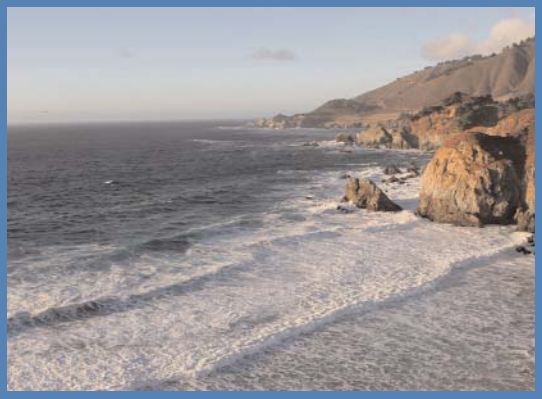

Water Resources and Land Use Planning

Watershed-based Strategies for Ventura County

Local Government Commission

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Additional photos provided by the Local Government Commission.

About the Local Government Commission

The Local Government Commission is a nonprofit, nonpartisan, membership organization that provides inspiration, technical assistance, and networking to local elected officials and other dedicated community leaders who are working to create healthy, walkable and resource-efficient communities.

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Water Resources and Land Use Planning

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Table of Contents

Executive Summary

Water resources are threatened as never before. Rapid population growth, climate change, drought and water quality impairment pose tremendous challenges not only for Ventura County, but the entire state. In the past, enormous financial investments and the marvels of engineering brought water from the wetter and largely rural regions of Northern California to the fast growing areas in the southern reaches of the state. Today, reliable sources of clean water are no longer a given, forcing California to rethink not only water sources, but water use now and into the future.

One water source often overlooked in Southern California is rainfall. Rather, the built environment is designed to treat rain as a nuisance. Collection, conveyance and disposal summarize the engineering approach to conventional stormwater management. The conversion of absorbent land to pavement and other impervious surfaces led to larger collection and conveyance systems, with little connection made to increases in local flooding, polluted water and degradation of the region's famous beaches, bays and estuaries. Even as rainfall is ultimately channeled to the Pacific Ocean, the State continues to explore even more distant water sources while facing growing costs to restore polluted waterways.

The water resource challenges presented above are intrinsically linked to local land use planning. Few decisions have greater impact on the quality, reliability, use and overall sustainability of water resources than how and where we grow. Despite their integral nature, water management and land use planning decisions are often disconnected.

The purpose of this plan is to better understand and bridge the disconnect between how we regulate land development and the standards we expect related to watershed health. This document is comprised of four main parts:

- An assessment of existing conditions and policies to identify needs and opportunities.
- A narrative explaining links between land use regulations in Ventura County and watershed health.
- Specific policy recommendations for aligning land use planning, community design and stormwater/watershed management programs.
- Technical review sheets to guide alignment of local codes and planning programs with stormwater and watershed management programs.

Project Background (Chapter 1)

In 2006, with local government partners in Ventura County, the Local Government Commission (LGC) received funding from the California Water Boards to conduct a watershed planning project to support integration of local land use planning, community design, stormwater management and watershed planning. The LGC's Ahwahnee Water Principles provided a framework, in part because several cities in Ventura County had formally adopted the principles.

As the project planning began, the Los Angeles Regional Water Quality Control Board (Regional Board), which oversees water quality resource management and its regulations, released a draft stormwater permit for Ventura County. The draft permit contained relatively new

requirements linking land development and stormwater management, including low-impact development, control of effective impervious surface and alternative approaches for redevelopment.

With input from a Stakeholder Advisory Committee comprised of representatives from local government agencies, watershed groups, the development industry, state regulatory agencies and environmental organizations, the LGC expanded the project scope to include consideration of permit requirements into the watershed plan.

Subsequent meetings were used to identify the opportunities for integrating water and land use, using the cities' and County's development codes and the permit as a vehicle for achieving greater integration of smart growth and site-level best management practices.

Ventura County Profile (Chapter 2)

Ventura County and the 10 cities within it have a history of advanced land use planning. The Guidelines for Orderly Development and Save Open-Space and Agricultural Resources (SOAR) initiatives continue to serve as national models for balancing land development and conservation. However, development and demographic trends are poised to challenge efforts to protect watersheds, farmland and open space, and maintain geographically distinct communities.

Ventura County is expected to add around 500,000 residents between 2000 and 2050. How that growth occurs is critical not only to local economies, transportation systems and quality of life, but to the health of water resources.

The watersheds of Ventura County are diverse and dynamic, ranging from steep rocky mountainous slopes to alluvial fans, from open wild lands to densely populated urban centers. The Santa Clara River and Ventura Rivers are in generally good condition, while developed and agricultural areas draining to the Calleguas Creek watershed have resulted in loss of sensitive ecosystems, flooding, erosion and sedimentation. Calleguas Creek also is the most studied, monitored and managed of the County's three main watersheds.

Ventura County is also relatively advanced in its approaches to watershed protection and management. The three major watersheds have active stakeholder groups that are engaged in various planning and management efforts.

Policy Alignment – Implementing Watershed-based Strategies in Ventura County (Chapter 3)

Chapter 3 provides an overview of challenges and opportunities for aligning water and land use to support watershed protection, community design and stormwater management goals. Ventura County and its cities have already enacted many of the solutions, though often with other goals in mind: smart growth, green building, transportation reform and economic development.

In California, General Plans (referred to as Comprehensive Plans in other parts of the country) translate a community's vision into preferred investment, land development and land conservation options. Over the past decade, General Plans in California have included expanded language on sustainable development and resource protection. However, the vision for sustainability has proven difficult to implement. Entrenched local codes and ordinances continue to reflect and support sprawling, high-impact development.

Most modern zoning regulations, which initially aimed to separate residences from harmful industrial areas, now work to separate nearly all aspects of day-to-day activities in a way that requires the use of an automobile to reach routine destinations. As a result, development standards have come to focus on designing communities for cars, which in turn create a landscape of expansive parking lots, larger roadways and dispersed buildings and communities. For watersheds, the end effect is impaired water quality, increased flooding, reduced supplies and degraded habitat.

To understand the code factors driving the built environment, the project team undertook a code review of communities in Ventura County. Rather than review thousands of pages of code, the team simplified the research by focusing on general areas where land and water resources might intersect. Several overarching review themes emerged through the code review to provide context:

- The Importance of Scale – Successful watershed approaches will need to address the overall development footprint while minimizing site level impacts.
- The Importance of Development Context – Joint water/land use planning must recognize that rural, edge, suburban and urban areas present different sets of constraints and opportunities.
- Natural Infrastructure and Ecosystem Services – Healthy watersheds provide a "natural infrastructure" that serves to capture, filter, cleanse, store and transport water. Advances in stormwater management, such as Low Impact Development (LID), build on the concept to mimic natural processes in site design.
- The Importance of Compact Development – Compact development, by design, reduces the overall footprint of development and minimizes impervious cover.
- The Power of Redevelopment – Redevelopment serves at least three watershed benefits. First, reusing already developed areas to accommodate new development demand generates comparatively less (or perhaps no) new impervious cover. Second, intensifying built areas can reduce the need to expand the overall development footprint onto non-built areas. Third, redevelopment offers the best opportunity to retrofit paved sites to improve water quality.
- The Role of the Transportation Footprint – Transportation-related impervious cover comprises over 50% of impervious cover under conventional development patterns, and thus is a major source of stormwater runoff. Watershed efforts that fail to address the transportation footprint are likely to miss a critical source of impact.
- The Importance of Use Mix – Enabling a greater mix of uses is necessary to address transportation-related impervious cover and the water quality impacts of car travel.
- Interlinking the Elements of Community Design – Zoning codes tend to inflate the amount of land needed by treating each site as an autonomous unit while overestimating site elements, such as setbacks, loading and parking.
- Specific Area Plans –Specific plans (as well as sub-area and master plans) emerge as one of the more valuable tools for orchestrating multiple planning, design and infrastructure elements of the built and natural environments. This orchestration optimizes shared amenities while minimizing the amount of land needed.

Code Review and Recommendations (Chapters 4-11)

Chapters 4-11 present each of the review themes with a discerning eye towards code language and ensuing impacts:

- Natural Systems and Green Infrastructure
- Infill and Redevelopment
- Compact Design
- Use Mix
- Streets and Mobility
- Parking and Loading
- Compact, District Design
- Stormwater Management

To better understand the watershed impacts, the review team formulated questions based on the watershed's point of view. Impervious cover is often used as an indicator to understand watershed health. As such, the review within each chapter begins with two overarching questions:

1. Which codes (or combination of codes) drive creation or prevention of excess land disturbance and impervious cover at the regional, community or neighborhood level?

2. Which aspects of the code (or combination of codes) drive creation or prevention of excess land disturbance and impervious surface at the parcel, lot or site level (in particular, directly-connected impervious surfaces)?

The Local Government Commission created questions for each chapter to find drivers of excess impervious cover as well as language that served to create less impervious cover. The findings are presented in a narrative format in Chapters 4-11, as well as in detailed Technical Review Sheets in Appendix C. The code challenges and opportunities summarized in each chapter include:

Natural Systems and Green Infrastructure

Code and Program Challenges:

- Recognizing Ecosystem Services within codes.
- Creating mapping, modeling and regulatory systems that recognize ecosystem services lost/gained.
- Shifting to "multi-purpose" open space through code directives.
- Code emphasis on quantity of open space rather than quality, in particular for urban areas, yards and setbacks.
- Planning and zoning for agriculture-based rural areas with urban growth pressures.
- Code barriers to LID.

Opportunities:

- Focus functional open space that allows recreation and ecosystem services simultaneously.
- With improved mapping, a better system of evaluating and accounting for cumulative effects (which would also address weakness in CEQA).
- Use of odd-shaped or other lots via code and programs.
- Specific/area planning to coordinate better stormwater management options.
- Alignment of stormwater efforts with other programs (e.g., parks and landscape manuals).
- Recognize Ecosystem Services within the regulatory system.

Infill and Redevelopment

Code and Program Challenges:

- Prevailing codes and standards geared towards greenfield development are difficult to meet where parcels are small, odd-shaped or experience split ownership.
- Conventional methods of site assessment focus only on site level runoff while missing larger watershed impacts and benefits of "recycling" already developed land.
- Overly stringent code requirements for stormwater management may tip decisions that result in no improvements (building rehabilitation or remodeling).

Opportunities:

- Stormwater can be added to the growing list of benefits of redevelopment, including climate, transportation and economic development.
- Specific/Area Planning forms a natural (and existing) tool for considering the smaller footprint of redevelopment.
- Form-based codes can be used to redeploy multi-use buildings.
- Many existing programs (e.g., streetscape) can be retooled to include stormwater management.
- A variety of existing studies can form the basis of environmental assessment at the larger watershed scale. Successes in redevelopment can be used to report successes in watershed objectives.
- Ventura County and its cities can use the rezoning and permitting process to spur improvements and BMPs.

Compact Design

Code and Program Challenges:

- Site/road design regulations and standards have increased over time.
- While well-intended, requirements for additional on-site amenities for commercial and

multi-family development projects can rule out smaller urban sites.

- Long-held conventions on separated zoning are giving way to new compact, mixed-use codes, however, traditional perceptions of proper land use are linked to individual and separate zones.
- Height limitations are controversial, though are rarely related to environmental performance.
- Setbacks will likely become a battleground for multiple uses, including stormwater management.
- Site coverage limits break apart and spread out development.
- Even with rise of green parking, the larger inefficient layout inflates the development footprint and its impacts.
- The sum total of these site-design elements results in "dense sprawl."

Opportunities:

- Coordinated District Planning (specific plans, form-based codes).
- New benchmarks of performance to introduce multi-objective parks, open space, landscaping and rooftops.
- Special design treatment at the neighborhood edge where new density meets older neighborhood or commercial areas.
- Height limitations serve a proper role for viewsheds, historic preservation and solar access.
- Increased heights should be used as part of larger district development discussions to avoid "density in the middle of nowhere."
- Ventura County and its cities can develop code language, policy and procedures for instituting shared site amenities.

Use Mix

Code and Program Challenges:

- Ventura County and its cities have inherited zoning codes that dictate segregated uses. Within these codes, the list of allowable uses can be quite narrow.
- Even with a broad list of uses, there is no guarantee that the market will deliver uses that match local tripmaking.
- Overlay zoning codes that are optional may not deliver desired outcomes. This could affect compliance with climate or stormwater directives where zoning plays a role.
- Use of density bonus provisions has not met expectations.

Opportunities:

- Ventura can augment language on access to include access via multiple modes of transportation.
- Commercial codes can be expanded to better address use mix and by extension, traffic generation.
- Assembly Bill 32 (California climate change legislation) will likely spur more detailed analysis of use mix and travel.
- The stormwater and climate change rules may spur widespread use of density bonus provisions.

Streets and Mobility

Code and Program Challenges:

- The over-design of streets and roads, which has been written into Highway Standards, persists in adopted manuals, standards and codes.
- Many of the cross sections and plates within the standards are outdated.
- Code language on access and connectivity may meet technical requirements, but fall short on meeting trip and travel needs.
- Preferred materials (pavers) seem to be the exception rather than rule, which adds time and approvals to the process.
- Approval of new technology is time consuming and is left to champions (rather than being part of a larger effort to obtain approval for larger-scale adoption).

Opportunities:

- Ventura County can elevate the need to fast-track testing and approval of new materials and standards to achieve permit compliance and water quality improvement.
- In advance of the permit, Ventura County and its cities can clarify use of existing funding stream for retrofits and "green streets."
- Ventura can adopt new language on connectivity and access to ensure roads, streets and trails link trips and activity centers.

Parking and Loading

Code and Program Challenges:

- Most codes require minimum levels of parking based on standards that are already thought to inflate parking space needs.
- Almost all codes limit the materials used for parking to impervious pavement (e.g., Portland cement or asphalt).
- "Landscaping in Parking" code requires landscaping to be contained in continuous, elevated (6 inches) concrete curbing.
- Codes are intended to direct site requirements one site at a time. As such, uncoordinated planning, circumventing the ability to design-in shared parking and loading.
- Redevelopment can trigger new (and typically larger) parking ratios, even when parking is adequately supplied under older standards.

Opportunities:

- Because parking is such an easily quantified measure of impervious cover, activities that reduce parking spaces can be plugged into stormwater performance reporting.
- Parking studies provide a finer look into parking/loading supply and need.
- Ventura County and its cities have planning efforts underway that include flexibility on parking allotment. There are several "quick fixes" that can help reduce the stormwater impacts of parking: use of on-street parking, improved shared parking, elimination of parking charge prohibitions, calculation of parking ratios, and new language on landscaping in parking.

Chapter 10 on district design includes observations and recommendations based on individual Specific Area Plans. The review and recommendations for stormwater management were developed with the stormwater permit in mind and are detailed in Chapter 11.

Chapters 4-11 include an overview, code barriers and incentives, and a summary with main code challenges and opportunities.

The Technical Review Sheets provide a list of potential stakeholders, relevant code sections and questions asked. Those questions are then presented with a summary of the land/water issue, sample code language to illustrate the code barrier or opportunity, and recommendations for modifying plans and codes. The recommendations are summarized and presented as possible short-, medium- and long-term efforts.

Water Quality Monitoring Plan (Chapter 12)

This project focuses on aligning water quality and land use planning policies. Unlike traditional watershed monitoring plans that set benchmarks through water quality monitoring, measuring the direct benefits of one or more policy changes is less direct. However, it is increasingly important that local land use agencies that are responsible for development decisions be able to assess the impacts of those decisions on water quality and watershed health.

This is particularly important as stormwater requirements related to NPDES permitting are implemented, because local planning and public works programs will need to refine policies and practices over time based on their efficacy. Thus, this plan discusses guidelines for linking policy adoption and water quality impact monitoring. The purpose is to:

- Establish a monitoring plan for the local water quality organizations and institutions.
- Develop guidelines for monitoring water-quality benefits from changed policies and practices.

- Develop a monitoring plan for watersheds that contain communities that adopt the project's recommendations.

The Local Government Commission recommends a facilitated meeting to develop proposals for measuring and crediting the water quality benefits of smart growth within the permit's land development program. The meeting would engage local stakeholders as well as a core group of science and policy experts.

For the purposes of this plan:

1. Identify methods for assessing the water quality benefits of smart growth (including infill, redevelopment, higher-density, compact design, mixing land uses, efficient parking, street design and mobility options).
2. Use the assessment to develop a credit program for smart growth within the permit.
3. Use the modeling protocol to measure the impacts of land use planning and development decisions over the permit cycle to modify or update the credit program and gain better understanding of the water implications of development decisions over time.
4. Identify a lead agency to house data and modeling functions.

How to Use this Code Review

If you are new to watershed planning, Chapter 2 provides a useful overview of the water cycle and the land use and water connections. If you are new to land use planning, Chapter 3 offers an overview of planning in California and the structure of zoning codes.

Non-technical stakeholders familiar with land use and watershed planning will find in Chapters 4-11 a narrative overview of code barriers and opportunities, along with general recommendations on code changes.

For those responsible for code changes or meeting regulatory permits, Appendix C covers a full list of possible code and plan revisions. It's easy to identify there which policy changes look most promising and use the Technical Review Sheets to investigate further.

The summary of recommendations in Appendix C, together with this executive summary, should also be helpful to local officials who need the bottom line on what the County or their cities need to do.

1. Project Background

In 2004, the California Water Boards funded the Local Government Commission to develop the Ahwahnee Water Principles for Resource-Efficient Land Use, a set of integrated policy guidelines for linking water and land use planning decisions. In 2006, in partnership with local governments in Ventura County, the LGC received additional funding from the California Water Boards to conduct a watershed planning project that supports integration of local land use planning, community design, stormwater management and watershed planning efforts in Ventura County. The Ahwahnee Water Principles, which have been adopted by the County and some cities therein, formed the basis for the proposal and the project work plan.

This Regional Watershed Plan is the result of a stakeholder driven process to develop watershed-based planning strategies for Ventura County communities. This plan is unique in that it focuses on the built environment and addresses water quality and watershed impacts of land use patterns and development practices – particularly the nexus of stormwater management and community design.

The plan's purpose is to provide a strategy for communities and agencies that make decisions that affect land use and water resources to work together to address both issues simultaneously, share data and plans and ultimately accommodate new growth in a manner that causes the least disruption to natural processes and water supplies. Its audience includes local government elected officials, planners, public works and other personnel associated with planning and permitting development. On the water side of the equation, this plan is for agencies involved with supply, treatment and stormwater control, and watershed groups.

Why Link Land Use and Water?

Water is a finite resource – we cannot make more for tomorrow. All we can do is protect and preserve what we have. We depend on our water for a growing list of uses: to drink, to grow food, to irrigate gardens and lawns, for showers and toilets, to wash clothes and dishes, to heat and cool buildings, and for industry and manufacturing. And we are not the only ones depending on water supplies. The health of rivers, streams, floodplains, wetlands and a host of other natural systems depend on healthy water as well – not to mention the organisms living within those systems.

In large measure, the sustainability of water depends on watersheds, which are natural systems that capture, filter and store water. All the water that falls within a watershed ultimately drains to a common point or outlet, such as a river, lake, delta or bay. A watershed creates a hydrologic network connecting water as it moves through the land. As a system, watersheds catch, cleanse, store and transport the water that falls within their drainage basins. They have biological and physical components that make up important ecological systems like wetlands, rivers, lakes, meadows, forests and floodplains.

Today, our water resources are threatened as never before. Rapid population growth, climate change, drought and water quality impairment pose tremendous challenges not only for Ventura County, but the entire state. Southern

Runoff from roads carries pollutants into local waterways.

California faces even greater challenges – a legacy of past water management decisions that at one time fueled the region's rapid economic and physical growth over the past century, while also placing the entire region in great peril with respect to the sustainability of the water supplies it depends upon.

In the past, enormous financial investments and the marvels of engineering brought water from the wetter and largely rural regions of Northern California to the fast growing suburbs in the southern reaches of the state. Today, a number of factors have made those supplies less reliable, forcing Ventura County and the rest of Southern California to rethink how and from where they will acquire their water supplies as water availability becomes a limiting factor for future development.

At the same time, existing freshwater systems are being degraded, limiting their potential utility in providing local sources of water for the future. The conversion of absorbent land to pavement and other impervious surfaces has increased local flooding and stormwater runoff, which carries a stew of pollutants from our communities into local waterways. Equally troubling, the pollutants entering these systems are being carried to the region's beaches, bays and estuaries, threatening the health of valuable coastal resources.

These issues are intrinsically linked to local land use planning. Few decisions have greater impact on the quality, reliability, and overall sustainability of water resources than how and where we grow. The built environment reflects the effect of those decisions over time, resulting in patterns of development that shape our neighborhoods, communities and entire regions. How these patterns unfold affects the amount of land, water and infrastructure needed and, consequently, the impacts that growth will have on the quality and reliability of water resources and the health of local watersheds.

Despite their integral nature, water management and land use planning decisions are often disconnected. To address this disconnect, the Local Government Commission developed the Ahwahnee Water Principles, which provide guidelines for aligning water management with local land use decisions and help communities protect valuable water resources as they grow. These principles can be tailored to meet local needs and conditions, allowing communities to translate appropriate best management practices (BMPs) into effective policies. (The Water Principles can be found in Appendix A.)

Project Overview

On December 27, 2006, the Los Angeles Regional Water Quality Control Board released a draft Municipal Separate Storm Sewer System (MS4) Permit for Ventura County. MS4 permits are issued under the National Pollutant Discharge Elimination System (NPDES) program under the Clean Water Act. Permits, in effect, allow discharges of stormwater from streets and conveyance systems into waterways. During a project scoping meeting in February 2007, local partners identified the draft permit as a pressing issue and an ideal focal point for the project.

With the permit as a backdrop, local partners helped the Local Government Commission to identify people to involve in a Stakeholder Advisory Committee (SAC) that would help steer the project. The committee is comprised of representatives from local government, watershed councils, government agencies, environmental organizations and residents. (See Appendix B for a list of SAC members.)

The committee held a kickoff meeting on April 19, 2007, and agreed that the MS4 permit provided an important bridge between water and land use policy in Ventura County, that policy gaps between the permit and local planning efforts needed to be addressed, and that the LGC project would focus on the subset of potential permit requirements with a land use and water nexus.

Subsequent meetings were held to identify the opportunities for integrating water and land use, using the cities' and County's development codes and the permit as a vehicle for achieving greater integration of smart growth and site-level best management practices.

Throughout the process, the SAC and the LGC have provided input, initial analysis and policy recommendations in the form of white papers and comment letters for the Los Angeles Regional Water Quality Control Board's permit revision process. At the same time, the LGC assessed local planning policies and programs to identify challenges and opportunities for watershed-friendly development. This assessment, along with interview and focus groups, form the basis for policy and planning strategies recommended in this document.

A Land Use-Based Regional Watershed Plan

As watershed plans go, this one is fairly unique. It deals largely with the design and form of the built environment, and more specifically with land use policies, as they relate to watershed health. Other watershed plans and studies exist for the Ventura region; this plan does not intend to replace or duplicate them, but to build on them and to approach some of the issues they address through the lens of land use planning.

Summary of the Ahwahnee Water Principles

I. Grow in a Water-wise Manner [Principles 1-2]

Forms that new development should and should not take to accommodate population growth and accompanying development and transportation needs without destroying watersheds – including the natural infrastructure of wetlands, flood plains, recharge zones, riparian areas, open space and native habitats.

II. Water-friendly Site Design [Principles 3-5]

Neighborhood and site-scale planning and design strategies that can be used to protect water quality, maximize existing supplies, reduce flood risks, and handle runoff more wisely.

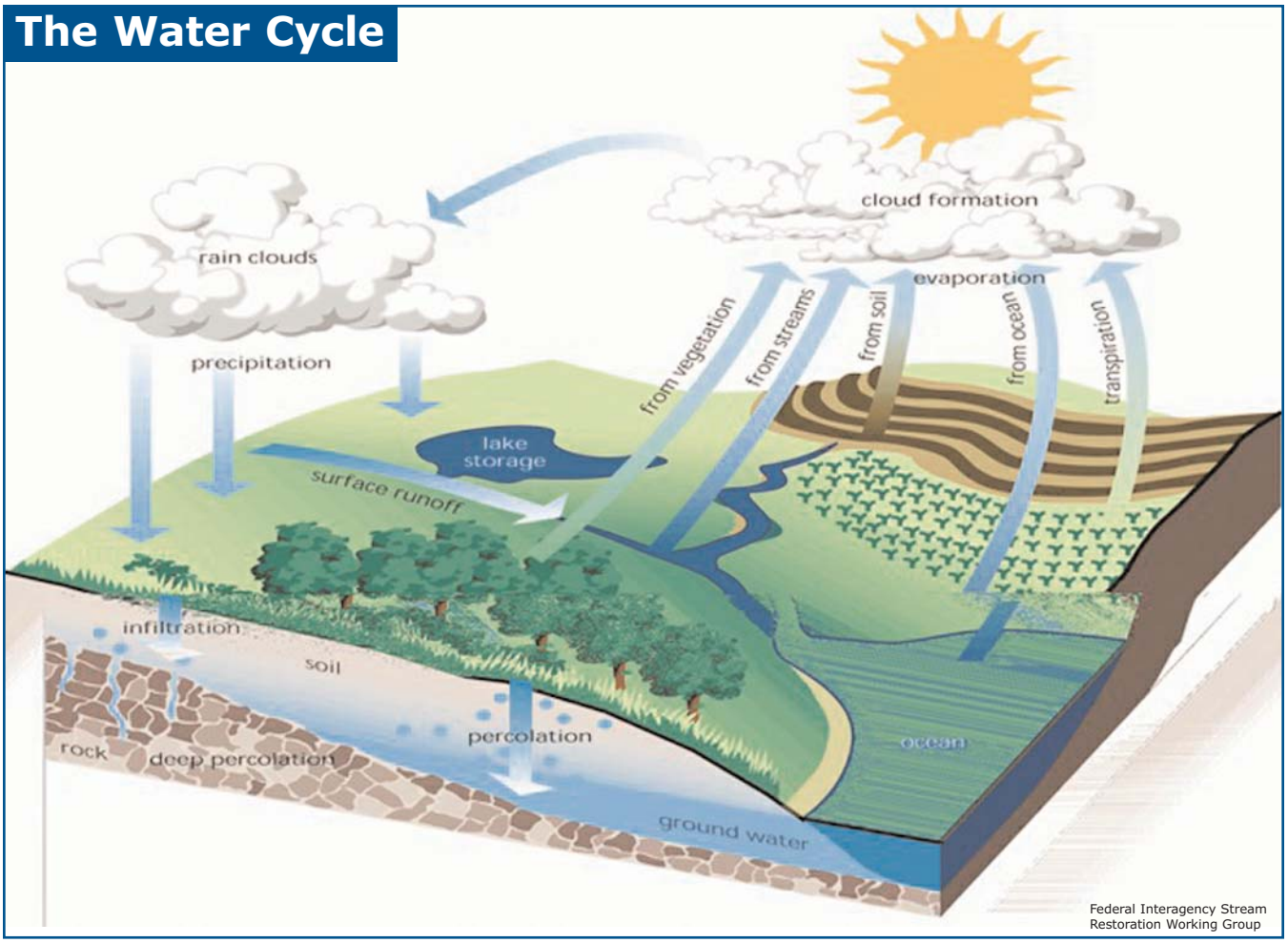
III. Stretch Water Supplies [Principles 6-9]

To ensure reliable water supplies in the future, communities need to make the most efficient use of existing water supplies. This includes graywater for reuse in the home, office or landscaping, use of water-efficient technologies and designs, and stretching groundwater supplies through treatment and desalinization.

IV. Implementation Principles

Five implementation principles that can help put these nine community guidelines into action through strategies for implementing compact growth patterns, water-friendly site design and water conservation – practical steps to make the physical changes necessary to ensure water sustainability.

The Water Cycle



Its purpose is to better align water and land use planning through improved coordination between land use and water planning efforts, policy analysis and by providing specific recommendations and tools to help implement them.

This regional plan contains:

- An assessment of existing conditions and policies to identify needs and opportunities.
- A narrative explaining links between land use decisions, watershed health, water quality and water quality regulations in a simple, non-technical form.
- Specific policy recommendations for aligning land use planning, community design and stormwater/watershed management programs.

Terms and Concepts

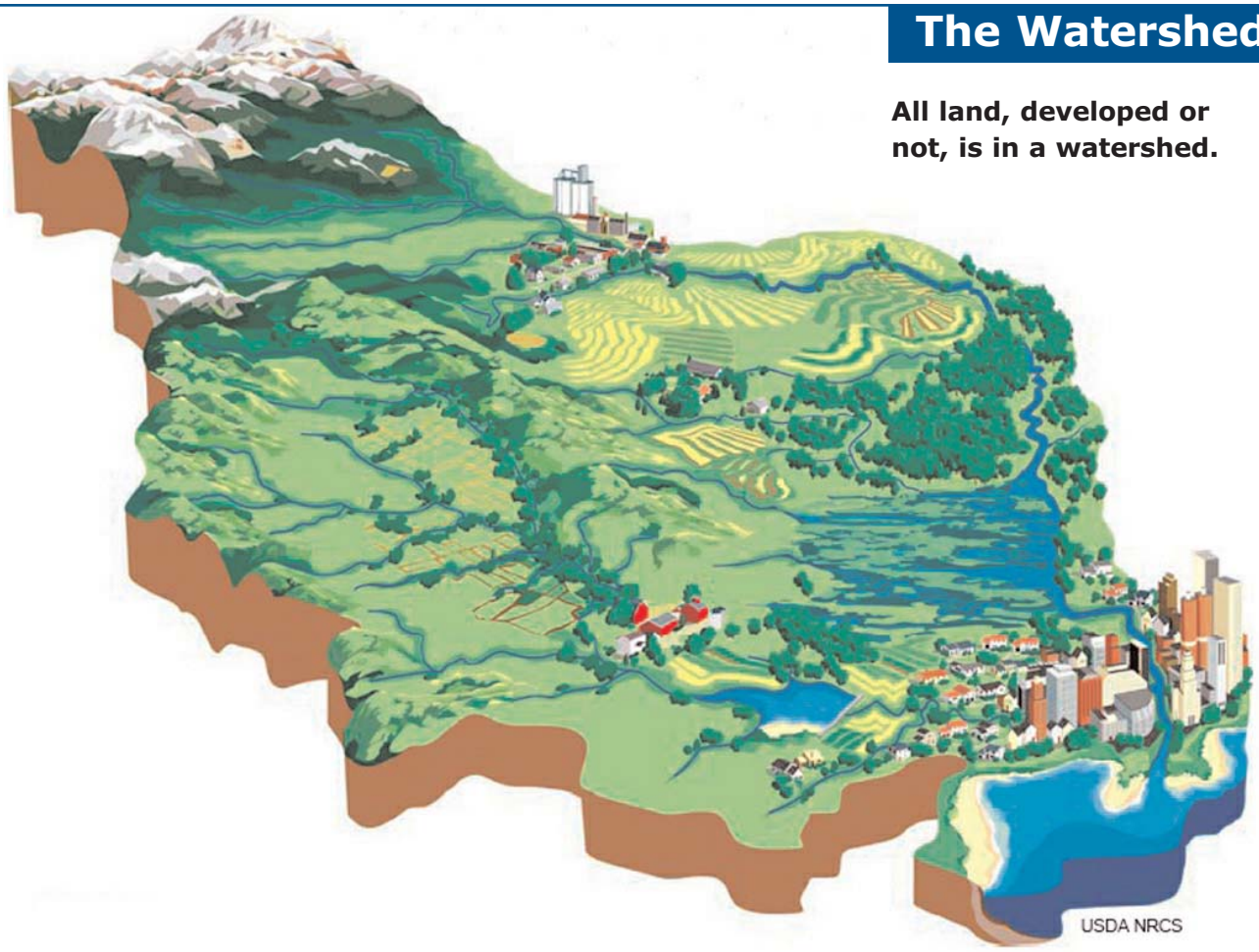
A few key concepts and their meaning in this document are important for the reader to understand, and merit additional discussion here. While some are basic, others represent new thinking and emerging ideas.

The water cycle is the continuous movement of water on, above, and below the surface of the Earth.

The water, or hydrologic, cycle is the continuous movement of water between land, waterways, the oceans and the atmosphere. It is an essential natural process that recycles and distributes the Earth's water supplies. Sun and gravity drive the process, which has cycled and recycled water around the planet as liquid, ice or vapor for millennia. The portion of this cycle that takes place on land occurs within watersheds.

The Watershed

All land, developed or not, is in a watershed.



Every site is in a watershed.

A watershed is the drainage area for a given body of water. It can be small, such as the land draining to a local creek, or large, such as the drainage area for entire Santa Clara River. A watershed creates a hydrologic network connecting water as it moves through the land. When a drop of rain falls to the ground, it becomes part of the watershed in which it landed.

All land, developed or not, is part of a watershed. Watersheds include both the streams and rivers that convey the water as well as the landscape systems (natural or developed) from which water drains. The watershed acts both like a funnel, collecting water that falls within the basin and "shedding" it into a water body, and like a sponge, capturing and absorbing water within soils, vegetation, and surface and groundwater systems. Larger watersheds are made up of smaller watersheds called sub-basins, which are all connected by and nested within the larger drainage system.

Natural drainage and the water cycle

When precipitation falls in a watershed, the water moves with gravity through any number of natural drainage processes. These drainage processes depend largely on the biophysical conditions of the land where it falls (e.g., soil, vegetation, topography). It might soak into the ground through a process called infiltration, or flow over the land as surface runoff. Most often it will do both.

Some water that soaks into soils is absorbed by plant roots and released as vapor back into the atmosphere in a process called evapotranspiration. Water that infiltrates deeper into the

Since natural drainage processes depend largely on land cover, drastic changes occur when raw land is developed.

ground becomes "base-flow," which replenishes groundwater systems (aquifers) and also feeds into surface waters such as rivers or wetlands, which may rely on this flow during dry periods. These systems are interconnected. The health of the system as a whole as well as the quality of the water within it depends largely on the land it flows over and through.

Watersheds provide natural infrastructure.

Watersheds are composed of soils, vegetation and natural processes that make up larger systems like wetlands, meadows and floodplains. These systems perform numerous services. They capture, store, filter and convey water supplies, ensure a water balance between surface and groundwater systems, and maintain healthy, functional landscapes. Increasingly, water managers and natural resource experts view these as a "natural infrastructure" system that provides essential services upon which communities depend.

The capacity of watersheds to function as natural infrastructure depends on the health of the ecological systems within them. When those systems are degraded, the watershed is unable to provide services such as clean water and groundwater recharge, and instead becomes a liability. The risks of wildfire, flooding, water contamination, invasive species, drought and habitat degradation increase because the watershed functions that normally keep such threats in check, are compromised.

The many benefits provided by watersheds and the ecological systems they support are often called "ecosystem services." Economists refer to the valuable goods created through ecosystem services, such as timber products, healthy fisheries or agricultural products, as "natural capital." Historically, land use planning and resource management have not only ignored the benefits of ecosystem services, they have compromised and even destroyed them by degrading or completely replacing the natural infrastructure that provided them.

Land development alters the water cycle and impacts watershed health.

Development replaces natural land cover with hard impervious surfaces, altering natural drainage processes. Prior to development, much of the landscape has evolved to absorb water, allowing it to infiltrate into soils, recharge groundwater systems, and provide base flow to rivers and streams, while the rest drains slowly over the surface. Vegetation, soils and organic matter cleanse the water and manage its pace as it flows over and through the ground. The water takes many paths, some fast and some slow, as it runs into and through rivers, streams and other water systems in the watershed.

When land is developed, impervious surfaces, like pavement and buildings, replace absorbent land, preventing water from infiltrating into the ground. This reduced infiltration causes corresponding reductions in groundwater recharge and base flow to rivers and streams. Reduced infiltration also increases the volume and

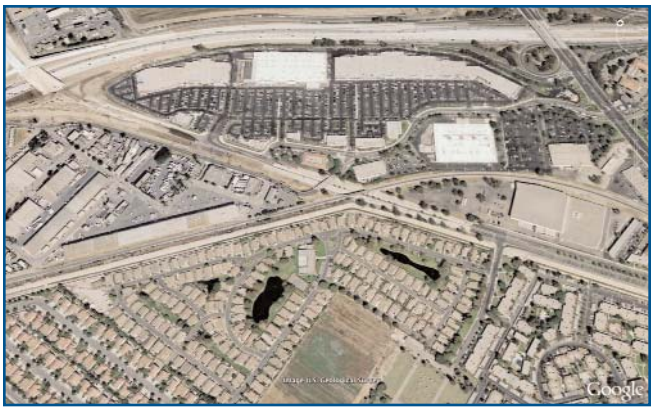
velocity of surface runoff, and thus increases the threat of flooding. More and faster runoff causes erosion and sedimentation, channel incision, stream bank instability, habitat degradation and flash flodding.

The runoff also collects a variety of pollutants from roads, parking lots, buildings, lawns and other areas that are then carried and discharged into local rivers and coastal areas. The kinds of pollutants in developed areas that can be picked up in runoff include heavy metals, oils and grease, pet waste, fertilizers and pesticides, and noxious air pollutants that settle on the ground. These pollutants in stormwater create a toxic stew that is destructive to the quality of receiving waters, aquatic vegetation and wildlife.

Using impervious cover as an indicator of water quality and watershed health.

Impervious cover is a chief cause of stormwater runoff and its impacts. Multiple studies show that significant water quality impairment occurs when as little as 10% of a watershed is covered with impervious surfaces.[1] A recent study suggests that in California this threshold may be even lower, with impairment occurring at levels as low as 3% to 5% impervious cover.[2] These and other studies, as well as the measurability of impervious area and relative understanding of its impacts, have made imperviousness among the most widely used indicators of water quality. However, there are several caveats when using imperviousness as an indicator.

1. While studies linking impervious cover and watershed impairment are based on watershed level impervious cover, stormwater is managed on a site-by-site basis. At the "watershed" scale, stormwater impacts are linked to the overall pattern of development, including its location and form. A watershed-based approach relies on addressing both site and watershed scales for opportunities and impacts.
2. Early discussions on impervious cover focused on the amount of coverage per site.



Impervious cover makes up much of the suburban landscape. Dedicated in large part to roads and parking, impervious cover is driven by auto-centric land use patterns.

   From this perspective, low-density development was viewed as a stormwater strategy. However, low-density development may result in more, not less watershed fragmentation and disruption where urban-type development and service demands move into rural areas.
3. The term "effective impervious cover" emerged to describe the connections between impervious cover and their delivery of runoff to a stream or storm drain system.

For example, 20,000 square feet of rooftop, which connects the gutter to a 20,000 square-foot sidewalk and parking lot, and a 5,000 square-foot driveway, which then connects to a storm drain, has 45,000 square feet of effective impervious cover. However, disconnecting the downspouts from the roof from the sidewalk/parking lot and directing them to a landscaped detention would render the rooftop "ineffective," reducing the effective impervious cover by 20,000 square feet. Of course, the rooftop, as a source of impervious cover is not gone, but its direct connection to the storm sewer system and then receiving waters, is eliminated.

With respect to the importance of such practices, it has also become clear that addressing imperviousness requires a closer look at what drives so much cover in the first place. Whether connected or disconnected, this imperviousness still has impacts on the watershed. Further investigations revealed that zoning codes,

National Pollutant Discharge Elimination System

Passed in 1972, the Clean Water Act is the principal law governing water quality in the United States. The Clean Water Act gives the U.S. EPA authority to set water quality standards and made it unlawful to discharge pollutants from point sources (such as pipes discharging waste from sewage plants or factories) into navigable waters, unless a permit was obtained under its provisions.

In California, the Porter-Cologne Water Quality Control Act gives the State Water Resources Control Board and nine Regional Water Quality Control Boards authority over water quality regulation at the local, state and regional level.

In 1987, the Clear Water Act was amended to address the problem of non-point source pollution in stormwater runoff by expanding the national pollutant discharge elimination system (NPDES) program to discharges from stormwater systems. This change brought cities and counties, as operators of municipal separate storm sewer systems (MS4s), under the regulatory provisions of the NPDES Municipal Stormwater Program.

The MS4 regulations originally only applied to communities with populations over 100,000, but now that threshold has been lowered to 10,000.

financial requirements and land development regulations, like land use separation and minimum parking standards, are driving much of the land disturbance and impervious cover that impacts watersheds. Moreover, only assessing impervious cover on individual sites leaves much of a watershed's impervious cover unaccounted for, in the form of streets, access lanes and soil compaction.

The challenge of stormwater runoff, a chief threat to the nation's waters.

The U.S. Environmental Protection Agency recognizes stormwater as the number one threat to water quality in the nation.[3] In response, state and federal agencies have stepped up regulatory oversight, particularly through an expansion of the National Pollutant Discharge Elimination System (NPDES) program.

NPDES was initially established to address "point sources" of water quality pollution such as discharges from industry and wastewater plants. Stormwater runoff was considered a "non-point source" of pollution because it emanated not from one discrete point, but from the entire developed landscape. The program was expanded in 1987 to include stormwater discharges from municipal sewer

Conventional grey infrastructure

Green infrastructure

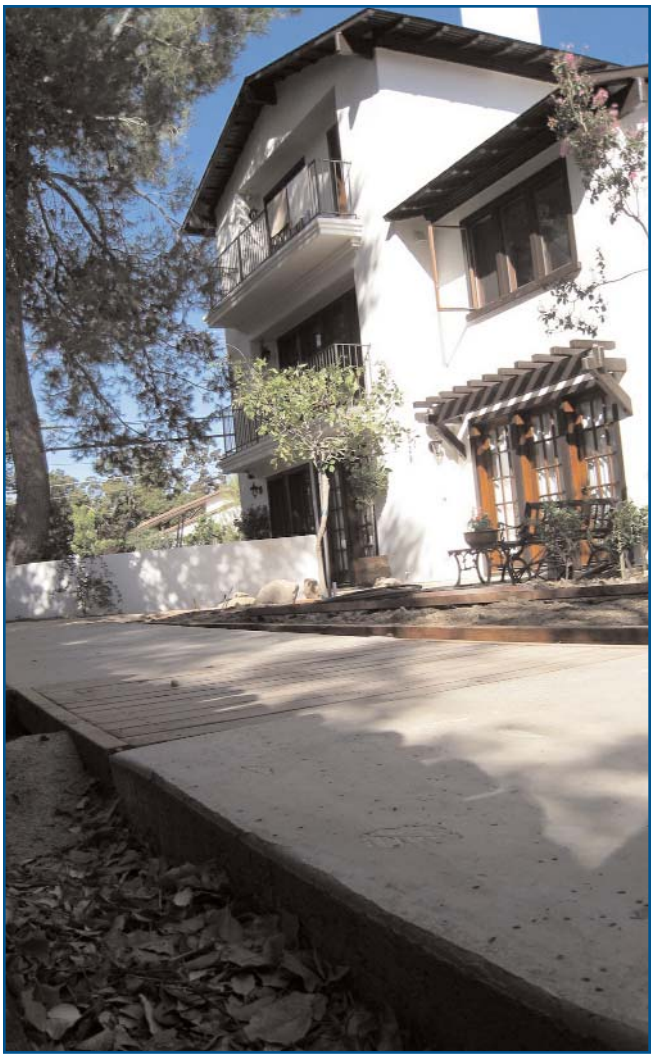
systems, effectively treating those systems as discrete point sources of pollution, even though the contaminants collected in the stormwater originated as non-point sources.

This regulatory shift has had a profound effect on stormwater management, greatly increasing the responsibility of local governments and developers in controlling the water quality impacts of development. Ventura County's stormwater permit is intended to implement NPDES stormwater program provisions.

Stormwater management – the shift from grey to green infrastructure.

Conventional storm drainage and flood control systems were based on "conveyances" designed to move large amounts of water out of an area as fast as possible. The result was a highly efficient system for discharging huge amounts of runoff and pollutants into local rivers and streams at high velocity. The unintended consequences on receiving waters, including degraded water quality, scoured channels, bank erosion and loss of habitat, have been grave.

Conventional conveyance-based stormwater systems rely on "grey infrastructure," a network of curb, gutter, concrete channels and underground pipes, designed to collect and convey water from developed areas as fast as possible. But stormwater management has evolved dra-



This compact, green redevelopment project in Davis combines strategic location, compact form and green design elements.

What Is Low Impact Development?

Conventional stormwater management solutions convey runoff from developed areas, but are not designed to address the impacts of runoff on water quality and local hydrology. Low Impact Development (LID) is a stormwater management approach that aims to reduce the impacts of development on water resources. LID makes use of small, decentralized controls that are distributed throughout a site to address runoff as close to the source as possible. LID attempts to mimic a site's predevelopment hydrology by protecting existing drainage properties of the site and incorporating naturalistic features designed to infiltrate, filter, store, evaporate and detain runoff from impervious areas.

LID techniques fit into a range of development settings and conditions. They have been applied in urban and rural areas, from commercial to residential land uses, and in various soil types, topographies and climate conditions. The techniques can be applied at site, neighborhood or regional scales to create a reliable "green" infrastructure to address drainage and reduce the water related impacts of the built environment.

Sprawl development

Compact development

matically in the last decade. Needing to comply with federally mandated NPDES rules, communities are rethinking their approach to stormwater management.

In recent years, there has been an increasing emphasis on "green infrastructure" as an alternative to conventional "grey" approaches. Conventional "grey" systems are centralized, single-focused, hard and structural, while newer "green" solutions are dispersed, integrated, non-structural and rely heavily on natural processes and systems. Low Impact Development, which will be required in Ventura County's new stormwater permit, is one of the more common names for the site planning, design and engineering practices that have emerged from this shift.

Stormwater management – looking beyond the site to the drivers of imperviousness.

Better site planning has attracted a great deal of design and regulatory attention to address watershed health. However, there has been less attention to other scales of development.

Recent trends in stormwater management, including closer ties to land use planning and the growing emphasis on "green" approaches, represent significant improvements over past approaches. But so far the shift from "grey" to "green" has focused on site level practices such as low-impact techniques to mitigate the impacts of development. It has become increasingly clear that site design alone cannot solve the problems of urban stormwater runoff. A watershed-level approach, which includes preventative actions, is needed.

This point was made most recently in a report prepared by the National Research Council for the US EPA.[4] The report found that a comprehensive strategy must address impacts at a variety of scales and work to curb the development patterns that drive excess imperviousness and watershed disturbance.

Working at the watershed scale marks the next phase in the evolution of stormwater management. It requires more emphasis on the causes of stormwater problems, and planning to prevent them. It will employ a much broader

Compact Development Patterns Protect More of a Watershed

In 2002, the EPA modeled the stormwater impact of new development at densities of one, four and eight residential units per acre. The results revealed that, assuming communities continue to grow, it is better to concentrate development in a smaller land area using higher densities. "Lower-density development always requires more land than higher densities to accommodate the same amount of growth." When more land is disturbed, more of the watershed is damaged. The study found that as density increases, overall impervious cover in a watershed decreases.[5]

range of planning strategies, including urban infill, redevelopment, mixed use development, compact neighborhood design and multi-modal transportation systems – all hallmarks of smart growth – to minimize watershed disturbance and impervious cover through compact community form, reuse of land and shrinking the transportation footprint.

This progression merges smart growth, urban design and LID to address impacts at the site, while attending to the larger issues of community form and development patterns. It builds on a growing body of research that is changing the way we look at the problem of stormwater runoff, and the solutions we use to solve it. It presents the opportunity to apply new solutions across wider scales and development contexts:

- Using green infrastructure at site, neighborhood, district, community and regional scales;
- Minimizing pavement not only through permeable alternatives, but also by improving development patterns to reduce the overall transportation footprint; and
- Disconnecting impervious surfaces, and making fewer of them while reusing and retrofitting those that already exist.

Land use patterns are central to the water impacts of development.

Development comes with certain impacts to watersheds, but the extent of impact depends on several factors that can be controlled. At a watershed scale, the location and form of new growth largely determines its impact on watersheds and other resources. When development is located in more ecologically valuable areas, there are higher impacts than when it is located in areas that are already disturbed or are less sensitive.

Dispersed development has a more adverse impact because more of the watershed is fragmented with the introduction of new roads, buildings and other structures, infrastructure systems, and other activities that come with development. Conversely, concentrating the impacts on a smaller footprint yields fewer per-capita impacts.

Compact patterns of development require less land for a given amount of growth and, therefore, can result in less land disturbance and impervious cover. Mixing land uses, housing, jobs, shopping and schools reduces the distances between everyday activities and reduces the number and length of car trips.

Transportation-related imperviousness (streets, roads, parking) accounts for a substantial portion of the overall development footprint. In areas of highly separated land uses, there is a greater need for roads and parking because people need cars to travel between homes, jobs and shopping.

At a broader scale, when housing is located far from community centers, greater amounts of streets and roads are needed to serve those residences than if they were located more centrally.

Other development standards, including setback requirements, lot size, block standards and street widths, are also closely linked with the overall amount of impervious surface cover resulting from a given amount of growth.

2. Existing Conditions

In the next 50 years, more than 89 million homes and 190 billion square feet of commercial space will be built in the United States.[1] California's population is projected to hit 50 million people by 2032. Ventura County is expected to add around 500,000 residents between 2000 and 2050, which equates to about 10,000 people per year. How that growth occurs is critical, not only to local economies, transportation systems and quality of life, but also to the health of water resources.

Ventura County Profile

Ventura County is something of an enigma. Sitting in the fast-growing Los Angeles region, a place known as the archetype of sprawl, Ventura County has developed in relatively orderly patterns, and maintains large areas of open space and farmland that establish clear edges between most of its 10 cities.

The achievement has been neither seamless, nor accidental. Unique social, geographical and political conditions underlie this deviation from the types of development patterns and community forms found in most of Southern California. It has also not been perfect – there are places throughout the county that reflect the classic symptoms of inefficient, dispersed, car-centered growth. Emergent and lingering development trends will stress current growth patterns and community forms, and will challenge efforts to protect farmland and open space, and maintain geographically distinct communities.

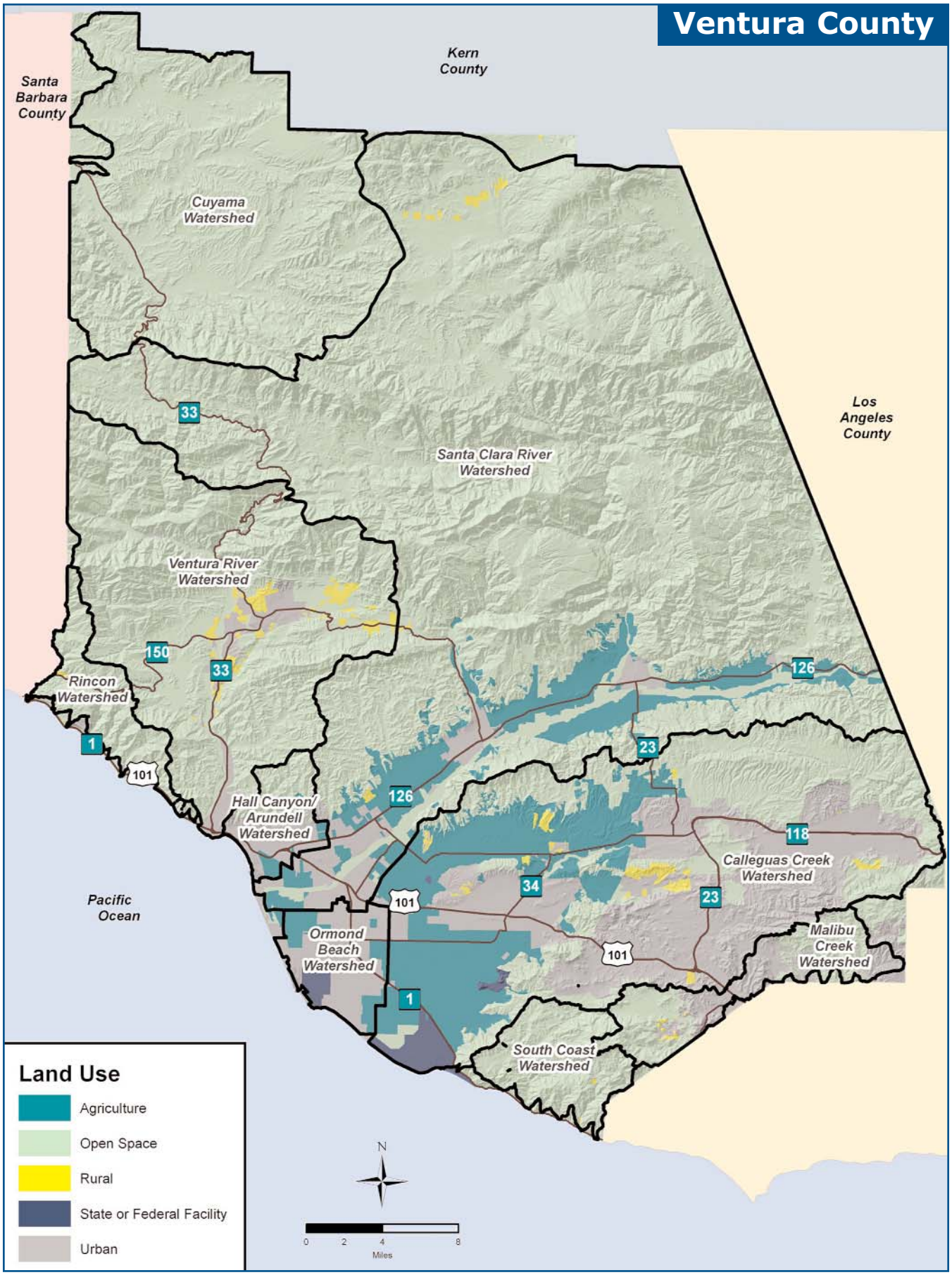
Ventura County lies northwest of Los Angeles County, and is bordered by Kern County to the north, Santa Barbara County to the west and the Pacific Ocean on the southwest. The county area encompasses 1,873 square miles with a population of 825,512 residents, ranking it 26th in land size and 11th in population size among California's 58 counties.

The county is geographically diverse, including 43 miles of coastline as well as mountains that reach up to 8,831 feet. The Los Padres National Forest accounts for a large portion of hilly and mountainous terrain in the northern county. The Santa Monica Mountains drop steeply down to the coastal plain in the southwestern portion of the county. The Oxnard Plain, Simi Valley and Conejo Valley in the southern portion of the county hold most of the county's population and are more heavily developed than the more rugged areas north of Highway 126.

Ventura County Watersheds

The watersheds of Ventura County are diverse and dynamic, ranging from steep rocky mountainous slopes to alluvial fans, from open wild lands to densely populated urban centers. The varying topography, waterways and development patterns in the county influence stormwater flows into floodplains and rivers, water resources in surface water and groundwater basins, the health and quality of wildlife habitat, the health of local ecosystems and the quality of water entering the Pacific Ocean from coastal watersheds.

There are three main watersheds in Ventura County: Santa Clara River, Calleguas Creek and Ventura River.

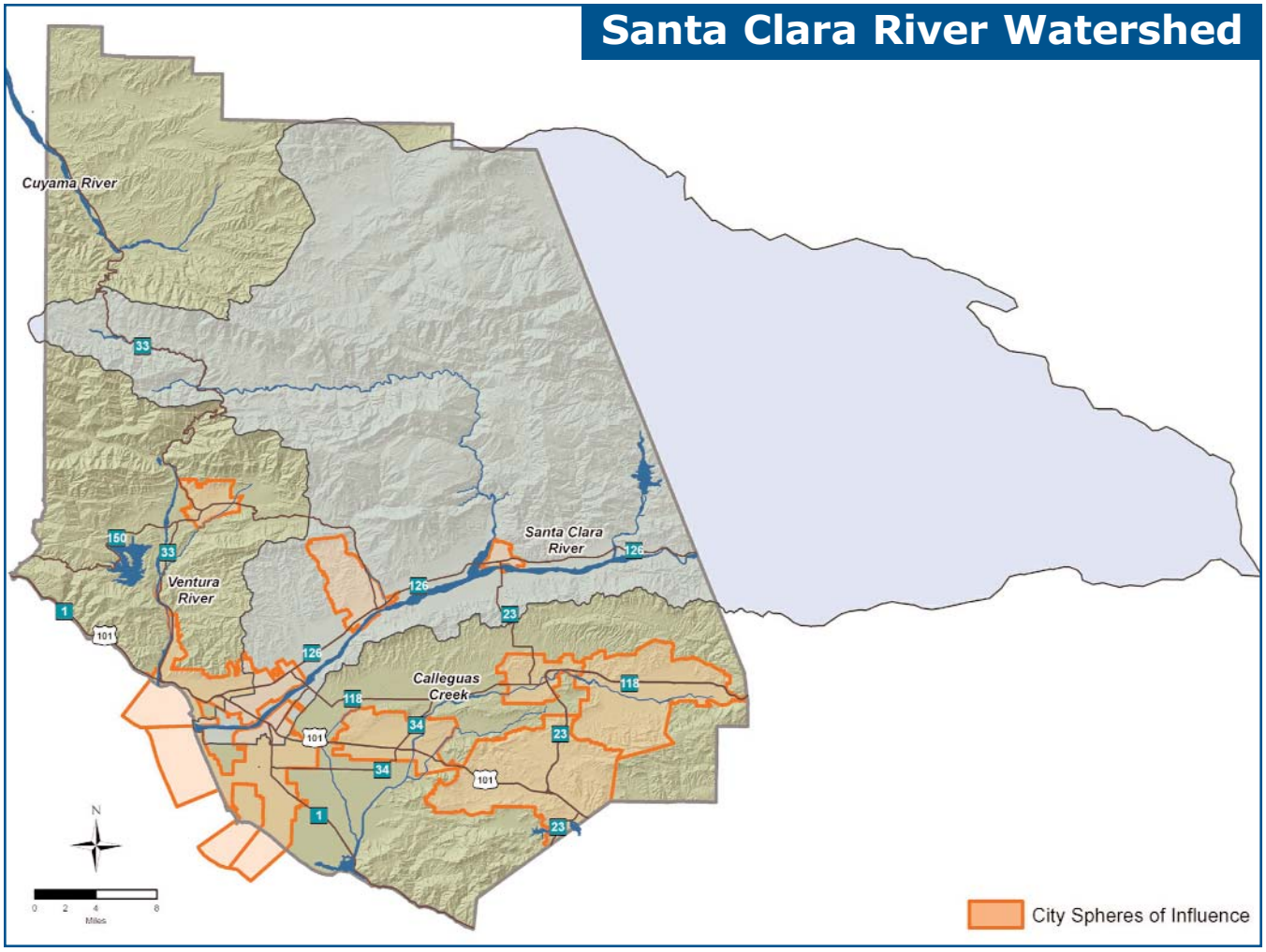

Ventura County
Kern County
Santa Barbara County
Los Angeles County
Pacific Ocean
Cuyama Watershed
Santa Clara River Watershed
Ventura River Watershed
Rincon Watershed
Hall Canyon/ Arundell Watershed
Ormond Beach Watershed
Calleguas Creek Watershed
Malibu Creek Watershed
South Coast Watershed
33
150
1
101
126
23
118
34
Land Use
Agriculture
Open Space
Rural
State or Federal Facility
Urban
N
0 2 4 8
Miles

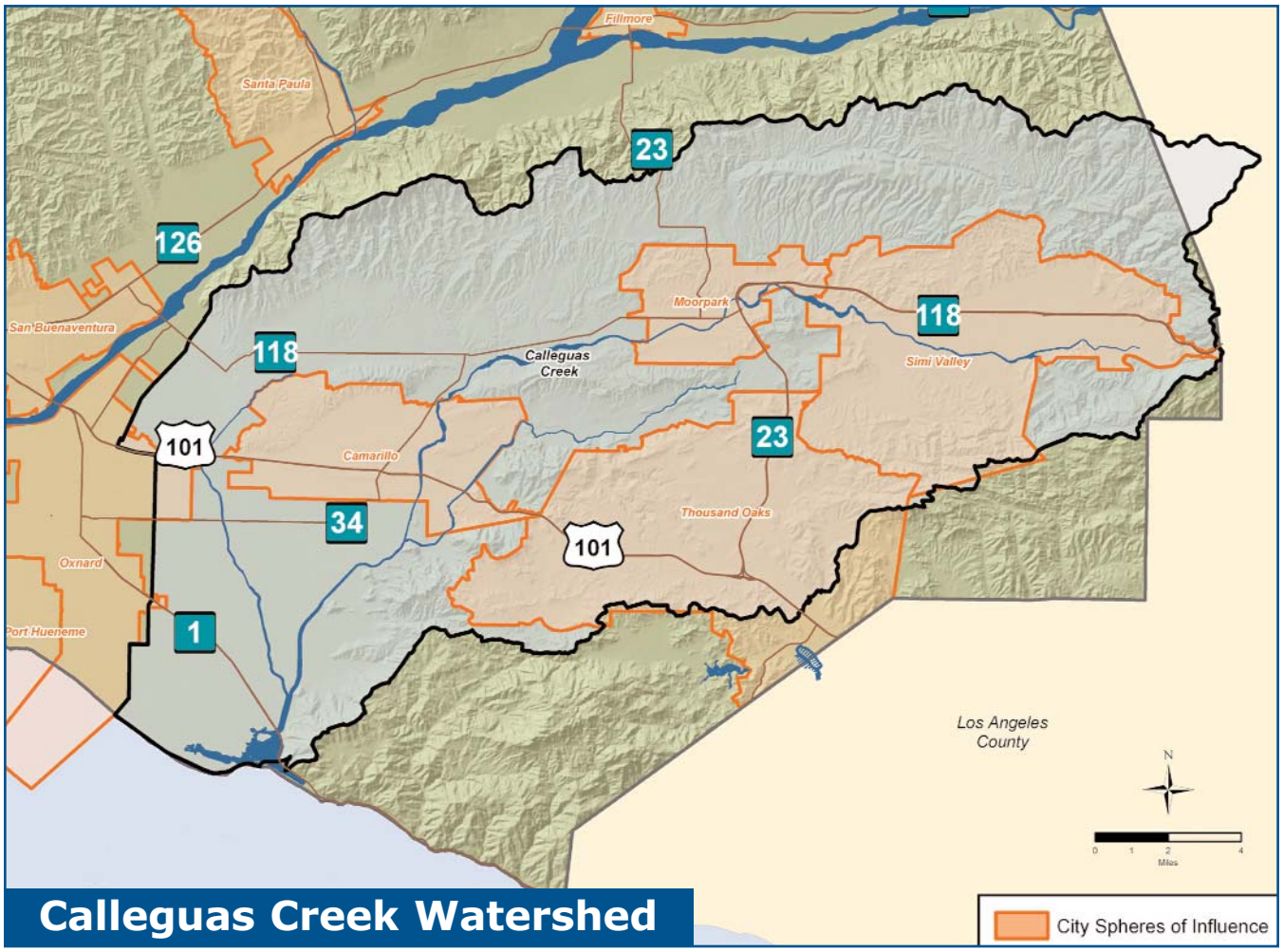
Santa Clara River Watershed

The Santa Clara River flows through two counties (Los Angeles and Ventura), six incorporated communities (Acton, Santa Clarita, Fillmore, Santa Paula, Ventura and Oxnard), and three unincorporated communities (Piru, Bardsdale and Saticoy). The prominent land uses within the 500-year floodplain of the Santa Clara River Enhancement and Management Plan (SCREMP) area include open space (62% at 12,315 acres) and agricultural (29% at 5,814 acres). Urban uses occupy only 107 acres, or about 1%, of the SCREMP area.

The 1,634 square-mile watershed of the Santa Clara River is the largest free-flowing river system in Southern California. As it remains in a relatively natural state, the Santa Clara is a valuable and unique watershed system that connects Los Angeles and Ventura counties, which has compelled both jurisdictions to engage cooperatively in efforts to protect, enhance and manage the river system. The most recent and notable effort is the SCREMP, released in final form as the result of a 26-member stakeholder process begun in the 1990s. The SCREMP process included representatives from both counties, and was led by the SCREMP steering committee, the Ventura County Watershed Protection District and the Los Angeles Department of Public Works.

The Santa Clara has several significant tributaries, including Castaic Creek and San Francisco Creek in Los Angeles County and the Sespe, Piru and Santa Paula creeks in Ventura County. Most of the watershed is mountainous, originating at Mt. Pacifico in the San Gabriel Mountains and running through the Sierra Pelona, and the Topatopa Mountains of the Sespe Backcountry. The Angeles and Los Padres National Forests cover much of that





area as well. Downstream, the river leaves the confinement of the mountains and expands out onto the flatter terrain of the Oxnard Plain and lower-lying valleys before it enters the Pacific Ocean north of Oxnard. From its mountainous origins to its mouth, it runs 84 miles and falls 8,800 feet in elevation. Water entering the system, and thus generating its flow, tends to come in short and intense bursts of rainfall.

Groundwater is an important component of the Santa Clara River Watershed. Prominent basins and several sub-basins, composed primarily of alluvial deposits, provide freshwater and are fed from several recharge areas in the watershed. Seawater intrusion and impacts of septic systems are important water quality concerns for these groundwater resources.

Calleguas Creek Watershed

The Calleguas Creek Watershed encompasses 343 square miles and lies in an urbanized and heavily populated portion of Eastern Ventura County. It is the most urbanized and therefore most degraded of the major watersheds in the county. Presently 50% of the watershed is undeveloped open space, 25% is agricultural, and the remaining 25% is in urban land use. The Calleguas is also the most studied of the main watersheds and has received considerably more attention, probably due to the precarious state of the system relative to the county's other two major watershed areas.

Tributaries to the main stem include Conejo Creek, Arroyo Santa Rosa, Arroyo Simi and Arroyo Las Posas as well as Revolon Slough

and Mugu Lagoon. The drainage area is bounded on the north by the Santa Susana Mountains, South Mountain and Oak Ridge Mountains. The Simi Hills and Santa Monica Mountains form the southern boundary. From those coastal ranges, the watershed drains west and south through the cities of Simi Valley, Moorpark and Oxnard before reaching the Pacific Ocean through Mugu Lagoon.

The net result of 40-plus years of fairly intensive urban and agricultural land uses is a highly impacted watershed that suffers from loss of sensitive ecosystems, flooding, erosion and sedimentation, pollutants from urban and agricultural runoff, and significant alterations to the hydrologic regime – much of the creek's constant flow is from discharged wastewater and stormwater.

As the most impacted, Calleguas Creek is also the most studied, monitored and managed of the county's three main watersheds. The Calleguas Creek Watershed Management Plan (CCWMP) is a collaborative, stakeholder-based effort that was initiated in 1996 to develop a protection and management strategy for the Calleguas Creek watershed. The CCWMP effort is still active and supported by on-going stakeholder efforts as well as the countywide Integrated Regional Watershed Management Planning (IRWMP) effort.

The CCWMP/IRWMP was prepared under the auspices of the Calleguas Creek Steering Committee and included stakeholders from cities, water districts and planning entities, among many others. The Steering Committee's land use subcommittee provides a link between local planning agencies and the IRWMP by offering a forum for discussion in its meetings, providing accurate, consistent land-use planning information, and incorporating local planning documents and goals into the project objectives. Several of the "action recommendations" identified in the CCWMP relate to project efforts to align water and land use policies.

The CCWMP focuses on Low Impact Development and calls for additional research so that potential retrofits can be prioritized by the pollution treatment capacity, land area served, and costs of implementation.

Ventura River Watershed

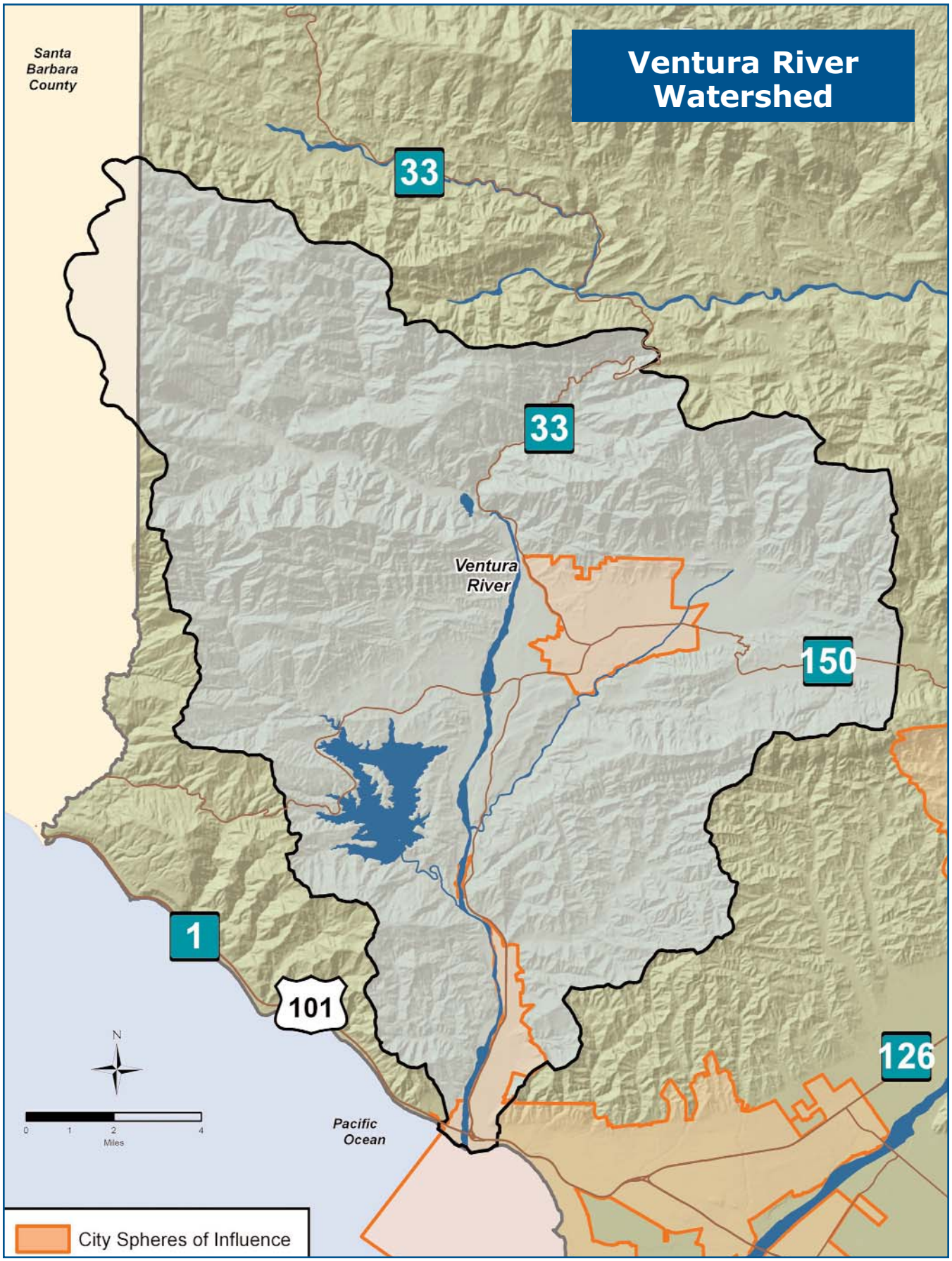
The Ventura River Watershed spans a 228 square-mile area in the western portion of Ventura County. The drainage area for the Ventura River begins in the Transverse Ranges generally following a southerly course to its drainage point in the Pacific Ocean.

The main tributaries of the Ventura River are San Antonio Creek, Coyote Creek, and Matilija Creek. The three creek systems originate from the east, north and west respectively, giving the Ventura River Watershed its fan-like shape. Other important tributaries include the North Fork Matilija and Canada Larga. Most of the tributaries in the watershed are typified by steep gradients resulting from the mountainous topography they cross. A proximate and related drainage system, the Rincon and Hall/Arundell Watersheds, is generally grouped with the Ventura River Watershed, and is included in management documents like the 2006 IRWMP.

The Ventura River Watershed is relatively undeveloped compared to others in the Los Angeles region. Water quality is generally good throughout most of the watershed. However, degradation has occurred, particularly in the lower reaches where point and non-point source pollutants have impaired water quality and led to periodic beach closures. Water quality issues are mostly related to non-point source issues.

Groundwater basins composed of alluvial material are subject to water quality impairment because of close association with surface flows. Beneficial uses include supplies to municipal, industrial and agricultural users, recreation, habitat for a range of species (including some rare and endangered species), groundwater recharge and freshwater replenishment.

Water supply management issues exist as well. Water diversions, groundwater pumping and dams are thought to limit surface water needed to support a high-quality fishery, and supply reductions impair water quality as well.


Ventura River Watershed
Santa Barbara County
33
33
Ventura River
150
1
101
126
N
0 1 2 4
Miles
Pacific Ocean
City Spheres of Influence

Removal of the Matilija Dam is a priority and an important issue to many residents and community groups.

Ventura County Growth Trends

Known for a mix of beach towns, rural agricultural landscapes, coastal streams and mountains, and small but cosmopolitan urban centers, Ventura County has long been considered an appealing place to live. It is also one of the more affluent counties in California. Its real-estate appeal, combined with its proximity to the Los Angeles region, has generated significant growth pressure in Ventura County for several decades.

Between 1960 and 2000, population grew at an overall annual rate of 7%, five times higher than the national average and more than twice that of the rest of Southern California (Los Angeles, Orange, San Bernardino and Riverside counties).[2]

The expansion of US 101 into a freeway in the 1960s made it easier to commute to Los Angeles, and stimulated development. Much of this growth occurred in the Conejo Valley, northwest of the Los Angeles County line and along the US 101 corridor.

While population has continued to grow, how and where development is built has changed rather dramatically since 2000. Between 1995 and 2000, voters in Ventura County and eight of its 10 cities adopted Save Open-Space and Agricultural Resources (SOAR) initiatives, which created a set of urban growth boundaries that cannot be changed without a vote. These are set to expire, varying by city, between 2020 and 2030.

According to a recent Solimar report, between 2000 and 2006 urbanized land has increased within the SOAR boundary and farmland has decreased. Furthermore, farmland conversion outside the SOAR boundaries has decreased even though real estate markets have not changed during this time period.[3]

Between 2000 and 2006, urban density trends – the number of people per acre – have also seen a shift. Although urban density has been steadily increasing in Ventura County over the last 20 years, the marginal urbanized density (the additional population per number of newly urbanized acres) has increased even more than usual. These increases in densities are most likely a result of more compact development since household size has remained constant.

Based on these trends and future analysis, the Solimar report projects that "all cities in the county could accommodate a 21% increase in countywide population – the SCAG forecast for 2030 – if the land use mix of future development is the same as the land use mix of current development." However, this will require that some agricultural land within the growth boundaries be converted to residential development. Some of this can be avoided if higher densities, mixed use and infill are encouraged.

Ventura County Policy Background

Reaction to growth in the county spurred one of the first and longest lasting growth management efforts in the nation. A range of land conservation and growth limitation policies were established to prevent Ventura County from "becoming the next Los Angeles."

Several policies designed to manage the extent and location of future development have been developed and implemented within the county. Most recent and notable are a series of landmark growth management measures voters adopted in the late 1990s collectively known as SOAR (Save Open-Space and Agricultural Resources). Earlier initiatives included the establishment of greenbelts as early as 1967 (Ventura-Santa Paula), the Guidelines for Orderly Development and several local ballot measures that placed restrictions on new development.

Guidelines for Orderly Development

Ventura County, its cities and the Local Agency Formation Commission (LAFCO) initiated the Guidelines for Orderly Development in 1969 to direct future growth into city boundaries of existing communities and away from unincorporated county land. LAFCO established limits to the number and location of new cities and also maintained strong control over the cities' sphere of influence boundaries. This helped maintain distinct boundaries between communities, and distinguish urban and rural areas.

Several communities also established greenbelt agreements designed to establish contiguous corridors of agricultural land as buffers between adjacent communities. Several communities also passed numeric limits on the number of new housing permits allowed per year.

The Guidelines for Orderly Development clarified the land use planning relationship between Ventura County and the cities therein. They established a formal policy that urban development should occur, whenever and wherever practical, within incorporated cities.

Additional issues covered by the guidelines include development standards and fees, and responsibility for development approval in different situations. Most notably, they directed future growth into existing cities in an attempt to establish a cooperative and regional (county-scale) approach to land use planning.

The objective has been to allow "for urbanization in a manner that will accommodate the development goals of the individual communities while conserving the resources of the county…and promote efficient and effective delivery of community services."

According to Ventura County LAFCO: "The Guidelines for Orderly Development are what make Ventura County unique in the State in terms of County/city development issues…The result of the implementation of the Guidelines for Orderly Development has been that the County of Ventura does not compete for urban development with cities and the County does not allow urban development to occur in a city's sphere of influence unless the area involved is annexed to a city. The Guidelines… have been effective because the County, all the cities in the County, and the Ventura LAFCO enforce them. The Guidelines for Orderly Development do not apply to special districts."

Save Open-Space and Agricultural Resources (SOAR)

The Guidelines for Orderly Development were, and continue to be, a landmark policy framework, but they did not serve to quell local concerns about growth. One reason may be that, while the Guidelines served to direct growth into the cities, which enabled protection of open space and farmland, they did not specify how growth within the cities would occur. They said nothing about the design and configuration of development.

While growth was more "orderly" at the county level, it tended to be "status quo" within city boundaries. In numerous cities, residents sought to control growth within city boundaries through the Save Open-Space and Agricultural Resources (SOAR) initiatives.

Between 1995 and 2000, voters in most of the cities, including Camarillo, Fillmore, Moorpark, Oxnard, Santa Paula, Simi Valley, Thousand Oaks and Ventura, passed ballot initiatives establishing SOAR ordinances. These initiatives created urban growth boundaries called City Urban Restriction Boundaries (CURBs) around the cities. Voter approval is required for extension of city services outside the CURB and for changes to zoned land uses (farmland or open space) outside the line. The CURB boundaries themselves cannot be changed without a majority vote of the people.

Housing in Ventura County

Housing is one of the chief issues driving development outcomes in any developing region. In Ventura County it is a vital issue that matters to the watershed because ultimately, decisions about where and how to locate housing, jobs and commercial centers determine development patterns and locations.

A 2001 study by the Reason Public Policy Institute and Solimar Research Group analyzed housing and development trends in Ventura County. The study concluded that 30 years of growth management policies have affected the physical shape of the communities and landscape:

- There are a limited number of cities.
- None of those cities is dominant.
- Most have populations between 50,000 and 150,000.
- Each city retains a distinct geographical identity surrounded by agriculture and open space.

The study sheds light on how housing decisions affect the amount of watershed land that will need to be developed to accommodate future growth.

The Solimar report indicated that under existing planning policies, Ventura County and the 10 cities had a "build-out" capacity of about 293,400 housing units, and that planned capacity was far below projected demands.[4]

The Ventura County Council of Governments (VCOG) expects housing demand to increase by 60,483 units by 2020, with the largest surge in demand occurring between 2010 and 2020. During that period, an estimated 27,000 housing units will be needed to meet projected demands. VCOG expects that demand for housing will be one-third higher than planned capacities can provide.

The study found that current General Plans overstate capacity by around 20% and that projects were being approved at densities well below (55% to 79%) planned capacity. Projects that were 100% affordable were more likely to be approved at, or close to, planned capacity.

Densities of multi-family projects were reduced less than single-family projects. Specific Plan area projects were approved at close to planned densities for the Specific Plan, while non-specific plans had larger reductions.

Countywide, the supply of new residential units, as developed under current planning policies and approval processes, will be exhausted by 2011. When projects are routinely approved at densities below planned capacity, that capacity of non-developed housing is permanently lost and is displaced somewhere else in the region or watershed.

The study leads to questions that are important for watershed protection efforts in Ventura County:

1. How will future growth be accommodated, if it is not feasible to fit it within SOAR boundaries?
2. Where will future housing go?
3. Are SOAR boundaries sufficient to curb urban development from spreading out into underdeveloped land in the watershed?
4. Are current General Plan policies sufficient to prevent urban expansion beyond SOAR boundaries?
5. What are the ramifications of consistently approving projects below specified densities?

Policy implications are considered according to three development scenarios:

1. Do nothing – housing values and rents increase, residential development is diverted to other areas within the region; redevelopment and infill increase; development moves to areas with remaining capacity.
2. Increase Capacity under currently enacted SOAR policies – projects are approved at densities closer to those planned; housing capacities are increased on non-SOAR property; land within cities is up zoned to increase allowable densities and accommodate additional housing on areas already zoned for residential development (smart growth scenario).
3. Change SOAR Boundaries – revise SOAR either parcel-by-parcel, city-by-city or through sweeping reform to the SOAR program.

From a watershed planning perspective, the second option provides greater protection of remnant natural infrastructure as communities accommodate future growth.

Agriculture and Open Space Protection

About 120,000 acres of land in Ventura County is used for agriculture, an important component of the regional economy. In 2000 and 2001, agricultural production in the county accounted for over $1 billion, a mark that positions it as one of the top farming regions in California.

The Agricultural Land Trust Advisory Committee (ALTAC) was established in 1989 as a part of the Beyond 2000 Advisory Committee, which was created to determine whether new growth policies were needed for Ventura County. Key recommendations from ALTAC included:

1. Creation of an Agricultural Land Trust.
2. Purchase or transfer of development rights.
3. Allocation of a portion of sales tax to fund acquisition of agricultural land.

Only the first of these recommendations has been implemented; the Ventura County Agricultural Land Trust was created in 1992.

Agriculture is important to the local economy and is a defining characteristic of the county's landscape and communities. The SOAR ordinances are testament to the importance of local agriculture and open space. Likewise, the Guidelines for Orderly Development highlight an institutional commitment to maintaining urban development within incorporated cities for the efficient provision of municipal services.

A secondary benefit of the Guidelines is limiting step-out and leap-frog development which creates inroads into agricultural land and operations, thereby making them more vulnerable to urbanization.

The County's participation in the Land Conservation Act Program, which creates an incentive for the farming community to retain lands in agriculture, and the County's 1983 amendment to the General Plan, which limited the minimum size of an agricultural designated parcel to 40 acres, has also been highly effective in preventing the same level of farmland conversion that is seen in other parts of the state.

However, the demand for housing and sunsetting of SOAR ordinances will require a renewed effort to sustain agricultural and open space in the county. Past efforts to develop Transfer of Development Rights (TDR) programs have been promising, despite the level of complexity that many TDR programs exhibit.

The institutional structure of the county/city relationships in Ventura County might enable development of a countywide TDR more easily than in areas where traditional tensions between city and county jurisdictions preclude coordinate planning and balanced land use.

Water Management and Policies in Ventura County

Ventura County is also relatively advanced in its approaches to watershed protection and management. In 2003, the countywide stormwater program was recognized by the U.S. EPA, winning first place in the 2003 National Clean Water Act Recognition Awards.

Each of the three major watersheds has active stakeholder groups engaged in various planning and management efforts. Recently, to compete for state funding and improve regionwide watershed management activities, the watershed groups formed the Ventura County Watersheds Coalition (VCWC), a consortium of watershed councils, agencies and other vested interests.

The VCWC was formed in part to compete for state bond monies to complete an Integrated Regional Water Management Plan (IRWMP). In 2005, the VCWC was funded to prepare the Ventura County IRWMP with funds provided by local participating agencies and a Proposition 50 Planning Grant.

In addition to this regional effort, several other watershed planning and management efforts have been initiated in Ventura County including the Calleguas Creek Watershed Management Plan (CCWMP), completed in November 2004, and the Santa Clara River Enhancement and Management Plan (SCREMP) completed in 2005.

Integrated Regional Water Management Plan – The Land Use Connections

The Integrated Regional Water Management Plan is a Prop 50-funded program, led by the Ventura County Watersheds Coalition. The VCWC's primary objectives are to:

- Reduce dependence on imported water and protect, conserve and augment water supplies.
- Protect and improve water quality.
- Protect people, property and the environment from adverse flooding impacts.
- Protect and restore habitat and ecosystems in watersheds.
- Provide water-related recreational, public access and educational opportunities.

The IRWMP was developed as a comprehensive plan to address regionwide water issues, compile related data and outline management measures to meet local and regional water management goals. The most recent IRWMP provides for "an integration of project and program implementation strategies which best address the needs and objectives of the Region."

Among the plan's recommendations is the development and implementation of individual watershed protection plans for the three major watersheds in Ventura County. The plans would focus on implementing watershed-specific projects and monitoring, and would allow for more localized stakeholder input that was not possible at the regional scale of the IRWMP. One such plan, the Calleguas Creek Watershed Management Plan, has already been adopted. Watershed management plans for the Ventura River and Santa Clara River Watersheds are still needed.

Stormwater Management and Regulation in Ventura County

As mandated by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) Storm Water Quality Management Program is designed to address stormwater discharges, which adversely affect the quality of our nation's waters. The program established a permit system to implement an array of controls meant to prevent pollutants from being washed by stormwater runoff into local water bodies. Cities and counties designated as MS4 (Municipal Separate Stormwater Sewer Systems) are required to obtain a permit for stormwater discharged from their storm sewer systems.

A major shift in the NPDES program has been an increasing focus on land use and development as a cause of water quality impacts stemming from urban stormwater runoff.

The Los Angeles Regional Water Quality Control Board has administrative authority over stormwater management and regulation in Ventura County. The Regional Board develops and issues a stormwater permit for the Ventura Countywide Stormwater Quality Management Program, which includes the county and 10 cities that have joined together to form the Ventura Countywide Storm Water Quality Management Program (VCSWQMP). Referred to separately as co-permittees, the program includes the Ventura County Watershed Protection District (VCWPD) representing the County of Ventura and the Cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley and Thousand Oaks.

The co-permittees operate municipal storm drain systems and discharge stormwater and urban runoff pursuant to the Ventura Countywide Stormwater NPDES Permit. Administrated by the Regional Board, the permit was first issued in 1994. This initial permit defined the basic program elements including public outreach, business inspection, construction inspection, land development, public infrastructure, illicit discharge inspection and monitoring of dry and wet weather runoff.

A second permit was issued in July 2000, and expired on July 27, 2005. Currently on administrative extension awaiting renewal, this permit requires the co-permittees to enhance existing program elements, and develop new fiscal analysis requirements, educational site visits to state permitted industrial facilities, and develop a Technical Guidance Manual for all

new and redevelopment projects under the Stormwater Quality Urban Impact Plan (SQUIMP) requirements.

Currently, the Regional Board is drafting a new NPDES municipal stormwater permit for the co-permittees of the Ventura Countywide Storm Water Quality Management Program. The Local Government Commission facilitated three meetings to discuss the permit and ways to align stormwater regulations and management with local land use planning efforts in Ventura County.

2006 Draft Stormwater Permit Revision Process

On December 27, 2006, the Regional Board released the first Draft Permit for public review. The new permit will significantly increase co-permittee responsibilities and activities, resulting in significant financial obligations to each of the co-permittees.

The Draft Permit proposes to use municipal action levels (MALs) expressed as numeric values to assess compliance with the permit. If adopted as written, the use of MALs to determine compliance will result in the creation of numeric effluent limitations for all outfalls greater than 36 inches.

If MALs are exceeded more than twice, then co-permittees would be judged to be out of compliance with the permit. Imposition of MALs would be a first in California (and likely nationwide), and may require costly treatment devices or augmented control measures.

The Draft Permit also requires certain new development and redevelopment projects to implement Low Impact Development (LID) concepts. The main tenet of LID is for developments to reduce impervious surfaces (concrete and rooftops) and provide for runoff infiltration so that post-development runoff closely matches pre-development conditions. The decrease in runoff reduces both the pollutants carried by the runoff and the potential erosion caused by the increase in flow in natural drainage systems. Stakeholders note some concern that if improperly implemented, these LID strategies would place local agencies in conflict with other environmental concerns (air pollution), policy (General Plan) and "smart growth" principles.

Similar to the LID requirements, the Draft Permit contains a requirement to prevent changes in the amount of flow allowed from a newly developed or redeveloped site. Any additional flow to a natural drainage system (also called hydromodification) can potentially cause streambed and bank erosion altering native habitat. The Draft Permit requires participation in a long-term, three- to five-year study, resulting in a Regionwide Hydromodification Control Plan.

The Draft Permit also includes an alternative compliance program called Redevelopment Project Area Master Plans (RPAMPs), primarily to address challenges of housing affordability and potential constraints to meeting on-site requirements in redevelopment areas. More importantly, the RPAMP concept fed into larger discussions about the role of development patterns, community form and transportation planning in stormwater management.

The RPAMP introduced a mechanism for tying stormwater management to improvements in development patterns as a way to credit smart growth within a municipal stormwater permit. As discussed in the previous chapter, this idea has emerged as a critical next step in the evolution of stormwater management and so was an important component of this project. The RPAMP and broader theme of crediting smart growth development are discussed in further detail throughout the document.

By court order in Cities of Arcadia et al v. State Water Resources Control Board et al (Orange County Superior Court No. 06CC02974), the development of the permit was effectively stopped in summer 2008, pending resolution of the matter. The revision process resumed in fall 2008 with several related questions about land use and development remaining, including how and if smart growth will be incorporated into the permit and if so, what performance measures will be used and how they will relate to the permit's on-site provisions? How will the

permit treat redevelopment? And will the permit begin to shift management to a basin level and/or facilitate retrofitting the built environment to address existing impacts?

For the project team's comment on the draft stormwater permit:http://water.lgc.org/ventura/ventura-meeting-notes/LGC_RPAMP_and_CoverLetter.pdf

Summary

Dispersed, auto-oriented growth, commonly called sprawl, has been and continues to be the dominant pattern of development in California and the nation. This pattern of development is widely criticized for its inefficient use of land, high demands on infrastructure and natural resources, and impacts on air quality, public health, open space and the character of our communities. It is also one of the greatest threats facing the health of water resources and the watersheds that provide them.

Ventura County and the 10 cities within it have a history of relatively advanced land use planning and watershed management/protection. However, the county is poised for additional growth, and the ultimate shape of that growth will either support or hinder watershed protection in the region.

Stormwater management is at the forefront of the water and land use planning nexus. Low Impact Development techniques are becoming widely accepted and will be a part of the regulatory and management framework of how communities and developers address stormwater from now into the foreseeable future.

Coordinated planning of development and stormwater will enable more sustainable growth and will require a clearer understanding of the effects of policies – those promulgated through stormwater regulations as well as through local plans, codes and ordinances – on development that gets built. The code reviews starting with Chapter 4 address local policies with these considerations in mind.

3. Planning Principles

This chapter provides an overview of challenges and opportunities for aligning water and land use to support watershed protection, community design and stormwater management goals. It reviews the principles of watershed-friendly development and the evolution of stormwater management in particular.

The Water Principles – Hallmarks of a Watershed-based Approach

The Local Government Commission's Ahwahnee Water Principles for Resource-Efficient Land Use provide a blueprint for integrated water and land use planning. They work to shape sustainable development patterns and improve the design of the built environment through the following combination of strategies:

- Protecting valuable natural areas and open space.
- Directing growth to already developed areas through infill and redevelopment.
- Encouraging compact form through community designs that mix land uses served by a connected and multi-modal transportation system.
- Reducing impervious cover.
- Incorporating and restoring green infrastructure within the built environment.

In combination, these strategies serve to reduce impervious cover, preserve critical areas, use natural drainage processes, and enable sustainable development patterns.

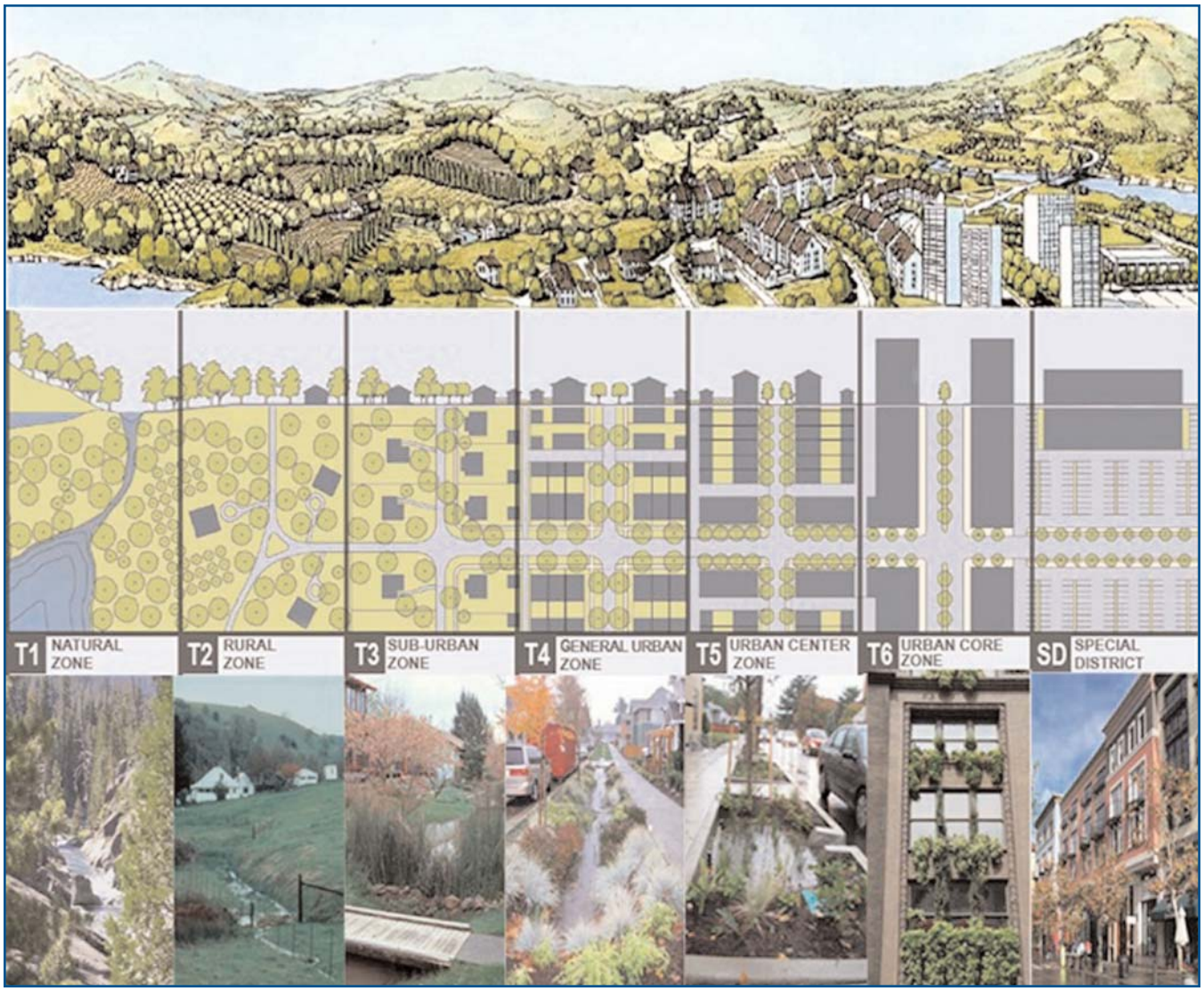
The Water Principles integrate solutions across scales (from site to region) and in different development contexts (from rural to urban). They unite the philosophies underpinning smart growth, new urbanism, green building and low impact development.

Green infrastructure: Street trees provide green design elements to minimize the environmental impacts of development.

While many communities, agencies and private sector developers have embraced the Water Principles, the type of policy integration they require has not yet been achieved in the field of stormwater management, the focus of this watershed planning project. However, the field of stormwater management is evolving to recognize the Water Principles' core concepts. This chapter and those that follow discuss policy solutions applying those concepts in local plans, codes and stormwater permit programs.

Policy Alignment – Implementing Watershed-based Strategies

For Ventura County communities, it is a formidable challenge to address stormwater runoff while also preserving the county's farmland and open space, protecting and enhancing the health of its watersheds and coastal ecosystems, ensuring water supply reliability,



A watershed approach requries integrated planning and design solutions across different scales and development contexts, from improving land use patterns and preserving open space, to using green site design to minimize development impacts.

providing housing and jobs for residents, remaining competitive in a global economy, and planning for the looming specter of climate change.

Fortunately, shaping healthy, vibrant and livable communities is a solution that helps address each of these needs. For Ventura County, many of the solutions to these challenges have already been embraced. General Plans throughout the county reflect a commitment to the principles of smart growth, green building and infrastructure, and support a vision of sustainable development patterns and practices. However, this vision has proven difficult to implement. Local codes and ordinances continue to reflect and support sprawling, high-impact development. Most modern zoning regulations, which initially aimed to separate residences from high-intensity industrial areas, now work to separate nearly all aspects of day-to-day activities in a way that requires the use of an automobile to reach routine destinations.

As a result, development standards have come to focus on designing communities for cars, not people. Designing for cars creates communities that have too much pavement – expansive parking lots, bigger roads and spread-out buildings – and consume greater amounts of

Sprawl development

Automobile-centric development

the watershed. For watersheds, the effect is impaired water quality, reduced supplies, degraded habitat and decreased productivity.

To address this challenge, the project team undertook a code review of Ventura County communities to identify opportunities for, and barriers to, the implementation of watershed-based planning strategies.

While barriers can be found in local codes in Ventura County, the review showed there is also a great, untapped potential to reduce pavement and control stormwater impacts by modifying development policies that shape the built environment.

Several overarching themes emerged through the code review that provide context, and suggest areas for further attention.

OVERARCHING THEMES

The Importance of Scale – Coordinated water and land planning relies on recognition of scale. Water resources, in particular stormwater, are most deftly managed when the site, the neighborhood, the district or community (sub-watershed), and the region (watershed) are simultaneously considered for opportunities and impacts. Conventional stormwater approaches for development have focused on site level practices. The location, form and overall pattern of development have received less attention but are fundamental drivers of impervious cover and watershed scale disturbance. Successful watershed approaches will need to address the overall development footprint while minimizing site level impacts.

The Importance of Development Context – Joint water/land use planning is most effective when it recognizes that rural, edge, suburban and urban areas present different sets of constraints and opportunities when it comes to managing the built and natural environments. To maximize success, ordinances, design standards and performance standards will need to be crafted to recognize this difference.

Natural Infrastructure and Ecosystem Services – Healthy watersheds provide a "natural infrastructure" that serves to capture, filter, cleanse, store and transport water. Economists use the term "ecosystem services" to describe benefits, such as flood attenuation, water purification and groundwater recharge, that are provided by natural systems and

In many cases local codes, such as parking requirements, present barriers to improving development patterns and practices.

processes. Advances in stormwater management, such as Low Impact Development (LID), build upon the concept of ecosystem services through site designs intended to mimic natural processes in the built environment. More broadly, land use planning will need to minimize watershed disturbance through sustainable land use patterns.

The Importance of Compact Development – Compact development, by design, reduces the overall footprint of development. Whether in new projects or redevelopment districts, reducing the development footprint is central to land conservation and minimizing impervious cover.

The Power of Redevelopment – Redevelopment is gaining recognition as one of the most effective forms of stormwater management and watershed protection. Redevelopment serves at least three watershed benefits. First, reusing already developed areas to accommodate new development demand generates comparatively less (or perhaps no) new impervious cover. Second, intensifying built areas can reduce the need to expand the overall development footprint onto non-built areas. Third, redevelopment offers the best opportunity to retrofit paved sites to improve water quality. Though retrofit opportunities get more attention, reusing developed land and "shrinking the footprint" may provide equal or greater watershed benefits. Any regulation that hinders redevelopment serves to prevent all three opportunities.

The Role of the Transportation Footprint – Transportation-related impervious cover comprises over 50% of impervious cover under conventional development patterns, and is thus a major source of stormwater runoff. At the same time, transportation planning, design and funding are among the most influential factors in shaping the extent and location of development in a region. Watershed efforts that fail to address the transportation footprint are likely to miss a critical source of impact.

The Importance of Use Mix – One of the major components of dispersed development has been the rigid separation of residential, commercial and institutional uses that has been inscribed in codes, and has mandated auto travel to meet almost daily needs. Enabling a greater mix of uses is necessary to address transportation-related impervious cover and the water quality impacts of car travel.

Interlinking the Elements of Community Design – Zoning codes tend to reduce design elements to individual site controls, such as setbacks, building height, uses and parking allotment, standardized for a given area. The cumulative effect of these requirements can produce challenges for achieving stormwater, environmental and livability goals. Minimizing watershed impacts requires coordination of site-specific controls with the form and character sought for the larger neighborhood or district planning area.

Specific Area Plans – Cities and the County of Ventura have been using specific plans and other types of area plans (master plans) to coordinate development and redevelopment in targeted areas. These efforts may emerge as one of the more valuable tools for orchestrating multiple planning, design and infrastructure elements of the built and natural environments. Ventura County and its cities have been engaged in this type of environmental planning for decades, though often for economic or community development purposes. Specific area plans provide the process for coordinating the interlinking parts of public space, infrastructure and buildings.

CODE REVIEW AND RECOMMENDATIONS

In California, land use and development are largely guided by General Plans, which set the vision for development, conservation, transportation and safety, while local codes are meant to implement the vision.

Most General Plans include language supporting efficient use of land and resources, protection of natural systems, economic development, housing affordability, public health and safety, a range of transportation options, and promotion of quality of life. Increasingly, General Plans reflect sustainable development goals such as

smart growth and green design. However, much of what gets built fails to live up to these principles.

Increasingly, developers, planners, designers and local leaders point to local zoning codes as a key barrier. Thus, this review focuses on local zoning codes in Ventura County.

A detailed audit of every code in each city as well as the County was beyond the scope of this review. Ideally, a full review would also include in-depth interviews, site visits and map analysis. Instead, this analysis is intended to reveal connections between code language and water management goals and suggest areas of improvement related to codes and plans.

Anatomy of a Zoning Code

The project's analysis focused on County and City zoning codes, which contain the largest set of land development regulations. Zoning codes typically regulate three aspects of development: the uses allowed on a site, the "bulk" of buildings on a site (including location), and certain impacts such as lighting and noise. While the code structure differs among local governments, the following elements are common:

Purpose and Intent: This section describes the main goals for the zoning category. Although it has less legal leverage than specific code parameters, the Purpose and Intent statement is important because it guides the interpretation and general direction of policy.

Administrative and Legal: This section typically describes procedural requirements for submitting development proposals, including time frames, submittals, enforcement and penalties for noncompliance.

Building Codes: Building codes specify the minimum requirements for structures and internal utilities. Most local governments adopt the State Uniform Building Code by reference. Building codes can also affect site design for drainage, site preparation, seismic requirements and building materials.

Land Development Code: The land development, or land use, code is often the most extensive part of the code. Over time, codes tend be appended to include new categories and new requirements. The following categories can be found:

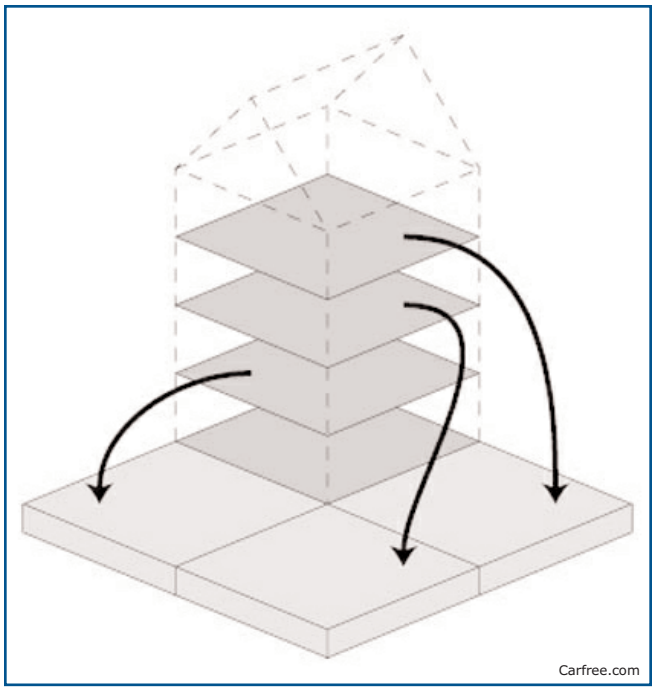
- Allowable Uses and Categories – Under California law, allowable uses must be specified within the code, which usually begins with parameters for less intensive uses (e.g., rural activity) first, and leads into more intense uses (e.g., industrial). Uses are typically broken down by agricultural, residential, commercial, industrial and more recently mixed-use categories. Residential uses are broken down further into detached single-family units, attached units and multifamily buildings. Commercial uses can include retail, office and light industrial. Industrial codes often separate heavy- from light-industrial.

  Some zoning codes are "pyramidal" in that they allow the uses included in preceding zoning categories. For example, a code may first present housing and then commercial codes. A pyramidal code will allow housing in the commercial code, thereby building in a use mix.

- Bulk Regulations – Bulk regulations refer to the building, its size and how it is sited or placed on a property. As such, they play an enormous role in shaping the built environment and larger development patterns. The following parameters are typically included:

  - Setbacks – Setbacks were instituted to allow air and light circulation, as well as to manage separation between buildings and public rights of way. Codes typically prescribe a minimum distance. For example, a building must be setback at least 20 feet from the public right of way. Many codes have a landscaped setback, while others allow parking and other activities within mandatory setbacks. In urban areas, a "build to" line is used to minimize the distance of a building to the public right of way.

  - Frontage – Codes will specify a minimum frontage for parcels. For example, a code may state that the minimum frontage for a



Floor-area ratios (FAR) help define building density.

parcel within the commercial-office district is 75 feet.

- Height – Codes typically limit building heights, and can be expressed as gross height or number of floors. In some cases, height control is included and guided by a set formula.
- Building Footprint – Building coverage is typically limited by a cap on the size of the building footprint (e.g., 45%) relative to the gross parcel size.
- Density – In general, this section will prescribe the number of units per acre allowed for residential units. For commercial, some cities cap building size by Floor-Area Ratios (FAR) or by the building footprint limit listed above.

The combination of these code parameters, together with parking requirements, work to form the eventual density and layout of a site. For example, a code may allow 50% building coverage, but a high parking ratio can result in only 40% coverage. On the other hand, many uses are subject to a Conditional Use Permit, which can allow more intensity, subject to reviews, approvals and conditions by the planning authority.

Parking and Loading: The code's Parking and Loading section is often detailed and usually contains:

- Minimum Parking Requirements – These requirements are typically calculated on a formula set by the Institute of Transportation Engineers. Some communities have begun to introduce parking maxima as well.
- Parking Lot Dimensions – This part of the code regulates parking space minimum sizes, numbers of compact spaces and the dimensions of turn and access lanes.
- Landscaping in Parking – This part of the code describes a minimum percentage or amount of landscaping and details on its construction and placement.
- Circulation and Drive Aisles – Codes prescribe minimum drive aisle widths for circulation, emergency response and deliveries. Several widths may be presented depending on the angle of parking and whether one-way or two-way circulation is allowed between aisles.
- Delivery and Loading – Within the parking code, requirements for the size of delivery bays are specified. For larger structures, the code may require more than one delivery bay.

The overall design of a parking lot is shaped by these requirements, as well as how circulation within the project site is handled. For example, the code may prohibit delivery trucks from backing into a public street or prohibit shared delivery bays. As such, extra room is needed for maneuvering.

Landscape Code: Most jurisdictions have a master landscape code that applies to civic, commercial and multi-family residential projects above a certain size. In many communities throughout the state, landscaping requirements have been used to encourage or require water conservation landscape practices. This is largely due to the State's 1990 Water Conservation in Landscaping Act, which required municipalities to adopt the State's model ordinance or develop an equivalent measure.

Language related to managing stormwater runoff is not as prevalent in landscaping codes. Evolving National Pollution Discharge Elimination System (NPDES) requirements, particularly those advancing use of landscaped areas for on-site management, will likely lead to greater emphasis on stormwater mitigation in landscaping codes.

New model codes are being developed by the California Urban Water Conservation Council to implement recent legislation on water-efficient landscaping (AB 1881 and AB 2717). Key provisions of this legislation related to local development regulations include:

- The California Department of Water Resources is directed to update the State Model Water Efficient Landscape Ordinance, based on recommendations set forth in the Landscape Task Force report, by January 1, 2009.
- Local ordinances must be "at least as effective as" the State Model Ordinance by January 1, 2010.
- Charter cities and counties, once exempt, are now subject to these regulations.
- Common interest development (property owners associations) shall not prohibit the use of low water-using plants.

The full text of this legislation is available at www.cuwcc.org/ab2717_landscape_task_force.lasso.

This effort will result in updated Best Management Practices and new directives for landscaping and water conservation, and will likely make reference to stormwater infiltration. Eventually, these BMPs will need to be aligned with NPDES permit performance standards. As localities and consultants develop ordinances for AB 2717 compliance, they should keep this in mind so that rework is not needed for permit compliance.

Subdivision Regulations: Subdivision regulations focus mainly on procedures required under the Subdivision Map Act. However, there are many parameters included in subdivision codes that influence the ultimate extent of impervious cover and land disturbance, such as lot, street, sewer, grading, drainage and landscaping standards.

STRUCTURE OF THE CODE REVIEW

Two overarching questions were used to guide code reviews:

1. Which codes (or combination of codes) drive creation or prevention of excess land disturbance and impervious cover at the regional, community or neighborhood level?
2. Which aspects of the code (or combination of codes) drive creation or prevention of excess land disturbance and impervious surface at the parcel, lot or site level (in particular, directly connected impervious surfaces)?

Water impacts of development result from both the alteration of natural land cover and gains in impervious cover. While impervious surface is emerging as a key regulatory tool, water stakeholders cannot ignore impacts related to land disturbance and preparation. For example, compacted soil overlain with turf provides less infiltration than natural cover.

This code analysis considers the question of what drives the creation of excess land disturbance and impervious cover in the first place. This allows for greater attention to the relationship of development patterns to stormwater, and an appreciation for "ecological services" lost in the conversion of raw land.

There are eight planning and policy recommendations chapters that follow, each focusing on different a land use strategy and its implications for watershed health:

- Natural Systems and Green Infrastructure.
- Infill and Redevelopment.
- Compact Design.
- Use Mix.
- Streets and Mobility.
- Parking and Loading.
- Compact, District Design.
- Stormwater Management.

Where sample language is presented, the citations, unless otherwise noted, are from the jurisdiction development or land development chapter of the zoning code. Each chapter includes a description of the issues for all readers, along with a corresponding Technical Review Sheet that is included in Appendix C for use by staff interested in reviewing their community's codes.

4. Natural Systems & Green Infrastructure

The connection between land conservation and watershed protection is well documented. The physical, chemical and biological properties of natural land cover are essential to ecological and hydrological processes underlying the health and function of watersheds. The loss of natural land cover contributes to watershed degradation. Open space policies have a crucial impact on water resources. For watersheds, open space acts to:

- Absorb rainwater and attenuate runoff.
- Facilitate groundwater recharge.
- Filter and assimilate pollutants from water.
- Sustain natural hydrologic processes.
- Sustain ecological systems and underlying watershed health.

Open space is a wide-ranging term, which includes large swaths of permanently preserved space as well as small pocket parks in urban areas. Different kinds of open space provide different degrees of ecological services for a watershed. For example, in a heavily used public park, land may be compacted and thus infiltrate less stormwater than an area of undisturbed forest cover.

The increasing scarcity of undeveloped land, growing demand for parks and open space in urbanizing areas, and the trend towards using open space to provide multiple functions, such as on-site retention and drainage, requires heightened attention to how it is addressed in policy language.

In general, larger planning efforts are used to identify environmentally important spaces and describe their functions. Efforts to protect farmland, habitat or ecologically-sensitive areas are then used to manage growth patterns by defining where growth can and cannot occur. Within developed areas, attention turns to the provision of park space and, at a finer scale, the use of open space in the design of individual projects to provide screening, buffers and other benefits.

The North Davis Wetlands were designed to provide habitat as well as water management benefits, including flood control, water quality and recharge functions. Linked to parks and surrounding neighborhoods, the site also provides a valued public amenity while serving as green infrastructure for the City of Davis.

Planners, residents and local officials increasingly expect open space to serve multiple purposes, including management of stormwater. This trend will likely shift attention from the quantity of open space to its quality, in terms of where it is located, its utility for various functions, and how it is provided.

In light of these issues, open space planning can be aligned with watershed planning and stormwater management in the following policy areas:

Save Open Space and Agricultural Resources

- Growth Management and Land Use Patterns: Language about the use of open space to shape the location and form of development.
- Sustaining Ecosystem Services and "Natural Infrastructure:" Language related to conserving ecologically valuable areas, and/or recognizing their ecosystem benefits.
- Floodplain and Habitat Protection: Language related to the use of open space for protection and management of floodplains, riparian areas and sensitive habitats.
- Urban Open Space: Language defining the provision and use of urban open space, in particular for watershed services or to enable a smaller overall development footprint.

Open Space and Growth Management

Ventura County is recognized as a pioneer in managing growth through open space protection. The tradition started with the Guidelines for Orderly Development, adopted in 1969. This agreement between the County and the 10 cities states that urban development should occur within incorporated cities, which are better able to provide urban services. The County and the cities then adopted a series of seven greenbelts. The greenbelts are agreements between the County and the cities adjacent to the greenbelt that land within it shall not be annexed to the adjacent cities. Given the Guidelines for Orderly Development, this effectively prohibits development at urban densities within the greenbelts.

The final components of the County's unique growth management tradition are the Save Open-Space and Agricultural Resources (SOAR) and City Urban Restriction Boundary (CURB) initiatives passed by the County and eight of the 10 cities. These measures require voter approval before development can occur in the affected areas.

Many cities have adopted SOAR ordinances, which refer to the role of CURB boundaries in shaping land use patterns. Some of the core objectives, in this case taken from the City of Thousand Oaks, include:

1 "To encourage efficient growth patterns and protect the quality of life by concentrating future development largely within existing developed areas, or, in some cases, directly adjacent to them, consistent with the availability of infrastructure and services;

2 To promote on lands outside the Thousand Oaks CURB line ongoing agricultural and other natural-resource and open-space uses, such as preservation of natural resources, public and private outdoor recreation, uses that foster public health and safety, and productive investment for farming enterprises;

3 To manage the City's growth in a manner that fosters and protects the character of Thousand Oaks while encouraging appropriate economic development in accordance with the City's unique local conditions;

4 To allow the City to continue to meet its reasonable housing needs for all economic segments of the population, by directing the development of housing into areas where services and infrastructure are more efficiently available; and

5 To promote stability in long-term planning for the City by establishing a cornerstone policy within the General Plan designating the geographic limits of long-term urban development and allowing sufficient flexibility within those limits to respond to the City's changing needs over time."

The CURB boundaries are used to define expectations of land use both inside and outside

the boundaries. As a result, ideas of where to conserve and where to develop are seen as interrelated and presented as complementary to one another.

The effect of these regulations has been to confine urban development to within the 10 cities and to preserve large areas of contiguous agricultural and open space between them. This is significantly different than the scatter-shot development patterns that occur in most other California counties.

The SOAR ordinances are set to expire in several communities, though most communities expect voter support for maintaining SOAR boundaries. Nonetheless, there are certain trends to watch related to use of land inside SOAR boundaries. The Solimar Research Group has tracked development trends in Ventura County, and noted a trend in development densities that are less than those specified in the General Plan. This trend has been affirmed in Vacant Land Studies. For example, the 10 cities had some 14,584 vacant acres as of July 2005, compared to 19,388 vacant acres in December 2000 (as shown in the 2002 Vacant Land Study). This translates to 25% of the 2000 vacant land being used within 4-1/2 years.[1]

There is already pressure to extend urban growth boundaries. In May 2007, 61% of Santa Paula voters approved expansion of the growth boundary by 6,578 acres. In June 2008, Santa Paula residents voted to extend boundaries a second time, permitting development of 1,500 housing units on 500 acres of farmland.

Other Conservation Planning and Policy Tools

Ventura County has also explored the use of a Transfer of Development Rights (TDR) program, which can be an effective market-based tool for channeling growth to the most appropriate sites. TDR programs can be complex to develop. One is in the process of development in nearby Santa Barbara. The outcome of that effort can provide lessons for officials in Ventura County. The Solimar Institute has developed a report on the use of TDRs, mainly for pinning down valuations for the purpose of directing growth. The valuation for ecosystem services provided by open space, in particular for NPDES permit compliance, would add to the complexity of assessing the value of sending and receiving areas. On the other hand, permit compliance may help drive a new market for sending/receiving areas and add flexibility to stormwater programs.

Using Zoning for Land Conservation

Zoning ordinances affect open space and development in two ways: by restricting uses within open space areas, and by regulating the site design of the development that is permitted. Most zoning codes and planning sections dealing with open space begin by stating goals for open space protection, which include:

- Maintenance of important natural functions.
- Minimization or mitigation of natural functions lost.
- Maintenance of rural character and natural resource economic base.
- Management of rural infrastructure.
- Balance of property rights for landowners.

These goals provide guidance to support legal language and restrictions listed in codes. Various zoning techniques are used to achieve the goals by managing the type and intensity of development on or near open space. Commonly, cities and counties will use code language to:

- Prohibit development and/or limit use on rural and agricultural lands.
- Limit development intensity, in particular the number of residential units on parcels of a certain size (e.g., 20 or 40 acres).
- Limit or restrict uses in floodplains or on other ecologically-sensitive areas.

While the use of zoning ordinances to promote watershed-friendly development is relatively new, it has the potential to be a powerful tool to ensure that individual projects are designed in ways that promote the natural functions of watersheds, through the use of Low Impact

This area demonstrates how rural development can be directed to a smaller footprint.

Development (LID) principles. This would include measures such as:

- Requiring development to be setback from watercourses.
- Minimizing impervious surfaces.
- Allowing use of existing topography.
- Allowing use of pervious pavers and pavement.
- Eliminating language on conventional drainage, required impervious materials and grading.
- Allowing the use of swales to retain water on-site long enough to allow it to percolate into the ground.

Localities use other non-ordinance programs to regulate the types and intensity of uses in rural areas as well. For example, economic development programs can be used to support desired uses such as agricultural processing plants or farm worker housing.

Water rules are increasingly being used as proxy land development regulations, particularly in areas without comprehensive zoning codes. Regulation of septic tanks (or on-site wastewater treatment) is one example. Failing septic systems can be a primary source of watershed degradation. One failing system may not trigger ecological response, however, the ongoing septic conversion project for Rincon Point highlights the connections among land use, water quality and waste disposal.

Ventura County's Planning Department limits installation of septic systems based on geological conditions.[2] As such, land development regulations dealing with the location, placement and density of septic tanks are increasing.

In rural areas, balancing housing needs and conservation goals poses a challenge. The issue often relates to the type of housing provided and its relationship to rural development patterns. On the one hand, farm worker and rural affordable housing are pressing needs. This is very different from the conversion of agricultural parcels into residential ranchettes and the consequent increase of long distance commuting. Both increase development pressure on rural lands.

Zoning regulation to control residential development on rural land varies. At the high end, the County and some cities restrict housing to one unit per 40 acres, while in other cities, "Rural Exclusive" housing is as high as 4 units per acre (or lot sizes of 10,000 square feet). Typically, urban type services are required to support this later level of density.

From a watershed management perspective, the impacts of exurban development patterns are significant, while truly rural development patterns can offer water benefits. This is where effective visioning for future alternatives can be effective. For example, maintaining an agricultural economic base can inform minimum ranchette sizes to support local processing and distribution while still providing targeted farm worker housing. For urbanizing areas, effective use of zoning can define urban edges and preserve open space while limiting the need to provide urban levels of services in rural areas. Last but not least, zoning ordinances can regulate the site design of individual rural projects to ensure that development occurs in conformance with Low Impact Development principles.

Sustaining Ecological Services and "Natural Infrastructure"

Preserving valuable natural areas such as wetlands, floodplains and riparian areas has long been a central tenet of watershed protection.

Green Infrastructure and Watershed Management

Green infrastructure is an approach to watershed management that is cost-effective, sustainable and environmentally friendly. Green infrastructure management approaches identify land (typically undisturbed open space), and evaluates the ecological value it provides for handling stormwater, absorbing excess rainfall, and increasing water supply.

At the largest scale, the preservation and restoration of natural landscape features (such as forests, floodplains and wetlands) are critical components of green stormwater infrastructure. By protecting these ecologically-sensitive areas, communities can improve water quality while providing wildlife habitat and opportunities for outdoor recreation. On a smaller scale, green infrastructure practices include rain gardens, porous pavements, green roofs, infiltration planters, trees and tree boxes, and rainwater harvesting for non-potable uses such as toilet flushing and landscape irrigation.

As green management approaches become more common, state and local governments will need to adjust asset management systems and environmental management programs. Eventually, local governments will need to integrate these changes into capital budgets, land acquisition programs, zoning code language and impact fee structures to account for ecological services retained, lost or mitigated.

To learn more: cfpub.epa.gov/npdes/home.cfm?program_id=298

Soils, native hydrology, vegetation and other natural systems within watersheds provide essential services including the capture, storage, filtration and transport of water. These are conservation goals the public understands and embraces as well. Water quality protection is the number one reason voters support public funding for land conservation.[3]

There is also growing awareness that conversion of open space comes with costs to the taxpayer that are typically not transparent. These costs are often absorbed later in the form of pipes, reservoirs, water filtration and flood control. This has led to greater efforts in the new field of "green infrastructure" to assign values to undisturbed land and the ecosystem services provided by natural processes and systems. These values are often compared to the costs of installing "gray infrastructure," such as pipes and ponds, when open space is converted to development.

While some General Plans make these connections, direct reference to "ecosystem services" and "green infrastructure" in codes is less common. However, there can be both direct and indirect statements such as using floodplain management for flood control and cost avoidance. The City of Camarillo's code ties open space to watershed management, linking its open space zones to land identified for recharge and watershed protection. Among the purposes of the City's Open Space (OS) designation, are to "protect, maintain and enhance watershed management to assure a continuing supply of safe water" (Chapter 19.34).

Ventura County recently made code changes to facilitate the acquisition of ecologically sensitive parcels of land. The revisions allow lot splits even if the resulting parcels are less than allowed with the underlying zoning. To qualify, the land must have ecological value and be acquired by a qualified conservation organization. The County has identified areas that are of special interest in advance of donations to further expedite the process.

The County and conservation groups may want to re-evaluate maps to identify parcels capable of serving stormwater management needs. This may provide a mechanism for acquiring parcels in urban areas as well. The recent changes in

Euclid Park provides open space and stormwater management in Santa Monica.

the real estate market may provide opportunities. Though conditions are still changing and unsettled, cities around the country are looking for ways to work with banks, owners and homeowners associations to see what levers and incentives are available.

Language Related to Floodplain Management and Habitat Protection

The Ventura Watershed Protection District issues regulations on floodplain and floodway management, which have been integrated into city and county zoning codes.

The Watershed Protection District is developing a new floodplain ordinance that may offer opportunities to strengthen connections among water quality, flood protection and community development goals. The Ventura County Resource Management Agency is also planning to develop a Watercourse Setback Ordinance, which will provide similar opportunities.

Most cities in Ventura County include general language on erosion, safety and environmental protection in floodplain development or conservation codes. Language on floodplain development tends to focus on mitigation, such as elevated structural requirements, though there is also language that addresses prevention.

For example, most language in the Floodplain Management Chapter of Oxnard's code relates to mitigation and construction. However, language related to loss prevention and environmental protection is also included: "Restricting or prohibiting uses that are dangerous to health, safety, and property due to water or erosion hazards, or that result in increases in erosion or in flood heights or velocities; Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, that help accommodate or channel flood waters; Controlling, filling, grading, dredging, and other development that may increase flood damage."

Note that this language has many ties to the proposed permit language as well. The NPDES permit includes new requirements to limit hydromodification (the alteration of landscapes and watercourses that result from changes to stormwater flow regimes). The language on cumulative effects of build out is also significant since further subdivision and development of upstream land is likely to be included in a watershed or hydromodification analysis.

The City of Ventura's code makes use of overlay zones for floodplain and habitat protection goals. Chapter 24.320 establishes the Flood Plain (FP) Overlay Zone, which prohibits any residential use and septic tanks. The code includes a mechanism for notifying buyers before they purchase property to raise issues related to building and living in a potential hazard zone.

As with floodplain development, the City of Ventura has a separate overlay zone for habitat. The Sensitive Habitat (SH) Overlay Zone (Chapter 24.325) is used to implement the local coastal plan and a Planned Development permit is required. Uses are controlled within a comprehensive plan and a 100-foot buffer is required. One item worth noting is that adjustments to the SH Overlay Zone boundary, which follows the boundary of sensitive habitat, are made through a zoning amendment, not an administrative map adjustment. Zoning amendments require expanded notification and review procedures, introducing stronger measures for designated sensitive habitat areas.

Stormwater Permits, Planning and Zoning

There are several areas where a future permit will likely require a revamp of planning and zoning. The areas that are likely to extend into a future permit include:

Low Impact Development (LID) – With the advent of LID, site engineers will have new sets of performance standards, which will direct the type of practices needed to manage the design volume, release rates and quality of stormwater. Plans and codes will therefore need to be reevaluated to both remove barriers and promote practices needed to meet these standards.

Because LID relies on small scale, distributed systems, all portions of a site can be involved in stormwater management, including landscaping, roofs, driveways and the like. These aspects of site design can be found in numerous code sections, which will require a comprehensive approach to code review and updates.

Best Management Practices (BMPs) – BMPs are currently used to manage stormwater, and can include traditional practices (ponds) and emerging technologies (filters and porous pavement) as well as use of natural systems. Future permits are likely to state an order of preference for choosing BMPs, such as preference for LID approaches first, followed by integrated water resource management, followed by landscape based applications, followed by structural devices. Zoning codes and planning documents will need to incorporate these preferences.

Alternative Applications for Stormwater Management – Most stormwater regulations allow for alternatives to assessing stormwater management one site at a time. For new development and redevelopment, orchestrated sub-basin planning is emerging as a powerful tool holding potential to better address flooding and pollution than a "one site at a time" approach. However, writing BMPs and performance standards continues to be more easily accomplished through site level codes. For optimum results, sub-basin and site planning are needed, which will require retooling small area plans and zoning codes.

Hydromodification – Hydromodification refers to changes in watershed functions and flows resulting from land development. These changes include habitat loss, streambank erosion, reductions in aquifer recharge and new flood patterns. While hydromodification is best understood through a watershed-wide study, the main response will include measures to reduce the energy of flowing runoff by retaining more water on individual sites and slowing the rate of release from stormwater detention areas.

Urban Open Space

Urban open space and neighborhood parks play a critical role in watershed function by "punching holes" in large impervious areas and offers opportunities of multifunctional green spaces within the community. This includes the retrofit of existing parkland, as well as acquisition of new parcels. Open space is provided through four main channels:

1. Publicly funded parks and open space.
2. Privately constructed areas, then deeded to the public.

Urban open spaces, such as this park in Santa Paula, can be designed to manage runoff from surrounding development. Designing parks to play double-duty as community space as well as green infrastructure is becoming more common, but may require changes to local codes.

3. Public-private ventures, such as land conservancies.
4. Private open space (not open to the public).

All four will play a role in watershed protection. With growing attention to green infrastructure and natural drainage, parks and other urban open spaces are poised to take on a "public utility" role for the watershed. In denser urban areas, parks may increasingly be called upon to handle not only on-site drainage, but runoff from surrounding development as well. As such, design standards and code language on park design will need to be reviewed.

Under the Ventura County Subdivision Ordinance, language directs parks planning: "...as a condition precedent to recordation of the parcel map or final map, the subdivider shall either provide or enter into a secured improvement agreement with the appropriate Park District to provide the following: all required curbs, gutters, sidewalks, drainage facilities, fencing, street lighting, stop lights, street signs, matching pavement and street trees to full County standards; stub-in of all requested utility line services to the park facility; all standard improvements required by the appropriate Park District; and initial on-site grading required for developing the park facility." (Section 8209-6.4, Fees for Parks)

Minimum Open Space Requirements in Ventura County

City	Code	Open Space Calculation
Camarillo	Subdivision Code	217.8 sq ft for each person anticipated to be living in the development
Camarillo	Residential Planned Development	125 sq ft for efficiency unit; 250 sq ft/BR for 1- and 2-BR units; 500 sq ft/BR for each unit of 3 or more BR
Moorpark	Subdivision Code	Pro-rated amount based on 5 acres/1,000 residents expected in the new project *Note: Credit for provision of private open space, but use is restricted to park and recreational purposes, drainage not allowed.*
Oxnard	Zoning	Projects having 12 or more units shall provide at least 1 lawn area of not less than 2,500 sq ft. *Note: Oxnard levies a fee on multi-family for parks and requires on-site provision.*
Ventura County Subdivision Code (8209-6.2)	Residential Planned Development Zone	20% of net project area *Note: Any area used for drainage cannot count towards the 20%.*
Ventura County General Plan	Suggested	5 acres/1,000 residents (in addition to regional and school-related parkland)

If green infrastructure is to be successfully implemented, codes will need to address language on "required curbs, gutters, sidewalks and drainage facilities," which is discussed in the "Streets" section in Chapter 8. Moreover, the language above highlights the need to revise language stressing not only the land development and grading for parks, but which park lands should be left in a natural state for stormwater management.

Heavily used parks may need to be augmented with structural BMPs to capture, treat and reuse stormwater.

Urban open space is often supplied is through minimum open space requirements in multi-family housing categories. For example, developers constructing a condominium project are required to supply a set level of open space, playground facility or landscaping per unit or person. A sampling of these requirements are in the table (left). As the table indicates, requirements for open space vary, but focus on quantity. Where present, language on function typically refers to equipment for playgrounds or active recreation.

Use of Public Lands for Stormwater Management

Currently, the primary mechanism for implementing green infrastructure and LID is at the site level through the development or redevelopment of privately held properties. The use of public lands to provide water quality improvements and other environmental benefits is receiving far less attention, but it offers great opportunity.

The Green Solutions Project, a recent study completed by Community Conservancy International, examined the potential for using existing public lands to implement a range of water quality enhancement projects. The study found that even in the heavily developed landscape of Los Angeles County, there is a substantial amount of public land available to serve water quality and supply management needs. This work underscores the need to think differently about open space, from parks and

Code and Program Challenges

- Recognizing Ecosystem Services within codes (most codes are silent on the issue) – Creating mapping, modeling and regulatory systems that recognize ecosystem services lost/gained.
- Shifting to "multi-purpose" open space through code directives.
- Code emphasis on quantity of open space rather than quality, in particular for urban areas, yards and setbacks.
- Planning and zoning for residential uses in rural areas.
- At what point does housing become less a factor in the rural economy and more about encroachment of urban uses in rural areas?
- Code barriers to LID. (These barriers are investigated throughout this code review.)

Opportunities

- Focus on quality – functional open space that allows recreation and ecosystem services simultaneously.
- With improved mapping, a better system of evaluating and accounting for cumulative effects.
- Use of odd-shaped or other lots via code and programs.
- Specific/area planning.
- Alignment of stormwater efforts with other programs (e.g., parks and landscape manuals).
- Recognize Ecosystem Services within the regulatory system.

schools to the public right of way, as a part of a comprehensive stormwater management strategy.

The current draft stormwater permit includes language that supports regional and sub-regional BMPs, particularly for hydromodification requirements. Public lands offer one opportunity for applying those types of approaches in a municipal stormwater program. The co-permittees in Ventura County should consider a similar study to assess eligible public lands and their relationship to pollutant sources and impervious cover "hot spots," as well as potential projects and funding mechanisms.

Conclusion

For open space, Ventura County has made some of the most important decisions on where to conserve land and where to grow, which is reflected in codes and plans. However, much of the open space has not been placed under permanent protection, and as such the ecological services may need to be supplemented elsewhere in the future.

The various codes reflect a common tension of how to accommodate housing while maintaining rural character and economic development. Careful planning for development in rural areas is paramount to ensure that working landscapes (including ecological services) are not fractured to a point of failure. Revision of city and county zoning ordinances to promote low impact, watershed-friendly project design would contribute significantly to this goal.

Urban open space presents an area of opportunity ranging from individual sites to larger parks and the restoration of natural areas in the built environment. However, applying these concepts as part of a green infrastructure approach will require linking urban design, parks planning and watershed planning. In particular, it will require greater attention to the quality, connectivity and functionality of green space throughout the community.

Wider application of green infrastructure will undoubtedly require a new generation of mapping and modeling tools to show not only current watershed functions, but projections on improvement through retrofit options.

This review could not include a full audit of all parks department materials, though the cities and Ventura County should review these policies to see if parks and public land form a natural green infrastructure.

Much of the code and subdivision regulation language results in a focus on quantity of open space rather than quality. For stormwater management and compact form, the latter is becoming more important. As land becomes more scarce, open space needs to serve multiple purposes.

For codes, this means analyzing the provision and use of private open space including setbacks and landscaping. In plans, this will require greater attention to the function and linkage of various types of open space as well as aligning acquisition and dedication programs to support both community and water quality goals.

Finally, the codes should address Low Impact Development principles to ensure that project site plans incorporate them.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 124.

5. Infill and Redevelopment

Most smart growth literature refers to "infill" and "redevelopment" as interchangeable terms. However, in relation to watershed and stormwater planning, there are important distinctions:

- Redevelopment typically means the creation of new buildings on a previously developed or disturbed site. These sites hold little or no ecological value.
- Infill generally refers to development on land adjacent to and between existing developed areas and is served by existing infrastructure (especially roads, sewer and water). The ecological value of individual sites can vary from highly impacted to undisturbed.
- Rehabilitation refers to the refurbishment of a building, with little or no change to the footprint of the building or site.

The common environmental benefit related to all three comes from the reuse of land in developed areas. Rehabilitation, infill and redevelopment are also parallel topics within climate change policies due to their role in shaping a smaller development footprint. From a watershed perspective, redevelopment can absorb development that would otherwise take place in ecologically valuable areas. Redevelopment "recycles" paved land, while infill focuses growth into developed areas to prevent scattering growth into "greenfield" sites.

Redevelopment presents a second opportunity for Ventura's streams, bays and estuaries by retrofitting properties where no controls currently exist. Under current and proposed rules, redevelopment projects that disturb as little as 5,000 square feet in some circumstances will be required to install BMPs and incorporate new building and site design features that limit runoff.

Although green roofs (above) and other urban best management practices can be used in denser urban areas, it is important that site level stormwater regulations do not trump larger watershed goals by making barriers to redevelopment.

Even as the power of redevelopment as an environmental strategy is gaining traction, the fact remains that infill and redevelopment projects are far more difficult to get financed, planned, and constructed than development projects on greenfield sites. As such, programs and codes that encourage redevelopment in identified growth areas can be regarded as environmental programs.

It should also be noted that Ventura County's policies and regulations that promote development within municipal boundaries have the effect of encouraging redevelopment, infill and rehabilitation. These include the Guidelines for Orderly Development, the seven greenbelts and various SOAR/CURB measures. These programs lead developers to look for sites within city boundaries (see Chapter 4 for program descriptions).

Understanding the Stormwater Benefits of Infill and Redevelopment

Infill and redevelopment are among the most effective ways to reduce development impacts at a watershed-level. Redevelopment recycles paved-over areas, which avoids "new" impervious cover and reduces the overall development footprint. Infill focuses growth into already developed areas, which prevents conversion of ecologically valuable land, enables a more compact development footprint, and reduces per-capita imperviousness.

Specific benefits are detailed below:

1. Infill and redevelopment occur within already developed areas, which relieves development pressure on undeveloped or greenfield sites that offer ecological services.
2. Infill and redevelopment tend to occur within areas already served by infrastructure. The benefits accrue when existing roads and other service infrastructure can be used instead of being extended and created anew.
3. Infill and redevelopment enhance the local tax base, which increases funding for infrastructure repairs and upgrades, including water quality/quantity retrofits.
4. Infill and redevelopment reduce the overall development footprint within a watershed.
5. Infill and redevelopment on small lots are served by a much smaller complement of public infrastructure. The reduction in frontage (and thus roadway) is often overlooked, in particular for analyses that only look at on-site imperviousness. For modern five-lane arterial roads, each 10-foot increment in parcel frontage is served by almost 600 square feet of pavement needed to reach the next lot.
6. When infill and redevelopment enable compact neighborhood design, the added density can support walking and transit and potentially reduce automobile trips. In addition to reducing transportation-related impervious cover, air deposition of exhaust components are reduced, as are metals deposited by brakes and tire wear.
7. Vertical infill and redevelopment projects accommodate greater development demand on a smaller site footprint under one rooftop. The draft stormwater permit's focus on the footprint (effective impervious surface) overlooks the watershed benefit of placing additional stories of development demand under one roof (instead of several roofs).

Attention to redevelopment is found in plans for redevelopment areas, such as downtown master plans and specific plans. In California, redevelopment agencies play a central role in stimulating renovation and new development in older neighborhoods and downtown areas through housing and economic development plans. For example, the Ventura Dedevelopment Agency provides assistance in the City's Downtown Redevelopment Area, supplying services such as land cost buy-downs, construction of off-site improvements, and parcel assembly.

In relation to local codes, focal areas for infill and redevelopment policy include:

Strategic Planning for Infill and Redevelopment: Policies, plans and programs intended to facilitate infill and redevelopment in targeted areas.

Code Barriers and Incentives: The degree to which existing policies enable or preclude infill and redevelopment in targeted areas.

The watershed and economic development benefits related to this site will likely be much stronger when a land owner chooses higher density redevelopment over building rehabilitation.

When a developer chooses a greenfield site on the fringe over redevelopment of this site, the watershed must still contend with this lot's runoff.

STRATEGIC PLANNING FOR INFILL AND REDEVELOPMENT

Infill and redevelopment are almost universally more challenging to accomplish than greenfield projects. Many programs and planning tools have evolved to facilitate redevelopment in certain areas. Some of the most prominent include site inventories and assessments (such as the County's vacant lands study), market analysis, marketing programs, modeling and design assistance, financial and tax incentives, capital improvement plans, renewal/revitalization programs and the development of specific plans.

Specific Area Plans – In Ventura County, specific plans are among the more powerful tools being used to orchestrate planning for infill and redevelopment. Infill and redevelopment projects benefit from the coordination provided through specific area plans, community plans or similar efforts.

Redevelopment and Revitalization Programs – Each city in Ventura County sponsors downtown redevelopment and revitalization by way of redevelopment programs and districts. Most downtown areas are covered by a master plan and special zoning designation (usually Central Business District, or CBD). Development regulations in CBDs often focus on unique aspects of the historic downtown core, including:

- Historic preservation and remodeling standards including materials, façades, windows and awnings.
- On-street parking.
- Signage.
- Zero setbacks (or build-to lines).
- Regulation of first-floor uses.
- Streetscape improvements.
- 100% building lot coverage.
- Uses on sidewalks.

Brownfields – Brownfield development also commonly commands attention since the blight and potential contamination entail larger economic and community quality of life issues.

The U.S. EPA estimates that for every acre of brownfield redevelopment, 4.5 acres of greenfield can be preserved. Why the difference? Zoning codes for Central Business Districts (CBD) tend to direct a smaller footprint for the same unit of development than codes prevalent in suburban areas. CBDs tend to allow multiple stories, smaller setbacks, and shared parking.

Site Assessments – Ventura County conducted a Vacant Land Study in 2001 to match growth protections with available land inside the CURB boundaries. This study identified vacant parcels within the 10 cities, but did not address property

The City of Grand Rapids, Michigan, developed a system for crediting higher-density redevelopment projects based on impacts avoided.

that was suitable for redevelopment. Ventura County is in the process of updating the vacant lands inventory. In 2007, the City of Ventura launched a program to identify odd shaped lots.

Currently, there is little reference in codes to vacant property outside of nuisance ordinances. However, many cities are looking to vacant lots for infill housing and other types of redevelopment. Vacant lots with the potential to hold and treat stormwater may also become more attractive for acquisition as Best Management Practices. Ventura County may want to compare the vacant land maps to soil and topography maps and pursue parcels with the most potential to hold and treat stormwater.

CODE BARRIERS AND INCENTIVES

Land development and subdivision regulations have traditionally guided development patterns based on a system of separated residential, commercial and industrial development located in a greenfield setting. In past decades, a greater amount of undeveloped land was available to accommodate this pattern, and the policy drivers of conventional suburban development went largely unquestioned.

Today, there is growing attention to the impacts of sprawl, with a corresponding focus on the degree to which local development regulations prevent infill and redevelopment. The following areas can pose barriers to redevelopment and are contained in varying degrees in zoning codes:

Mixed Use Zoning – A major barrier to redevelopment is the lack of mixed use zones in many zoning ordinances. The ability to develop a small infill or redevelopment parcel with a dense, economically attractive mix of commercial and residential uses would lure more developers to this type of project. Mixed uses can also benefit from lower parking requirements due to shared use of parking spaces.

Parking – Within codes, certain redevelopment and renovation thresholds trigger newer parking requirements. For example, a 5,000 square-foot retail structure constructed when 10 spaces were required, would need to supply the modern 4 spaces per thousand square feet, or 20 spaces upon redevelopment even with the same use.

Bulk Requirements – Bulk or site requirements include setbacks, height limitations, landscaping and other aspects of code that direct the location and size of building footprints. Over time, code updates have resulted in larger and larger zoning parameters for various reasons (e.g., design speed of streets, sight distance requirements and parking).

Updated Building Codes – Like other states, California has adopted standard building, electrical and plumbing codes. California has also adopted a special State Historical Building code (www.dsa.dgs.ca.gov/SHBSB) to guide rehabilitation and redevelopment, and remove former barriers to reuse of buildings. However, many buildings ripe for redevelopment or rehabilitation are not officially "historic," so these buildings must either be brought up to code or demolished to make way for a new building.

For redevelopment, a variety of incentives are used, including:

- **Public Structured Parking** – Publicly constructed parking structures to reduce the amount of land devoted to on-site surface lots and to complement redevelopment efforts.
- **Lower Parking Ratios** – Maximized on street parking and elimination of unnecessary duplication of on-site parking spaces through shared parking arrangements between complementary uses.
- **Streetscape Improvements** – Reduced street widths, traffic calming, landscaping and sidewalk enhancements to allow building closer to the street.
- **Tax Increment Financing** – Established districts whereby the taxes assessed on the increased value of redevelopment are directed to projects within the district. For example, if a redevelopment project increases the value of the assessed property by $100,000, then the taxes levied on that increase are directed to the redevelopment district to cover infrastructure upgrades, streetscape improvements and parking programs.

By and large, the best code language on redevelopment is in conjunction with specific area plans, downtown plans and master plans. For example, the City of Oxnard has a section in the parking code for redevelopment projects, noting that parking and loading requirements in a redevelopment project shall be the same as standard requirements, though they may be modified by an adopted redevelopment plan. (64 Code, Sec. 36-7.1.12) (Ord. No. 2021) SEC. 16-625.

Challenges within Zoning Codes

- Updated codes and standards geared towards greenfield development are difficult to meet where parcels are small, odd-shaped or experience split ownership.
- Conventional methods of site assessment focus only on site level runoff while missing larger watershed impacts and benefits of infill and redevelopment.
- Overly stringent code requirements for stormwater management may tip decisions that result in no improvements.

Opportunities

- Stormwater can be added to the growing list of benefits of redevelopment. As such, stormwater can be added to the attention and resources devoted to climate, transportation and economic development.
- Specific/Area Planning provides a natural (and existing) tool for considering the smaller footprint of redevelopment.
- Form-based codes can be used to design multi-use buildings.
- Many existing programs (e.g., streetscape) can be retooled to include stormwater management.
- A variety of existing studies can form the basis of environmental assessment at the larger watershed scale. Successes in redevelopment can be used to report successes in watershed objectives.
- Ventura County and its cities can use the rezoning and permitting process to spur improvements and BMPS.

The City recognizes that redevelopment projects may require modified parking, and that the best way to orchestrate parking needs is through a larger plan.

CONCLUSION

Redevelopment is almost universally more difficult to undertake than greenfield development. As such, economic and development programs that stimulate and redirect development can be thought of as powerful watershed strategies.

Land development regulations are often an underlying barrier to redevelopment. As codes have become more expansive, smaller urban sites cannot accommodate larger setbacks, larger parking requirements and landscaping to "come up to code" while still delivering a positive return. Water quality regulations that unintentionally favor larger land-based practices may compound these problems.

With these factors in mind, it is important to differentiate between infill, building rehabilitation and redevelopment as they relate to overall watershed health.

The benefits of building rehabilitation lie in the ability to capture growth within an existing building. However, rehabilitation projects that disturb less than 5,000 square feet under the draft tentative stormwater permit would not be required to install post-construction controls. Moreover, in areas with auto-dependent development patterns, rehabilitation of existing buildings likely will not support transit-oriented planning. Most developed land area in Ventura County is also comprised of single-family homes; stormwater rules for "single-family" in the draft tentative permit are triggered at 10,000 square feet.

Ventura County and its cities may need to develop multiple paths of progress in meeting water quality objectives. Redevelopment Project Area Master Plans offer flexibility for both site level and district shared stormwater management but will likely be resource intensive. For areas with smaller-scale redevelopment potential, Ventura will need to assess the redevelopment imperative of the site for multiple objectives, and incentives available to individual projects.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 140.

6. Compact Design

For urban and urbanizing areas, reducing overall impervious cover can be realized by use of compact development design. The term "compact design" applies equally to new development and redevelopment, and from individual buildings or lots to neighborhoods, districts and entire communities. Regardless of scale or development context, compact design is a central strategy for reducing watershed-scale imperviousness and conserving open space and ecologically valuable areas.

Compact design encompasses several of the other planning topics discussed in this review. Compactness enables a greater use mix, more efficient use of parking, improved street design, higher densities, increased mobility options, walkability and urban greening that all relate to a broader set of community goals.

A number of factors within conventional zoning codes and land development regulations tend to expand the overall development footprint and prevent more compact form, including:

- Large areas zoned for low-density development (typically expressed in maximum allowable units to the acre and minimum lot sizes for residential development and maximum floor area ratios for commercial development).
- Zoning for highly separated land uses – for example, permitting only single-family residential development, multi-family residential development, office development and retail development in separate zones.
- Large building setbacks.
- Broad limitations on height – for example one to two stories throughout a city.

- Large parking and roadway requirements.

These are issues that are also handled in other sections of this document, but relevant to the overall topic of compact community design.

Despite the breath of factors effecting "compactness," the topic of compact design is often oversimplified to an issue of higher versus lower density. This has ramifications both in practice (increasing density at the lot level without attention to height, use mix or connectivity) and in broader debates about growth (it is said that the only thing people dislike more than sprawl is density). Reducing the overall development footprint will require an orchestration of planning and design elements within the community, not just higher density. Public acceptance of higher density is only possible if compactness enables greater comfort and functionality within the community.

Compact Design and Water

At the watershed level, the impacts of development depend largely on how much land is needed to accommodate a given amount of

Ped-shed: Grand Valley Metro Council Form-based Code Template, Grand Rapids, MI.

What Is a Ped-shed?

Ped-shed, short for "pedestrian shed," is a concept used to evaluate the walkability of an area. A ped-shed is the area encompassed by the walking distance from a town or neighborhood center. Ped-sheds are often defined as the area covered by a five-minute walk (about 1/4 mile).

The ped-shed has emerged as a performance measure of sustainable neighborhood design and is prominent in the LEED for Neighborhood Design rating system.

Watershed planners must begin assessing how the metrics for walkability support stormwater management goals by reducing pavement and car travel.

growth. A growing body of literature has examined this relationship, including the U.S. EPA's "Protecting Water Resources with Higher Density Development," which found that for a given amount of growth, higher-density development lead to reductions in runoff, impervious cover and land conversion.

Local codes affect compact design in many ways, but converge on two themes:

- Compact Community Design – The treatment and coordination of various design elements to enable a more compact form at neighborhood, district and community scales.
- Compact Building (Bulk Dimensions) – How code language directs the placement of a building within the parcel; how large/small are dimensions such as height, frontage and setbacks; and the size, treatment and flexibility contained within setback regulations.

Compact Community Design

To varying degrees, Ventura County and each of its cities have engaged in planning to support compact development. The most prominent examples are plans to revitalize downtown areas, where the underlying historic street layout and building types are augmented with modern amenities and uses. For new development, jurisdictions have produced Master Plans to create compact development with a variety of housing types and other uses, accessible to pedestrians, bicycles and transit. These examples are discussed further in the Specific Plan section. Most plans for walkable communities are good examples of compact design since uses must, by design, be within walking distance.

Pedestrian Orientation – In general, each city and the County emphasize pedestrian travel and pedestrian-oriented districts. The term "pedestrian shed" is increasingly used to describe typical and threshold distances. On average, pedestrians will travel one-half mile for a trip, with an upper limit of 1-1/2 miles. Several factors, such as the age of the pedestrian, weather conditions and quality of the walkway will affect decisions on trip making as well.

Mixed Uses – A key element of compact design is mixed uses on the same site. The most common of these is commercial or office units on the ground floor and residential units on upper floors. Mixed-use projects benefit from reduced parking requirements due to shared complementary spaces, thus reducing

pavement. At the district level, properly designed mixed use areas make it possible for residents to travel to work, shopping and entertainment on foot or by bicycle, reducing car travel.

Barriers to Compact Design – One of the more challenging aspects of compact design for Ventura County and its cities is the treatment of multi-family housing within the code. Multi-family housing is a critical element in compact design for watershed protection, since the impervious surface per household is typically far less than a comparable unit in a single-family home development.

However, most Ventura codes prescribe site elements that cumulatively add to the land needed for individual multi-family projects (outside of specific plans). Codes governing multi-family housing (more than 5 units) contain an extensive list of on-site requirements that add up to a larger parcel size.

More often than not, these design attributes (e.g., hedges, landscaped islands and turf setbacks) do little to enhance the public realm or walkability, add to meaningful open space, or improve the environmental impact, but rather may serve to detract from these goals.

From a watershed point of view, these rules put pressure on the size of land needed to supply multi-family housing projects. For example, the building footprint can occupy 60% of the site, which at first glance can seem like an efficient footprint. However, parking (1.5 to 2.5 spaces/unit, parking for recreational vehicles for 20% of units and guest spaces) and communal open space (30% of the site), combined with new on-site stormwater handling, will limit design options.

The large land requirements may also have the effect of locating multi-family housing at the edges of town unless specific area planning is used to plan higher density residential development. Since most density bonuses and affordable housing plans are tied to multi-family residential codes, the cumulative requirements for large parcels may result in locating affordable housing in the areas of town where transportation, education and employment options are less convenient or accessible.

Small spaces between housing can be used for stormwater management. Note that codes limiting use of non-plant material would prohibit this BMP design.

While land availability is decreasing, the need for spaces that serve multiple functions is increasing. Therefore, the need to revise codes to allow more efficient use of land on site, or to ensure that various requirements such as setbacks and landscaping can serve multiple functions – particularly for storm drainage – will increase.

From an urban development angle, the edge where higher density, compact redevelopment meets the existing neighborhood requires special attention. The design, connections, landscaping and tapering from lower to higher density can either provide seamless integration that enhances both new and old, or an unpleasant wall of development. There are a

This clustered subdivision (left) is recognized as a model for site-level stormwater practices. At a larger scale, however, it contributes to dispersed land use patterns that increase imperviousness, automobile travel and watershed-level disturbance. These multi-story buildings in a small, rural town (right), with a smaller footprint, greater walkability and less impervious cover, are better for the watershed than the clustered development.

growing number of urban planning techniques to support development and design along this interface.

One good example comes from Santa Paula's code, which includes a Planned Development (PD) district. This zoning district provides standards where changes and transition between densities are needed. This is extremely important in fostering infill and redevelopment. The overlay can be used to define tapering and building attributes, or provide management techniques for spillover parking and design.

For stormwater management, a PD district might be used to specify additional stormwater treatment, or a list of LID techniques most fitting for the area.

Several cities have adopted Residential Planned Development (RPD) zones to support a greater mix of housing types. Moorpark's RPD zone is prefaced by the following purpose statement: "Residential Planned Development – provide areas which will be developed utilizing modern land planning/unified design techniques and flexibility to encourage:

1. Coordinated and compatible neighborhood design;
2. Efficient use of land (e.g., clustering and preservation of the natural features);
3. Variety and innovation in site design, density and housing unit options, including garden apartments, townhouses and single-family dwellings;
4. Lower housing costs through the reduction of street and utility networks; and
5. A more varied, attractive and energy-efficient living environment as well as greater opportunities for recreation than would be possible under other zone classifications."

This language serves to remove some of the inflexibility of Euclidean residential codes, and allows for land efficiency. However, assessing the benefits of clustering alone should be done with care. It is important to note that overall environmental impacts associated with a project may depend less on what happens within the project's boundaries, and more on how the project relates to the larger district and transportation/land use patterns.

Because cluster housing and open space zoning are prominent low impact practices, the need to establish the larger planning context is extremely important. Otherwise, the benefits of individual housing projects could be reduced or even eliminated when unplanned commercial development follows.

Thousand Oaks provides further language on the purpose of the RPD code: "To provide for

an orderly and cohesive urban growth and physical development pattern in the City by discouraging fragmentation with unrelated elements and encouraging the efficient delivery of City services;" and "provide the City and developer with reciprocal latitude to consider alternate standards in return for increased amenities to serve the inhabitants of the development and surrounding areas." (Section 9-4.901)

These zones have the advantage of integrating more housing options and allow for more efficient development types. However, RPD zones are solely residential areas, and thus do not encompass the same energy efficiency advantages as a mixed-use zone related to transportation and trip making.

The emphasis on "efficient delivery of services" can be related to the "efficient use of land" since the neighborhood design is clustered onto smaller residential footprints. While both codes speak to efficiency, much of what delivers efficiency is how the project connects to and relates to surrounding areas as far as trip generation, travel and access to everyday goods and services.

Public art can serve double duty in compact district by managing stormwater.

Compact Building (Bulk Dimensions)

Bulk dimensions determine how buildings are massed and spaced. They specify how high and close together buildings can be and how much of the lot they can cover. To understand how bulk dimensions can work to increase land cover and land disturbance requires looking at each parameter alone, and in combination.

- Lot sizes – Minimum lot size requirements can affect land disturbance in several ways. Large lot requirements tend to increase the distance between parcels, and the infrastructure costs associated with them. Inflexible lot sizes also undermine flexibility in arranging lots around sensitive features. Thus, the tendency is to develop the ecologically fragile area and provide mitigation, rather than avoid disturbance in the first place.
- Setbacks – Likewise inflexible setbacks can lead to "cookie-cutter" appearances since developers will maximize the building footprint based on uniform setbacks. Inflexible setbacks also undercut a developer's ability to arrange a building away from an ecologically sensitive portion of a site. Even on small sites, small landscape depressions can serve as natural on-site infiltration areas. Finally, and intuitively, the larger the setback requirement, the larger the parcel needed for a development project. Conversely, build-to lines and zero lot-line codes can serve to shrink the amount of land needed, though they tend to work best when coordinated with other urban design elements.
- Height – Height can be a sensitive neighborhood design topic. From a watershed point of view, however, development that cannot be accommodated by "going up," tends to "go out." On the other hand, isolated density may not have watershed benefits if the larger

Summary of Code Challenges

- Site/road design regulations and standards have increased over time, in some cases based on conservative measures for safety.
- While well-intended, requirements for additional on-site amenities for commercial and multi-family development projects can rule out smaller urban sites.
- Long-held conventions on separated zoning are giving way to new compact, mixed-use codes, however, traditional perceptions of proper land use are linked to individual and separate zones.
- Height limitations are controversial, though are rarely related to environmental performance.
- Setbacks will likely become a battleground for multiple uses, including stormwater management.
- Site coverage limits break apart and spread out development.
- Even with rise of green parking, the larger inefficient layout inflates the development footprint and its impacts.
- The sum total of these site design elements results in "Dense Sprawl" – the resulting form is too sprawling to produce a successful, walkable product, yet dense enough to feel congested.

Summary of Code Opportunities

- Coordinated District Planning (specific plans, form-based codes).
- New benchmarks of performance to introduce multi-objective parks, open space, landscaping and rooftops.
- Special design treatment at the neighborhood edge where new density meets older neighborhood or commercial areas.
- Height limitations serve a proper role for viewsheds, historic preservation and solar access. Increased heights should be used as part of larger district development discussions to avoid "density in the middle of nowhere."
- Ventura County and its cities can develop code language, policy and procedures for instituting shared site amenities.

development pattern results in a concentration of residents or workers bound by automobile travel.

- Site Coverage Limits – Most codes, in particular commercial codes, cap the amount of space on a site that can be occupied by the building floorplate. For example, many commercial codes limit the size to 30-40% of the parcel. This limit makes sense in industrial areas to separate the impacts of distribution, noise and heavy operations. However, in urban and urbanizing areas, any area that cannot be occupied by a retail or commercial building is typically occupied by parking (with a small percentage of the site devoted to landscaping under a typical code). Note that many watershed guidance manuals recommend capping the floorplate as a means to limit impervious cover. However, the rise of "big box" formats has shown that limiting the floorplate does not, by itself, result in environmental site design.

- Frontage Requirements – Most codes specify a minimum frontage, for example any project in the Commercial Neighborhood zone must have at least 100 feet of frontage. This can lead to strip type development since smaller stores (under 2,500 square feet) do not need such a large frontage.
- Limits to Sharing Site Amenities – Ventura County and its cities include language on shared parking, which is covered in detail in other chapters. One of the most powerful methods of reducing the development footprint is through shared parking, parks, landscaping, access and loading. Even where code language exists, the process for obtaining shared parking can be so cumbersome as to reduce its viability.

Conclusion

The greatest gains in compact design will result from synergies between planning and design decisions. Compact design cannot be achieved by waving a magic density wand, but through attending to multiple aspects of the built environment such as parking, streets, infill, landscaping, open space and use mix concurrently.

One of the most powerful, yet misunderstood aspects of compact design is the role of height for watershed protection. Increasing density within a conventional zoning framework of single, separated uses or without proper attention to the impacts of height restrictions can result in a "dense sprawl," which is likely to be resisted by the community and may not support greater gains in compact design such as reduced Vehicle Miles Traveled (VMT) or trip making.

Various requirements tend to inflate the size of sites and projects such as parking, screening and setbacks, and even certain types of open space. All of these amenities are meant to serve a purpose, but as less land is available for development, greater attention to their functionality and relationship to community form is needed. How pending stormwater requirements relate to these tensions remains uncertain, but it is clear that cities will need to evaluate existing site requirements in light of the permit provisions with an eye for making site features play double and triple duty.

These planters in Emeryville, CA, are designed with overflow boxes and underdrains.

Communities in Ventura County are using specific/community plans to gain ground in this area. Thus, the sections that follow as well as the separate chapter on specific plans provide further discussion on achieving compact form.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 147.

7. Use Mix

Use mix integrates two or more different uses into a single structure or grouping of buildings, neighborhood or district. Highly separated land uses contribute to excess impervious cover by increasing automobile dependency. To meet daily needs, people must take more trips (e.g., between home, work, store and school) and drive farther between activities. In turn, this feeds into formulas that determine the size and expanse of roads, parking lots and other car-related infrastructure, all of which translate into more impervious cover that may not appear in project site runoff analyses. Conversely, mixing uses links and combines complementary functions and building types to reduce "trip making" and supports more compact form and efficient land development.

The role of use mix and housing for watershed health is receiving attention from watershed and stormwater practitioners in California. The California Association of Stormwater Quality Administrators (CASQA) has produced guidance on issues related to stormwater management and water quality. Section 2 of CASQA's BMP handbook for New Development and Redevelopment includes use mix and neighborhood design as a best practice.

The City of San Jose has also developed a stormwater permit that treats smart growth projects (certain affordable housing, brownfield and downtown revitalization projects) as watershed practices. The City reasons that stimulating these projects within town will relieve pressure to develop on the fringe or on farmland.

Housing variety and affordability are often included in the discussion on use mix. Since most mixed-use projects are conducted at higher density, housing efforts are woven into projects to take advantage of efficient design and strategic co-location with transportation, services and jobs.

The code review focused on planning and zoning for use mix, including housing mix.

Planning and Zoning for Use Mix

Reintegrating a use mix is typically accomplished through overlay zones or designated mixed-use districts. Several jurisdictions are addressing use mix through special area plans and specific plans. As mentioned in Chapter 6, cities are also adding new categories of zoning codes that address mixed use.

Overlay Zones

Overlay zones were created to bring variation or new regulations to underlying use zones. Examples can include:

- An overlay zone that allows a new mix of uses to a district dominated by strip commercial development. The underlying zoning may be C-1 or C-2; thus, an overlay zone may add residential uses or create a new code for mixed use.
- An overlay zone that includes new buffer requirements next to a stream that experiences algal blooms and odor. The buffer will likely be set to maximize the owner's use of the property, but wide enough to provide filtration and treatment of polluted runoff.
- A "floating" overlay zone that is not attached to a set geographical area, but one that allows a certain use or intensity to "land" once an appropriate site has been found. These are often used for larger land uses,

such as car dealerships, industrial warehouses and the like. However, there may be applications for floating zones for other uses, such as environmental protection or stormwater management.

Overlay zones can be implemented in several ways. Most applications allow a landowner or developer to choose either the new overlay zone or the underlying zone for a development project. However, this dilutes the effectiveness of the overlay, so some cities use incentives to steer decisions towards use of overlay provisions in codes. In other cases, the overlay zone is mandatory.

The City of Ventura is using overlay zones to serve many purposes. In Ventura, all uses within the boundaries of an overlay zone must comply with the overlay zone regulations in addition to the zoning district regulations for the underlying zone.

Of the 12 overlay zones in the city, nine deal with some intersection of land development and the environment. This has a subtle, yet important implication for addressing compliance with environmental laws with zoning. For example, a city may cite an overlay zone in a climate or stormwater reporting document, but results can only be achieved if development adheres to provisions of the overlay.

The City of Ventura also has a unique set of overlay zones (Eastside and Westside Workplace Overlays) to help support and retain affordable commercial development. While affordable housing has commanded a great deal of attention, there are environmental benefits to retaining commercial and retail development within existing neighborhoods. The significance of this zone is the facilitation of jobs, services and commercial uses close to older housing stock. A successful affordable housing program may be undercut if residents do not have local access to markets, services, offices and jobs. This use of an overlay zone is interesting, since most localities use economic development tools, not zoning, to retain affordable commercial uses.

Use Mix within Existing Codes

In general, the two ways to obtain a use mix within zoning codes are by expanding the list of allowable uses within conventional codes and creating a new code category that expressly calls for mixed use, such as those found in several specific plans.

For example, a variety of residential land uses are included in the City of Ventura's Limited Commercial (C-1) Zone. However, having a mix of uses within code categories allows, but does not necessarily guarantee, a mix of uses.

In addition to listing uses that are allowed "by right," a zoning designation will often include a list of conditional uses. Conditional use permits establish a list of allowable uses, but only if certain conditions are met or if certain operational conditions are in place. This can create a barrier for adding a greater mix of uses to an area over time, or increase the costs of upgrading the use mix due to the longer process. This does not mean conditional use codes are unnecessary; in fact, they serve the essential function of negotiating operation and design considerations for compatibility.

However, if the process has the effect of thwarting an enhanced use mix, it may be also thwarting watershed goals as well.

Other ways to introduce use mix within codes:

Pyramidal Codes – Zoning codes are typically divided into sections by use: Residential, Commercial or Industrial. The codes typically have several categories, presented from the least impact-generating to the most. For example, rural residential will be presented first, followed by low-density residential, then medium and high. Commercial codes will specify uses, and then "reach back" and allow the residential uses as well. This can create a use mix, though it can have the undesired effect of producing low density land uses in areas planned for a higher intensity of use.

Vertical versus Horizontal Mixed Use – Older downtowns and historic villages included a "vertical" mix of uses with retail or offices on the first floor and residential uses on the upper

floors. The evolution of zoning, parking and building codes has made this type of mix more difficult, though form-based codes are emerging to meet this challenge. In 2006, California passed legislation to facilitate form-based codes within local land development regulations.

Santa Paula has innovative language on use mix in its Transportation Demand Management code. "Residential development projects: 350+ units. Residential development of 350 dwelling units or more must comply with...the following to the satisfaction of the City: Development design must, to the greatest extent possible and as appropriate based on adjacent land use and markets, incorporate services such as dry cleaners, eating establishments, child care facilities, grocery markets, neighborhood work centers and other facilities which will reduce home-based vehicle trips and vehicle miles traveled. Such services must, to the greatest extent feasible, interconnect to circulation systems." (Section 16.108.030. Transportation Demand and Trip Reduction Measures)

This language recognizes use mix as a part of Transportation Demand Management. It also ties together residences, daily services and circulation connections to lead to a reduction in both trips and miles traveled.

Although commercial codes typically apply to a smaller geographical area than residential, there can be a wide variety of uses within commercial codes. Several categories of commercial zones are worth highlighting:

Commercial Office – This designation allows some commercial uses in office zones. Some cities have code language prohibiting eateries or limited café options in office districts. This can stimulate a mid-day traffic rush "hour," which dictates parking for a trip to an area where eateries are zoned. The strict application of office-only uses also precludes more efficient parking for restaurants located in office zones, which could use office parking after hours.

Commercial Neighborhood – CN zones are created to supply daily shopping and service needs of residential areas. Thus, the list of

This mixed-use project contains a grocery store.

uses should match the trips associated with residential neighborhoods. The review found that this was not always the case. In one code, only two uses were allowed (convenience store, sandwich shop) in a commercial neighborhood zone. In Santa Paula, landscaping is required on at least 25% of the site, which may be burdensome for smaller sites (though it does provide space for on-site, natural stormwater management).

Commercial Planned Districts – These planning districts are larger than traditional CN zones, and tend to contain both neighborhood and limited destination retail. These centers may have some use mix built in as well as a variation of the neighborhood-shopping district in a C-1 zone. A shopping center may be constructed if the developer can show that the neighborhood within which the property is situated contains a minimum of 600 residents. Only one C-1 district/property as specified in the General Plan can be constructed in the neighborhood, and it must have one "major" tenant for daily needs, be architecturally compatible and meet traffic code.

The language shows a tie between retail and housing. A stronger standard might be to require retail development for a given threshold of residential density (for example retail is required when there are 300 or more units). Another item worth noting is that the only language related to access is the requirement to meet traffic code. If non-auto access is not addressed in code, such as pathways, connec-

tions, multiple entry points, then auto-only access will drive not only local traffic, but parking space demand and site design geared towards auto travel. Thus, codes would be strengthened by handling access via multiple modes of transportation.

Camarillo lists both Neighborhood Commercial and Commercial Planned Development (CPD) in its code. A view of the zoning map shows that very little land is zoned CN and instead, most shopping centers are contained in the CPD zone. Thus most services and retail (outside of specific area plan planning areas) are provided through CPD zoning. The uses included in CPD are extensive. The table below presents the bulk regulations for buildings constructed under the permit.

This example helps illustrate what happens when the code parameters are combined to produce the site design. Individually, some of the parameters appear to support walkable, neighborhood design. For example, the side setbacks can be zero and frontage can be a minimum of 100 feet wide (many codes call for frontage of 500 feet or greater). There is language directing architectural integration where more than one building is contained within the project.

However, a combination of factors work against integrated design to support use mix and walkability. The minimum frontage for CPD is 100 feet. While the rear setback of 50 feet might be an appropriate setback, the solid wall prevents shorter walk trips between properties.

Similarly, the building footprint limitation is 30%, which means that 70% of the site will be something else. With a 10% minimum landscaping rule, the result is a site primarily devoted to parking and travel lanes. Even with setbacks that could support walkability, the combination of maximum building footprint and minimum parking tends to dictate a larger parcel size dominated by a surface parking lot. This example shows how code parameters affect the effective use of travel, compact design and mixed uses.

Housing Affordability

State and regional discussions on growth have focused on increasing the supply and availability of housing to a larger range of incomes for more than two decades. Despite a softening of the market, housing still remains out of reach for many working families. This is particularly true for housing that is located closer to jobs and amenities.

Camarillo Commercial Planned Development Code (by planned development permit)

Minimum Lot Size	10,000 sq ft (though may consist of several parcels). Minimum width of 1,000 ft.
Front Setback	Between 10 and 50 ft.
Side Setback	Can be 0 ft; must be at least 50 ft when abutting R zone. Sides along public ROW must equal front setback.
Rear Setback	>10 ft; height over 25 ft, setback increases 10 ft for each 10 ft in height to max yard area of 50 ft.
Site Coverage	Buildings can occupy no more than 30% of site.
Height (Maximum)	2 stories not to excess 35 ft (though greater heights allowed under CUP)
Parking	Retail: 1 space per 250 square feet
	Office: 1 space per 400 square feet (gross).
Wall	Solid decorative screen wall 6 ft in height where property abuts R zone.

San Jose was one of the first cities to make the link between affordable housing and watershed health through water permitting and code. San Jose falls under the jurisdiction of the San Francisco Bay Water Quality Board and is a member of the Santa Clara Valley Urban Runoff Pollution Prevention Program. The City recognized that much of the conversion of the watershed was related to the creation of housing for the booming region. Thus, providing higher density housing within the existing development footprint was supplying a powerful watershed benefit, though one that was unrecognized within the conventional permit analyses and reporting.

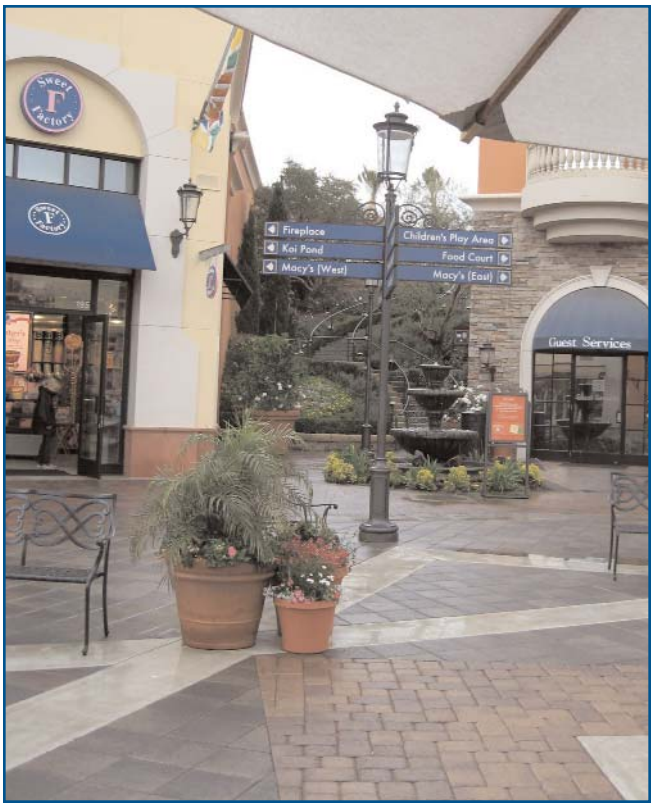
The City then structured a program within zoning that would literally recognize certain housing projects as "Best Management Practices" based on their location and form in the watershed. San Jose's program is described in more detail in the U.S. EPA's "Using Smart Growth Techniques as Stormwater Best Management Practices" (2006).

Density bonuses are required by the state to facilitate the provision of adequate housing for low- or very low-income families and low-income senior citizens. Thus, each city's code devotes a section to provision of density bonuses and second units, as well as parking requirements for second units. Given the small number of permits issued for second units, even the least restrictive building requirements for second units may be set too high.

Several cities have instituted residential permit caps, which have the effect of limiting supply. However, cities that have instituted caps also include allowances for affordable housing and the ability to transfer un-built units to the next year.

Density Bonus

Density bonuses are included in most communities' zoning codes, for the most part reflecting the State's density bonus law (Government Code section 65915-65918). This law was enacted to specify density bonuses (or regulatory concessions) for affordable housing. As



A stairwell links the retail to housing. However, this linkage could be strengthened by adding everyday retail at points closest to pedestrian access.

such, density bonus language in codes tends to closely mirror the language of the state law. State-level reviews of the density bonus law are mixed, but largely note that more can be done to supply affordable and workforce housing.

In Ventura County, code language for density bonuses tends to allow not only increases in density, but also:

- Site plan review and approval advantages.
- Reductions in development standards, including reductions in square footage or lot size requirements and reductions in the ratio of vehicular parking spaces that would otherwise be required.

The density bonus law allows a developer to seek "waivers and modifications" of "development standards." The statute defines "development standards" as "site or construction conditions" that apply to a residential development pursuant to any ordinance, general plan element, specific plan, charter amendment or

Summary of Code Challenges

- Ventura County and its cities have inherited zoning codes that dictate segregated uses. Within these codes, the list of allowable uses can be quite narrow
- Even with a broad list of uses, there is no guarantee that the market will deliver uses that match local tripmaking.
- Overlay zoning codes that are optional may not deliver desired outcomes. This could affect compliance with climate or stormwater directives where zoning plays a role.
- Use of density bonus provisions have not met expectations.

Summary of Code Opportunities

- Ventura can augment language on access to include access via multiple modes of transportation.
- Commercial codes can be expanded to better address use mix and by extension, traffic generation.
- Assembly Bill 32 (California climate change legislation) will likely spur more detailed analysis of use mix and travel.
- The stormwater and climate change rules may spur widespread use of density bonus provisions.

other local condition, law, policy, resolution or regulation.

The stormwater permit may not have much impact if the density bonus provisions are rarely sought. However, in areas where on-site requirements are more expensive to meet, any stormwater concessions in the density bonus law may become more common.

Oxnard's code allows for customized density provisions, but requires the developer to fund any studies needed to support the bonus. Local governments may want to include this type of analysis in Specific Area or housing plans as an incentive, and possibly as part of an innovative watershed plan similar to the San Jose example.

Conclusion

The role of use mix as a watershed protection strategy has not been fully examined, but is central to reducing the footprint of development.

From a planning perspective, determining the correct mix of uses for a given area is a challenge. The researcher Larry Frank has produced information describing use mix, development form and transportation. One study in particular points to form and use mix as it relates to shrinking the development footprint. In a study of older women, he found that the women were more likely to walk if a variety of everyday uses were within a comfortable walking distance.

Ventura County and its cities are building use mix into specific area plans. Localities should look at existing "Commercial Neighborhood" areas and see where additional uses, connections and land area might work to reduce trip making. Smaller "Crossroads" planning districts also enable a functional use mix in largely residential areas.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 157.

8. Streets and Mobility

Automobile-related hardscapes can account for up to 60% of the total imperviousness in areas built to conventional development and subdivisions standards. Streets account for the lion's share of this – about 40% to 50% in residential areas alone.[1] For stormwater management, streets have traditionally served as the conveyance system; the wider and more dispersed the streets, the larger the impacts.

There has been increasing activity related to building a multi-modal transportation system. Several key strategies include:

- A connected system of small blocks to support efficient land development and multiple modes of transportation in urban and suburban development settings.
- Narrow streets that balance traffic calming, mobility, environmental protection and emergency response.
- "Green streets" planning for stormwater management, landscaping and infiltration during the initial design process.
- "Complete streets" planning for multi-use streets that consider pedestrian safety and access in relation to auto travel, parking, bike paths, sidewalks, medians, landscaping, drainage, aesthetics, access and surrounding building placement.
- Retrofitting the public right of way to include "complete streets" and "green streets" objectives.

Each of these is directly related to watershed planning and water quality protection. Few aspects of the built environment face more direct code barriers than designing and building more sustainable streets. In general, local codes need to be updated in the following areas.

Street pattern and connectivity: Language to link existing and planned transportation routes and impediments to connections.

A network of well-connected streets and paths is a prerequisite for development patterns that reduce impervious surface and overall transportation-related footprint. Street design and layout can increase connectivity within and between neighborhoods to reduce congestion and create more route choices. A connected street pattern provides direct links between destinations, making trips shorter, some of them short enough to be made on foot or bicycle, further reducing car dependency and the need for large asphalt roads and parking lots. Direct and multiple connections to destinations also improve emergency access and response time.

Street design and dimensions: Standards that influence the amount of pavement associated with streets and sidewalks and space for landscaping.

Reduced street widths lessen impervious cover while still allowing space for green infrastructure to manage stormwater. Street designs can include planting areas between the curb and sidewalk for trees and drainage. Street trees serve to intercept rainwater, encourage infiltration, and reduce heat island effect. Medians provide additional opportunity for reduced imperviousness and maximum tree canopy, while improving traffic flow and safety.

Narrow, tree-lined streets also encourage slower traffic speeds and enhance pedestrian comfort. Narrower streets can cost less to build and maintain.

Materials allowed for transportation-related infrastructure: Language about the use of permeable paving materials and methods.

Permeable paving materials reduce runoff and allow infiltration while providing stable, load-bearing surfaces. A number of permeable paving options are commercially available and have proven successful in a variety of settings, though they are not appropriate for all sites. Most codes exert caution with respect to the use of permeable paving, to the degree that these materials are prohibited.

Retrofits and funding: Language to bridge capital improvement budgets with retrofit priorities.

Demonstration projects have gotten off the ground with the assistance of larger state and federal grants, but wider application of storm-water retrofits will need more reliable and consistent funding streams, not only for initial design and installation, but for long-term maintenance.

Inclusion of multiple modes: Language about biking and pedestrian travel within transportation-related aspects of codes and standards.

Community design options to reduce VMT and the overall environmental footprint of transportation need to include travel lanes for pedestrians and bicyclists. While this will add some imervious cover, these lanes are prime candidates for green paving materials.

Within LID manuals, there is a spirited debate about sidewalks. Whether sidewalks flank both sides or just one side of the street, or are eliminated altogether, is as much a transportation decision as a watershed one.

CODE EXAMPLES

Street Pattern and Connectivity

Even with the growing spotlight on connectivity, there are often mixed messages within codes. For example, the ”Purpose and Intent” for Ventura County’s Circulation Code contains conflicting elements:

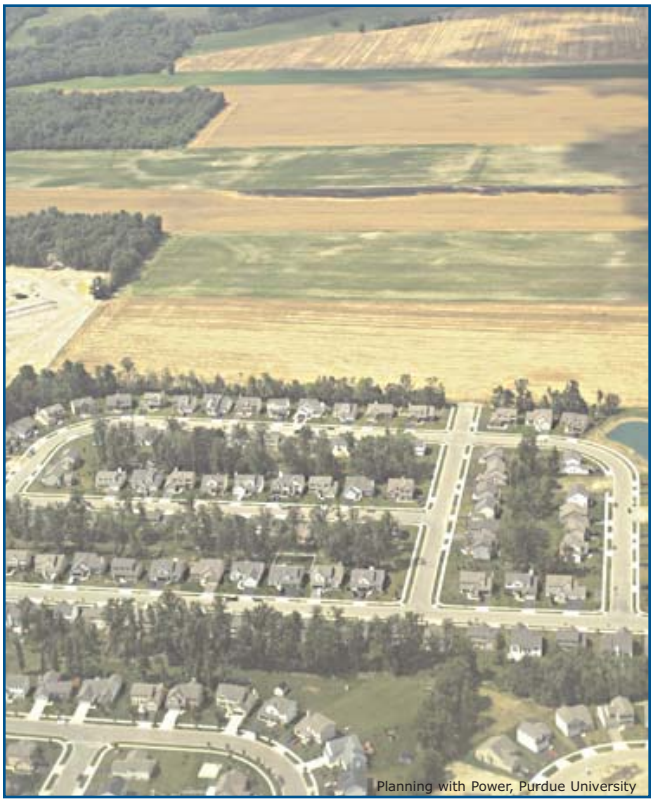
“Circulation shall be designed as follows, where feasible:

a. To minimize street and utility networks;

b. To provide a pedestrian walking and bicycle path system throughout the common areas, which system(s) should interconnect with circulation systems surrounding the development;

c. To discourage through-traffic in neighborhoods by keeping intersections to a minimum and by the creation of discontinuities such as curvilinear streets, cul-de-sacs and the like; and

This aerial view begs several questions on the effectiveness of street connection requirements in subdivision codes. What would be needed in the future link to provide environmental performance?



Planning with Power, Purdue University

d. To facilitate solar access by orienting neighborhood streets along an east/west axis, except where this is precluded by the natural topography and drainage patterns."

In general, street systems to support bike and pedestrian travel are characterized by a compact design, yet can be undermined by lack of intersections, indirect routes and unconnected cul-de-sacs.

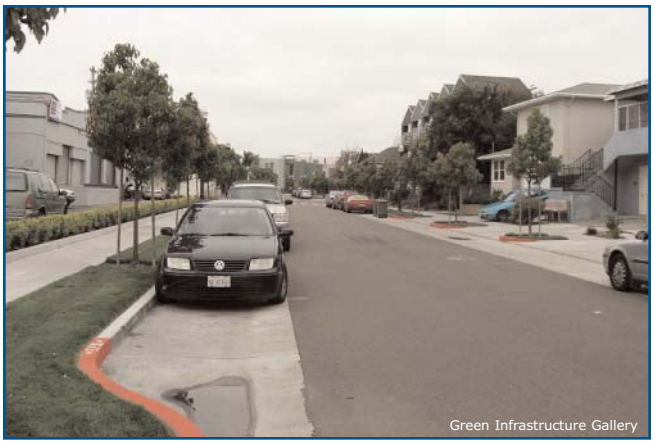
Perhaps one of the largest impediments to connectivity is not within road standards, but in the zoning code requirements for walls and screening. While the intent of walls is to provide transition, safety and a buffer between unlike uses, the opportunities for walkways is limited by this requirement. Almost every municipal code requires a continuous 6- to 8-feet tall wall between residential and commercial uses. Thus any walking connections rely on first exiting the subdivision or development,

Street Dimensions and Design

Several layers of requirements affect and ultimately determine street width. A number of communities in California and around the country have adopted standards for narrower streets or implemented "road diets" (reducing the number of lanes on overly wide streets) to encourage slower traffic speeds, add bicycle lanes, increase pedestrian safety, and improve the pedestrian environment.

New community street designs call for residential street widths of 26 to 28 feet with parking allowed on both sides, which is considerably narrower than the 40-foot wide streets that are found in conventional post-1950s suburban neighborhoods. These guidelines also include other standards for controlling speeds and improving safety that reduce the amount of street pavement, including 10-foot versus 12-foot travel lanes for most urban streets and smaller corner radii to produce slower turning movements.

Wide street



The result of a "road diet" with consideration for emergency vehicles.

The width of public streets and highways is largely governed by the California Streets and Highways (S&H) Code. Under State code, the width of all city streets except state highways, bridges, alleys, and trails, are to be at least 40 feet. The governing body of any city may, by a resolution passed by a four-fifths vote of its membership, determine that public convenience and necessity demand the acquisition, construction and maintenance of a street of less than 40 feet (Appendix B, S&H Code §1805). Thus, cities may set guidelines for narrower streets, but may also develop rules for streets that are wider than 40 feet.

Within Ventura County, street and driveway design is also influenced by the Ventura County Fire Protection District's Codes Standards and Ordinances. The District issues several standards, which have been incorporated by reference in several zoning codes.

These standards do not support and very often preclude narrow streets, traffic calming, alternative paving and other elements of a "green"

Sample Ventura County Road Standards

PLATE	ROAD CLASSIFICATION*	STREET WIDTH	RIGHT OF WAY
B-2 Primary, Secondary Roads, Controlled Access	A (Primary) Project ADT 36,000 max. Design speed of 60 mph Stopping Sight Distance: 580 feet	44 feet total	118 feet (including median and 8 feet in width sidewalks; emergency parking only). Sidewalk may be eliminated by approval of road and planning commissioners.
	B (Secondary) Projected ADT 24,000 max. Design speed of 50 mph Stopping Sight Distance: 440 feet	32 feet total with 14 ft median	94 feet (including median and 8 feet in width sidewalks; emergency parking only). Sidewalk may be eliminated by approval of road and planning commissioners.
B-3 Secondary Industrial and Commercial	Secondary (with approval only) Projected ADT 20,000 Design speed of 40 mph Stopping Sight Distance: 300 feet	64 feet total Flood free width: 28 feet	80 feet (including 8 feet width sidewalk, no median required).
	Major commercial or industrial Projected ADT 20,000 Design speed of 40 mph Stopping Sight Distance: 300 feet	64 feet total Flood free width=28 feet	80 feet (including 8 feet width sidewalk, no median required).
B-5 Urban Residential Roads	Collector Design speed of 50 mph Stopping Sight Distance: 200 feet	40 feet total	53 feet Sidewalks of 5 feet width required. Instead of ADT, road "traffic index" tiered on # lots served.

*ADT is Average Daily Traffic in 20 years

Note: Each plate is accompanied by notes that include further stipulations, exceptions and approvals from the planning director.

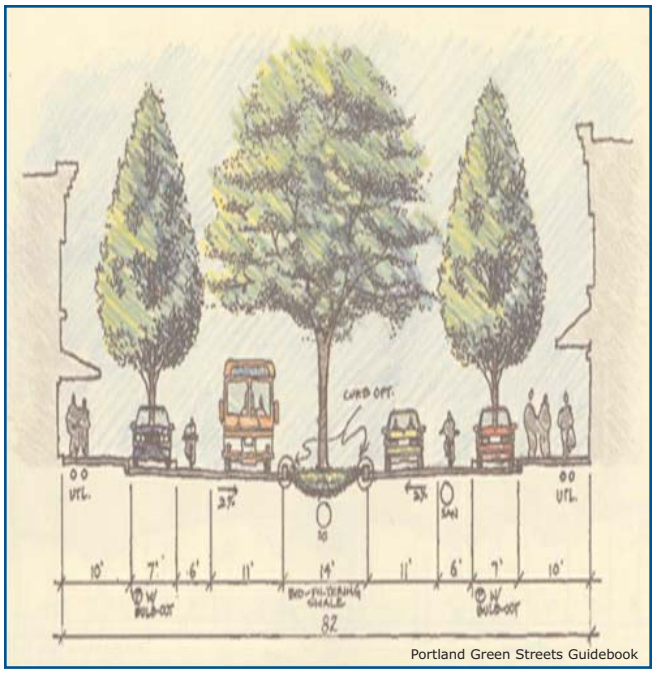
or "complete" streets program. Given the recent wildfires in Southern California, the tension between narrow streets and emergency response will likely continue.

Local street design is also highly influenced by county standards, which have been adopted in part or whole by several cities. The Ventura County Road Standards prescribe minimum standards for public roads or roads to be dedicated to the County.

The standards contain required road geometries in a series of illustrated plates. Road geometry is not only the lane width, but the entire hardened right-of-way. The requirements are based on the common road classification system, which relies on "Average Daily Traffic," or ADT, to set the dimensions of roads and supporting hardscape (shoulders, sidewalks).

The information in the table (above) raises several important issues related to watershed management. First, the sheer amount of land needed for the transportation system is large. Second, the street and road standards are based on safety in the form of movement, sight distance and emergency response. As such, watershed needs to reduce impervious cover may appear to be pitted against safety and response time.

A third significant detail for watershed management is how the environmental review is likely



This cross section shows how land can be allocated to not only auto travel, but pedestrians, stormwater management and support for homes and businesses facing the street.

to be handled under any future NPDES permit. For example, a new "green" project on the fringe may appear to be watershed-friendly within its own boundaries (with shorter roadways and no shoulders). However, the new roads (or expansion of an existing rural road) to reach the development would not likely occur absent the development proposal.

This induced impact is not recognized, and instead must be incorporated into the Department of Transportation's budget for stormwater management. Impact fees may cover some of this increase, though Ventura County may want to revisit the totality of costs.

Within municipal zoning codes, most cities have a separate section on "Streets." As an example, the City of Thousand Oak's Road Standards, which govern streets, layout and landscaping, include the following requirements.

- Primary Road (at least 55 mph) – 108 feet Right of Way, 14 feet median, 4 lanes at 22 feet each, 8 foot sidewalk.
- Secondary Road (at least 40 mph), 84 feet Right of Way, no median, 4 lanes at 16 feet

Toolbox of Alternative Paving Options

Pervious Asphalt and Concrete: Pervious asphalt and concrete are similar materials that are evolving to meet a growing number of uses. Though they cannot bear the same loads, these materials look and act like normal pavement, except that they have tiny voids allowing infiltration. They can be used for parking stalls, walkways and along highway shoulders.

The surface areas do need to be cleaned two to four times a year to avoid clogging. However, research has found that even when clogged, pervious asphalt and concrete will infiltrate at rates near to or faster than most sands and soils.

Turf Block: Turf block consists of a patchwork of turf interlaid within a precast latticework that provides structural integrity to support pedestrian and vehicular traffic. Open cells between a plastic lattice-structure are filled with a soil medium and seeded with grass. Water is able to pass through the resulting surface, which is quite literally a "green" hardscape.

Maintenance requirements include mowing, fertilization and irrigation. Porous turf is especially effective for overflow parking and emergency vehicle access.

Gravel Pavers: Gravel pavers are similar to turf block pavers in that they use a geometric support structure to keep the gravel in place and provide additional structural support. Most plastic geocell material is flexible so it can adapt well to shrink/swell soils and during freeze and thaw periods.

Stone or Block Pavers: Stone or block pavers are solid units of concrete, brick or stone laid side by side. They can bear traffic loads and are shaped to produce openings that are filled with porous aggregate or turf that allows for infiltration of stormwater.

Chicago launched a green alleys program to both test and install stormwater-friendly materials.The city chose light-colored pavement to reduce urban heat island effect.

each, 4 feet sidewalk with 6 feet wide setback.

- Minor Road (at least 25 mph), 52 feet Right of Way, no median, 2 lanes at 16 feet each, 4 feet sidewalk with 6 feet wide setback.

The City of Ventura's Street Code has language on inadequate street widths that reveals the tension related to "skinny streets," for traffic calming and stormwater management.

"The existence of inadequate street widths and inadequate improvements in the street right-of-way adjoining buildings, dwellings and other structures within the city, and the lack of adequate sidewalks, curbs, or gutters, is hereby found and declared to be dangerous to the public health, safety and welfare of the inhabitants of the city." (Section 18.010.010, Division 18. Streets and Other Ways)

This code language could be used to oppose narrow streets or even "Green Street" retrofits due to the focus on conventional design with curb and gutter.

Materials Allowed for Transportation-Related Infrastructure

Permeable paving is gaining attention for stormwater management, but porous asphalt has been used on California roads, mainly to prevent "splash-up," since the 1930s. Today, there are a growing number of alternative paving materials that can be used to minimize the impacts of hardscape in the built environment, but this is yet another area where local codes need to be updated to enable broader application of these methods.

Permeable paving comes in several varieties:

- Paving Materials – Permeable asphalt and concrete show promise for new construction and parking lot rehabilitation. Most codes require that paving materials support a certain size vehicle, for example, a 20-ton vehicle during a 20-year rainstorm event.
- Pavers – Pavers, typically brick or concrete block, allow water to seep between gaps. Pavers come in several varieties described below.
- Grassy parking and driveways – Designs for overflow parking and fire access are kept in turf to serve as landscaping the majority of time. Some codes around the country require that excess parking be left as a "grassy refuge" until the property owner demonstrates that conversion to paved parking is needed.

While the number of options for alternative paving grows, policy impediments persist. For the most part, the materials and design are governed by a series of standards. The California Department of Transportation

This small filter strip in Filmore is designed to slow and treat some of the runoff coming from the adjacent parking lot before it enters the storm drain.

Highway Design Manual (HDM) is an overarching regulatory manual that is translated into City and County road design manuals. The physical strength of roads is a key driver, as is the expected level of traffic (Traffic Index). Caltrans also issues Pavement Guidance, which is updated on a regular basis. Beyond the discussion in this review, a separate standards review of the HDM will likely be needed to eliminate barriers to widespread use of better road, access and parking materials.

As noted above, the Ventura County Fire Protection District's Codes and Ordinances limit paving materials to asphalt and concrete in travel lanes. Standard 14.6.9 on Alternative Pavers: "Alternate surface pavers are allowed on a limited case by case basis only. It must be approved by the Fire Prevention Bureau and comply with all the requirements of this standard. Typical applications may include surfacing near protected trees or limited access areas. Use of pavers is not intended for daily traffic areas."

The code goes further to stipulate that no vegetation is allowed between pavers in driveways and turnarounds, though gravel and non-vegetative filler can be used.

This language limits the use of green techniques for roads, access and parking. It means that wider use of LID techniques may have to first go through the Fire District, not only for street widths, but materials and testing as well.

"Materials shall be tested in accordance with the test methods required by the 'Standard Land Development Specifications,' as well as those supplementary test methods required by the DPW." (Section 3 – Materials Testing, "Test Methods and Reports")

The significance is that as new technologies come on line, communities in Ventura County may find that the "Standard Land Development Specifications" limit alternative/permeable pavement options if test methods are not updated.

Slope is another important factor when evaluating whether pervious paving materials would suit a site. In general, pervious surfaces are not effective when the surface grade exceeds 5%, since water will flow from the surface before infiltration takes place.

This catchment drain illustrates how to render a site's impervious cover "ineffective." The drain intercepts water that would other wise flow into the street, directing flow into planters.

Retrofits and Funding

Funding for stormwater management is somewhat in flux. Proposition 218[2] presumably did not include stormwater fees, although work continues to define at least certain runoff fees as "regulatory fees." In communities that do not get voter approval to fund a dedicated stormwater district, other funding streams are needed.

Many local governments have established a Gas Tax Street Improvement Fund, which allows use of gas taxes for a variety of street construction, maintenance and improvements on public highways and streets. This provides an opportunity for financing stormwater improvements. In 2004, the State Comptroller's Office issued Guidelines Relating to Gas Tax Expenditures for Cities and Counties to describe how funds collected for vehicles and gas may be used.

Under California law, fuel taxes are allowed for "research, planning, construction, improvement, maintenance, and operation of public streets and highways (and their related public facilities for nonmotorized traffic), including the mitigation of their environmental effects, the payment for property taken or damaged for such purposes, and the administrative costs necessarily incurred in the foregoing purposes."

The guide further specifies the types of activities that may be undertaken, which include:

- Reseeding and resodding shoulders and approaches.
- Reshaping drainage channels and side slopes.
- Restoring erosion controls.
- Cleaning culverts and drains.
- Mowing, tree trimming, and watering within the street right-of-way.
- Replacing topsoil, sod, shrubs, trees and irrigation facilities.
- Repairing curb, gutter, rip-rap, underdrain, culverts and drains.

However, the guide's list of fundable activities appears to be limited to conventional curb and gutter approaches, making it unclear whether "green streets" programs can be supported using gas tax funding. This funding question requires attention to address provisions in stormwater permits and Total Maximum Daily Load (TMDL) implementation plans. The requirements for natural and green drainage cannot be implemented if the underlying funding sources appear to limit the list of allowable costs to conventional, structural "grey infrastructure" practices.

The County and cities should ask the State to clarify or amend key street and highway funding programs to allow the wider range of green infrastructure. Each municipality should also examine its own tax code to see how street retrofits are classified.

For example, the City of Oxnard's tax code notes: "All monies received by the city from the State under the provisions of the vehicle motor tax for the acquisition of real property or interests therein or for the construction, maintenance or improvement of streets or highways other than State highways shall be paid into the special gas tax street improvement fund." (Chapter 13 – Article V. Water and Street Funds)

Under a future scenario, for example, Oxnard could amend definitions to include green streets-type retrofits as a type of improvement. Gas tax money could easily be used for stormwater improvements, which could also be used in reporting compliance with stormwater permits and possibly TMDL implementation plans and flood control.

Inclusion of Multiple Modes

Enabling multiple modes of transportation is part of reducing auto-oriented design and the overall transportation footprint (streets, highways, parking) associated with local and regional land use patterns. Reducing auto travel is also linked to reducing impacts of atmospheric deposition of auto emissions, brake wear and oil deposits. Atmospheric deposition of nitrogen is listed as a pollutant source in the Santa Clara River TMDL for nitrogen compounds.[3]

Ventura County municipalities all support walkability, transit and bike travel, yet each of these alternative modes has struggled to gain broader use.

The Ventura County Transportation Commission (VCTC) prepares the Congestion Management Plan (CMP) for the county. It includes state-mandated elements for trip reduction and transportation demand management that promote carpools, vanpools, transit, bicycles, walking, park-and-ride lots, improvement in the balance between jobs and housing, and other strategies, including flexible work hours, telecommuting and parking management programs.

The Transportation Demand Management (TDM) or Trip Reduction section of a code typically includes standard language for information kiosks (to provide maps, dial-a-ride, carpool sign-up and transit information) carpool/vanpool parking, bicycle facilities, and transit improvements (such as bus shelters).

Missed LID opportunity: Street planters such as this bulbout are being used for traffic calming and can also be designed to capture runoff. Green streets programs should be coordinated with other "complete street" programs that support safe, walkable streets rather than being though of as a separate effort.

Some code language related to TDM will also specify sidewalk and pedestrian linkages both internal and external to a project.

Santa Paula's Transportation Demand Management code includes the following requirements for non-residential projects with 150 or more employees:

"Development design must incorporate, to the extent feasible, showers, changing rooms, lockers, and the like, for employees who bicycle, jog or walk to work. Projects that are required to construct showers are exempt from the conditional use permit requirements of §16.15.060 (Bathing and Showering Facilities) of this Title 16.

Development design must incorporate lunchrooms, cafeterias, eating establishments, and other facilities that will reduce the need for mid-day driving.

Summary of Code Challenges

- The over-design of streets and roads, which has been written into Highway Standards over many decades, persists in adopted manuals, standards and codes. This over-design is often presented in terms of safety, which may seem to pit environmental objectives against accident prevention. Many of the cross sections and plates within the standards are outdated.
- Code language on access and connectivity may meet technical requirements, but fall short on meeting trip and travel needs.
- Preferred materials (pavers) seem to be the exception rather than rule, which adds time to the approval process.
- Approval of new technology is time consuming and is left to champions (rather than part of a larger effort to obtain approval for larger scale adoption).

Summary of Code Opportunities

- Ventura County can elevate the need to fast-track testing and approval of new materials and standards to achieve permit compliance and water quality improvement.
- In advance of the permit, Ventura County and its cities can clarify use of existing funding stream for retrofits and "green streets."
- Ventura can adopt new language on connectivity and access to ensure roads, streets and trails link trips and activity centers.

Development design must incorporate, to the greatest extent feasible, interconnected circulation systems, such as joined parking lots, to reduce the need for cars to travel on the street when traveling from one business to another." (Section 16.108.030 Transportation Demand and Trip Reduction Measures)

Under Camarillo's subdivision rules, projects that are 100 acres or larger, create 200 or more dwelling units, or at the Planning Commission's discretion, are required to dedicate land for transit stop and amenities. (Camarillo Land Development Standards, 18.10.130 Dedication of land for transit facilities)

Conclusion

Streets are often referred to as the "DNA" of a community because the road system dictates the relationships among buildings, public facilities, parks and neighboring areas. In watershed terms, this DNA also influences the overall development footprint. An extended, dispersed street system will result in far more land disturbance and street-related impervious cover than will an interconnected network designed to support compact development in urban, urbanizing and rural areas.

The current system of standards and specifications was developed when land consumption was less of an issue. Priorities for safety, expansion and land development outweighed the issues emerging now: decline in source water, increases in flooding, loss of mobility and inflated costs to repair, maintain and police an extended system.

Ventura County and its cities have begun addressing street design in Master and Specific plans, include language on access, support for multiple modes of travel and directions on linking land uses and the transportation system design. However, there is some opportunity to work within existing codes to introduce mobility and access.

Finally, significant progress on transportation-related infrastructure can only be addressed at the state and national levels. Investment for larger mobility improvements, as well as larger scale stormwater retrofits will ultimately be needed.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 162.

9. Parking and Loading

The literature on parking and its impact on the built and natural environments has grown substantially over the past decade. Parking and the policies that affect it have enormous impacts on the form and function of the built environment. One study suggests that parking policies are in large part responsible for the differing urban forms of Los Angeles and San Francisco.[1]

The connection to water is clear – parking makes up an enormous proportion of connected, impervious cover in a community. Likewise, excess parking tends to feed into a larger development cycle related to auto travel. Where the automobile is the dominant or sole means of travel, the pressure to supply abundant parking increases. Tom Schueler, founder of the Center for Watershed Protection, estimates there are 10 parking spaces for each car in urban and urbanizing areas.[2] As parking lot size increases, so does the overall development footprint, decreasing the potential for walkability.

Like streets, there are two watershed-related aspects to parking impacts: (1) the overall design, and (2) the materials used. Both are important, since even "green" parking can reduce hydrologic function when parking replaces forest cover. Because road standards also require Portland cement or asphalt driveways and access roads, oversupply of parking leads to increased impervious cover.

Several zoning parameters determine the overall parking footprint.

Minimum numbers of parking spaces – Parking standards are typically estimated using the Institute for Transportation Engineers Parking Generation Manual. This manual is under criticism for overstating the number of spaces needed, since the data sets are small and often collected in auto-only locales. The formulas used to determine the amount of parking required for a project are typically based on project size and establish a minimum number spaces, which means a developer can opt to provide more spaces, but not fewer (though some cities are instituting parking maxima as an upper bound).

Minimum parking space size – Minimum parking space footprints are typically 20 feet by 8 feet to 20 feet by 10 feet (or an equivalent area for angled parking). Compact spaces are a little smaller. The maximum amount of space a municipal code allows for compact spaces varies, from 15% to 30% of the parking lot.

Rounding up – Most codes require that any fractional computations be rounded up to the next whole number. In some instances, cities allow "rounding down" if the fraction is less than 0.5.

Shared use of parking spaces – There are two types of parking in this category: joint use and shared use. Some codes specify when joint and shared uses are allowed, though most codes require the same number of spaces as if sharing were not undertaken.

Parking spaces and redevelopment – Most codes require that significant redevelopment and some remodeling bring parking "up to code." Where the original development was built under smaller standards, the new requirements may leave less room for economic or residential activity. The increased requirement in code is typically insensitive to whether the additional spaces are needed or may have the effect of stifling redevelopment.

Prohibition of parking in required setbacks – Within the bulk regulations, a code will indicate whether parking is allowed in required setbacks. Prohibitions on parking in setbacks will inflate the size of the parcel needed.

Disincentives to lower parking ratios – Provision of parking is generally subsumed into construction and operation budgets, which suppress price signals. There are also usually no incentives to study over-parking, and thus no feedback loop to better manage the built environment. Finally, many financiers of development projects require over-supply of parking as a perceived cushion of risk.

Location of parking on lots – Codes and retail operations work together to place almost all parking in the front of buildings. This draws retail away from the sidewalk.

Circulation within parking lots – Codes present several requirements related to circulation and loading. In short, codes tend to require that any activity related to the site's operation be handled completely within the site. This serves to enlarge the size of a parcel, for example, to accommodate room for maneuvering. In older downtowns, alleys were used, or deliveries were allowed from the street.

Parking for recreational vehicles – Parking for recreational vehicles (RVs) are often contained twice in codes: once in parking requirements, and a second time within allowable uses since RV parking and storage is a growing commercial business. RV parking spaces can be quite large: up to 40 x 10 feet plus room for maneuvering.

The result of these policies (and others) is that parking has become one of the most visible aspects of the developed landscape. How one views this result depends on one's perspective. From the watershed or livable community standpoint, parking is ubiquitous, there is too much, and it is a stain on our communities and environment. However, if you ask tenants or property managers for commercial shopping centers, they will tell you that they need more parking, not less. A more nuanced perspective suggests that both observations are true. Many areas suffer from a parking imbalance – too much in some areas and not enough in others. Moreover, excess parking is not simply the result of parking policies, but of other aspects of modern conventional codes and land planning that drive auto-oriented design.

To date, stormwater management efforts have focused less on the overall parking footprint, and more on mitigating the impacts of parking lots through alternative materials and landscaping requirements. A comprehensive approach will require both, which will require planners to review and revise codes related to:

- Reducing the overall parking footprint – determining how parking provision is handled in the planning process; the efficiency of the parking footprint; whether code language allows or streamlines provision of fewer spaces or shared/joint spaces and; how/whether structured parking is treated to supply demand.
- Using pervious paving materials, methods and landscaping – whether pervious materials can be used; whether/how overflow parking is handled.
- Using landscaped areas for bioretention – whether code allows use of landscaped areas for bioretention, whether code language will impede meeting performance requirements on stormwater management with landscaped islands and areas.

Reducing the Overall Footprint of Parking within Zoning Codes

Planning for Parking

Interest in parking is beginning to cross over from the retail and commercial sectors into stormwater management.

One of the most successful strategies in reducing the footprint of parking occurs with the coordination of parking at the supra-site level. The City of Ventura has a parking overlay zone to orchestrate and maximize use of existing parking, public parking and on-street parking. In most cases, planning for more strategic, functional and efficient parking needs to take

place along with a more general assessment of existing parking requirements for different types of development.

Parking Requirements for Commercial and Residential Areas

Because minimum parking standards are seen as engines of excess impervious cover, the code review focused on several aspects of parking supply for various uses. In particular, the code review compared parking requirements across jurisdictions and their role in the built environment. The table below includes some examples.

Requirements for smaller units in multi-family residential projects provide a good vantage point to get a watershed view of parking. As a rule of thumb, each parking space (plus drive aisles and access) requires approximately 300 square feet if supplied in a surface parking lot. For a 600 square-foot studio apartment, a 1.5 parking space minimum requires close to 450 square feet of land for auto habitat. The parking for accessory units is also interesting, ranging from minimal requirements for one off-street space to the requirement for two garaged spaces for each unit greater than 800 square feet.

In some codes, the provisions for RV parking are quite large, even when RV parking is an allowable use in the code for RV storage companies. Camarillo requires space for a RV in single-family and duplex zones, as well as one

Sample Ventura County Minimum Parking Standards

CITY	RESIDENTIAL PARKING	COMMERCIAL - GENERAL PARKING
Camarillo	Residential (SFH and duplex) = 2 enclosed spaces/unit and space for RV. Residential (TH and cluster) = 2 enclosed/unit; 1 RV space/5 units; 1 guest space/5 units Residential (multi-several buildings) = Single/Efficiency: 1.5/unit 1 BR: 1.5/unit 2 BR: 2/unit 3 BR: 2.5/unit and 1 RV space/5 units; 1 guest space/5 units	Retail: 1 space/250 sq ft Office: 1 space/250 sq ft (gross)
	NOTES: 1 space/unit for residential senior housing. City may increase by 50% or adjust downward. Land must be banked for future parking in case of conversion. Camarillo allows for increased surface coverage for commercial buildings if underground or tuck-under parking is provided. Special parking rules apply to "Camarillo Old Town."	
Fillmore	Residential (SFH) = 2 spaces within a garage Duplex = 2 spaces (garage); 1 guest space (uncovered) per 3 units "Granny flat" = 2 covered/carport spaces for >800 sq ft	Retail/Service/Commercial 1 space/250 sq ft gfa Office = 1 space/300 sq ft gfa Shopping Centers (CH) 10,000-30,000 = 1/225 sq ft gfa 30,000-50,000 = 1/200 sq ft gfa >50,000 = 1/175 sq ft gfa Note: There are special rules for CBD.
Moorpark	SFH and Duplex (R-1 and R-2) = 2 garage spaces for du ≤ 2,800 sq ft. 3 garage spaces for du > 2,800 sq ft.	Retail & Office – 1/300 sq ft Shopping Centers >25,000: 1/250 sq ft)

Notes: City code allows reductions in the number of parking spaces required if such requirements are demonstrated to be excessive (e.g., senior housing).

This multistoried garage reduces the amount of impervious cover for parking.

This parking lot is covered with 100% pervious materials.

RV space per 5 units in multi-family housing. Moreover, the code specifies that each RV space have dimensions of 40 x 10 feet. (Camarillo – 19.44.030 Residential, section (G))

Large loading bay requirements also add to the space needed. Most codes require parking for individual uses, and thus rule out shared loading.

Shared and Joint Parking

Shared parking refers to use of a parking area by two or more uses with non-competing hours of operation. Joint parking refers to two or more buildings using the same parking facilities.

Most cities allow shared parking and joint parking, but common code language still requires the same number of spaces, meaning there is little incentive to enter into shared and joint parking arrangements. However, most cities in Ventura County allow a reduction subject to review. For example, Fillmore's shared use code allows adjoining uses with substantially different hours to enter joint parking arrangements.

Structured Parking

Structured parking refers to either multi-level parking decks or underground parking. Structured parking reduces the impervious cover related to parking by reducing the overall footprint of parking. Camarillo has a code provision that allows an increase in building site coverage for underground parking in commercial districts, which is somewhat of an incentive to underground parking with larger buildings.

Camarillo also has language to limit restricting parking: "Where multiple uses are provided, this title provides a parking standard to satisfy the individual and cumulative needs of that complex and is intended to provide the minimum number of parking spaces necessary to serve the various uses. If parking area is reserved or restricted to a particular use, that reservation or restriction is in conflict with the intent of the parking provisions to satisfy the overall needs for a center or complex unless that parking is strictly limited to a period of time and not to a particular use. Such a limitation shall require the city approval prior to such installation."

Reserved parking takes spaces out of the collective "pool" and increases the pressure to supply more parking. Reserved parking spaces are typically established within leases to guarantee a minimal supply of parking to the individual lessee. Parking may be reserved at different times of the day based on considerations such as deliveries, routine maintenance or peak hours of operations. These are valid considerations, but apply pressure to supply more spaces than are needed.

Allowances for Reductions

Many cities, including those located in Ventura County, are beginning to use code language to reduce excess parking. In general, parking space requirements are reduced in circumstances where:

This lower cost method of structured parking doubles the parking capacity with no addition in impervious cover.

- On-street or public parking is available.
- Car trips are reduced by way of transit, carpooling, or a high degree of bicycle and walking trip-making.
- Planning efforts identify and make use of shared or joint parking.

Oxnard provides a variance for parking space reductions in certain areas for nonresidential projects "so that some or all of the required parking spaces are located off-site, or so that in-lieu fees or facilities are provided instead of the required parking spaces. The variance is intended to (1) provide an incentive to, and a benefit for, the project; and (2) facilitate access to the project by patrons of public transit."

This second point provides a double benefit for the watershed – efficient parking and support for transit.

Addressing Other Challenges in Parking Formulas

There are other code parameters that can affect parking requirements. One is through rounding when the calculation for off-street parking results in a fraction. Conventional practice dictates rounding up to the next whole number when the parking space calculation yields a fraction. The following language is typical: "When the computation of the number of off-street parking spaces required by this section results in a fractional parking space requirement, any fraction less than 1/2 may be disregarded, and any fraction equaling 1/2 or more shall be construed as requiring one full parking space."

A related challenge is the accounting of floor area for a project that does not contribute to its parking demand, but is still included in parking formulas.

The City of Ventura allows developers to deduct stairwells and mechanical rooms from the calculations of square footage, since these systems are not associated with the type of space that might generate auto trips.

No off-street parking spaces are required for floor area exclusively used and maintained for elevators, stairways, restrooms, unstaffed electrical or mechanical equipment rooms, and employee only kitchens, lunchrooms, exercise or locker rooms. Likewise, the square footage of carports and garages are not fed into the parking requirement. (Section 24.415.020. General parking space requirements)

Financial Incentives and Disincentives

Several cities expressly prohibit charges for any parking required under code, thus removing a market-based instrument for managing the environmental impacts of parking. For example, Moorpark's code reads: "Charging a fee for the use of a required off-street parking space in conjunction with a permitted or conditional use is prohibited." (Parking Chapter 17.32.010. General provisions)

Parking and Redevelopment

Redevelopment can trigger new parking code requirements. In general, parking code and parking space requirements tend to increase over time. As such, redevelopment often triggers increasing the number of spaces, even when floor space is held constant. Moreover, some codes require an increase in parking with not only redevelopment, but substantial remodeling.

Several cities require that any increase in intensity of a use (for example 25% or more) triggers updated parking rules. Discontinuance of a use for 6 months or more can also trigger updated parking rules. Cities are beginning to

Summary of Code Challenges

- Most codes include minimum levels of parking required based on standards, which are already thought to inflate parking space needs.
- Almost all codes limit the materials used for parking to impervious pavement. (e.g., Portland cement or asphalt)
- "Landscaping in Parking" code requires landscaping to be contained in continuous, elevated (6 inches) concrete curbing.
- Codes are intended to direct site requirements one site at a time. As such, uncoordinated planning circumvents the ability to design-in shared parking and loading.
- Redevelopment can trigger new (and typically larger) parking ratios, even when parking is adequately supplied under older standards.

Summary of Code Opportunities

- Because parking is such an easily quantified measure of impervious cover, activities that reduce parking spaces can be plugged into stormwater performance reporting.
- Parking studies provide a finer look into parking/loading supply and need.
- Ventura County and its cities have planning efforts underway that include flexibility on parking allotment. There are several "quick fixes" that can help reduce the stormwater impacts of parking: use of on-street parking, improved shared parking, elimination of parking charge prohibitions, calculation of parking ratios, and new language on landscaping in parking.

fine-tune parking policies by developing parking districts, customized parking for specific area plans, and ensuring that parking cannot be a sole reason for nonconformity (the term used when a structure does not meet current code).

Commercial loading requirements can also pose barriers to redevelopment outside of special planning districts. In older downtowns, shared loading took place in alleys or with sidewalk loading. Modern codes require dedicated and sometimes enclosed loading bays with minimum dimensions for the bay and access. Moreover, requirements are established for each individual use; even where shared loading is possible, minimum requirements must be met. Finally, codes can require that delivery vehicles be able to maneuver entirely within site boundaries. While this requirement is intended to decrease conflicts in the public right of way, that maneuver space adds to the space needed on site.

Use of alternative paving materials and methods

As noted in the discussion on streets and street design, several codes (Ventura Fire Protection District and Ventura County) mandate the use of Portland cement or asphalt for roads, parking lots and driveways. This presents an obvious barrier for the use of alternative materials.

Most codes also specify conventional, conveyance practices for runoff from parking. The following language from Thousand Oaks' code is common: "Parking and circulation areas shall be designed with an adequate drainage system, and improvements shall consist of two (2) foot wide concrete gutters, subsurface drains, and other appropriate drainage devices as determined by the Public Works Director." (Section 9-3.606)

Code language directing islands and irrigation, combined with poor practices, creates runoff during dry weather.

Requirements for continuous elevated curbs surrounding landscaping in parking areas prevents the use of such areas for drainage. Small curb cuts or other designs can allow runoff to enter landscaped areas to slow and filter runoff.

Use of landscaped areas in parking for bioretention

As noted elsewhere in this review, one of the more apparent barriers to stormwater management in codes is the requirement for continuous, elevated landscaped islands. This may also be one of the easily remedied parts of code, though code writers will need to deal with wheel stops, which elevated curbs provide.

Planners and landscape architects should be aware that islands will not only need to take on some stormwater, but also meet performance standards on volume, treatment and rate of release. These islands may be part of a "treatment train" where a smaller portion of runoff from the roof is directed to islands.

Conclusion

The footprint of parking is influenced heavily within codes, but is also driven by market considerations, economic perceptions and attempts to build in a margin of safety to oversupply parking. As with other aspects of zoning codes, there is no magic wand that automatically waves in a new, lower number of spaces.

Rather, determining the right amount of spaces involves looking at a district, as well as individual projects. The district may hold on-street, public and overflow parking. Moreover, city and county policies also come into play on pricing, variances and economic development programming.

Nonetheless, several aspects of code can be revised in the near term to reduce land consumption or encourage more efficient use of land as redevelopment occurs. For the longer term, district level parking plans, even outside of a specific plan process, can help reveal parking options.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 170.

10. Watershed Planning through Compact District Design

A main finding of the code review is that development dispersion is generated when sites are treated as autonomous units. Each site is expected to supply its own parking, loading, landscaping and access. Conservative assumptions built into minimal parking codes, setbacks and circulation, add to the amount of land needed per project, which is then replicated across the built landscape.

Shrinking the footprint of the built environment rests on turning this concept on its head: each development or redevelopment parcel works in concert with other parcels for an efficient land development format. Reducing the impacts of development on the environment, in particular for urban and urbanizing areas, requires orchestration of development strategies:

▼ Reducing the environmental footprint of parking in plans and codes by:

- Forecasting parking needs within the district as a whole.
- Determining how use of on-street parking can boost supply.
- Instituting both minimum and maximum numbers of parking spaces.
- Organizing site plan and building arrangements to support shared parking.
- Designing safe, comfortable pathways to support parking.
- Developing model shared parking agreements.
- Designing parking lots to maximize use of pervious parking and pavers.

▼ Reducing the footprint of transportation-related imperviousness in codes and plans by:

- Optimizing shared access ways.
- Designing internal streets to relieve main roads of traffic and reduce the need to increase capacity on those roads.
- Keying the use mix to local tripmaking to reduce the length of trips, support combined trips and support non-auto tripmaking; and
- Determining where pervious pavement and pavers can be used.

▼ Reducing the environmental footprint of buildings through codes and plans by:

- Requiring that drainage and open space be planned first to optimize natural flows and preserve natural assets.
- Planning for shared mechanical systems, loading and trash pickup areas.
- Encouraging density and intensity as part of district planning in identified areas.
- Addressing parks, playgrounds and shared open space through a district plan to optimize the quality, distribution and variety of parks.
- Addressing several facets of economic development, including incentives, infrastructure, retail needs, housing and the like.
- Assembling the most effective BMPs for site and building design based on water quality and quantity objectives.
- Developing a plan on how to use "in lieu of" fees to the best advantage for stormwater, parks, schools and the like. Where possible, leverage the fees so that a park may also be designed to handle stormwater.

Successful coordination for compact development requires planning for these (and many

other) interlinking parts. Specific area plans, master plans and other coordinated planning efforts are the documents that orchestrate these parts at the district or regional levels. Once these are in place, additional site or project-specific strategies can be used to further improve community, environmental and economic performance.

There are several challenges to district-wide planning. First, most cities were zoned long ago under the system of separated zones. Even with the rising recognition of negative impacts, communities have strong legal ties to the current zoning system. Secondly, coordinating development for a less intrusive footprint necessarily involves sensitive topics of density, intensity, height and use mix. Even where there is broad buy-in for compact development, successful integration of the interlinking parts is still relatively new. Small details, such as pedestrian walkway design, way finding signs and even the location of doors for retail can make or break a project and, by extension, the larger planning area.

Even with these challenges, Ventura County and its cities have embraced and developed many area plans over the years, with continued advances over time. This section will review specific area planning, its components and highlights from Ventura plans. As with the previous chapter on zoning, the review will look at the plans "from the watershed's point of view," which will illuminate benefits and areas for improvement from a new angle.

This section looks at district or sub-area planning in three sections:

- Specific Area Planning.
- Downtown Plans.
- Language in individual codes that support sub-area facets of design.

SPECIFIC AREA PLANNING IN CALIFORNIA

Planning districts fall under several categories in California, based on a legal structure which revolves around the General Plan as follows:

General Plan – The General Plan is the overriding legal document that directs all manner of land development and conservation at the County, municipal, district and, eventually, site levels (via zoning). Within a city or county General Plan, there can be smaller area or general plans.

Planned Unit Developments – Once a planning innovation, PUDs were developed to coordinate site and infrastructure planning, typically within subdivisions. Specific Area and Master Plans are more prevalent today, though PUD language can still exist within codes and/or planning documents.

Specific Area Plans – Specific area plans act more like zoning districts than planning documents. Specific area plans, hence, will emulate code directives, though with different parameters. These parameters include special parking ratios, different zoning categories, street geometry and open space specifications. Specific area plans must still meet the letter and spirit of the General Plan for consistency with CEQA analysis, infrastructure and transportation. There are several types of specific area plans worth noting:

- Master Planned Communities – These are typically new development projects that go through a two-step, phased process. The process is tied to procedures within the Subdivision Map Act.
- Downtown Master Plans – Each city in Ventura County has embarked on redevelopment of older, historic areas. These areas were platted on a smaller footprint with buildings that have adapted over time. Infrastructure, parking and streetscape tend to play a dominant role in the planning process. With intensity already built in, these areas also tend to be home to new multi-family residential projects and mixed-use buildings.

Planning is one thing – aligning the regulatory program is quite another. For new development, new zoning is less complicated since site ownership and the underlying zoning are likely to be uniform. With redevelopment or land

assembly, the process can become more complicated. Cities often enter "development agreements" with developers to add certainty to the process. Zoning overlay zones are also used. Overlays are most successful where the new overlay provisions are mandatory, the overlay offers higher value zoning, or the process provides other incentives such as expedited permit review or incentives for infrastructure.

A Review of Select Plans

The primary findings of the Specific Area Plan review are:

- Ventura County and its cities are already using specific area plans to create more efficient development patterns, though often for economic development or transportation rather than explicit watershed protection.
- In general, the more recent plans incorporate planning techniques that are most effective in obtaining efficient design, ecological services, multi-modal transportation outcomes and use mix. Even with greener design, however, some plans pay more attention to building design rather than plan design.
- The economic development, community and environmental success of a plan depend on the overall treatment of the "interlinking parts" of district design. Some of the most important parts to get right are amount/

Select Specific Area Plans

CITY	PLAN	TYPE
Camarillo	Camarillo Commons	Mixed use district
	Camarillo Old Town	Downtown
	Camarillo Village Mixed Use District	Mixed Use District
Fillmore	North Fillmore Plan	New/Redevelopment
	Fillmore Central Business District	Downtown
	Business Park	Campus type commercial
Moorpark	Carlsberg Specific Plan	—
	Moorpark Highlands	—
	Downtown Specific Plan Amendment	Downtown
Oxnard	Oxnard Central Business District	Downtown
Simi Valley	Kadota Fig	Infill
Santa Paula	Downtown Plan	Downtown
	Adams Canyon	—
	Fagan Canyon	—
	East Areas 1& 2	Largely Residential
	South Mountain	—
	TAPO	Corridor Redevelopment
	LAAPO	Corridor Redevelopment
Thousand Oaks	See below	
Ventura	Downtown	Downtown
Unincorporated Ventura County	El Rio/Del Norte Area	—
	Lake Sherwood/Hidden Valley Area	—
	North Ventura Avenue Area	—
	Oak Park Area	—
	Ojai Valley Area	—
	Piru Area	Smart growth
	Saticoy Wells Area	Corridor Redevelopment
	Thousand Oaks Area	—

North Fillmore Specific Area Plan

location of parking, connections to the external community and transportation network, and management/tapering of heights.

North Fillmore Specific Area Plan

The North Fillmore Specific Area Plan (2006) is among the most recent, and is based on New Urbanist themes, designs and street layout. The plan area consists of a mix of redevelopment, infill and greenfields sites. The main features of the plan are:

- Providing connections within and to the existing downtown area to the south.
- Compatible design with the existing residential neighborhoods.
- A "green infrastructure approach" to stormwater management, transportation and parks.

Parking – The North Fillmore Plan emphasizes on-street and shared parking to a larger degree than other specific plans. This helps to efficiently supply parking, particularly parking for the athletic fields and public parks. The plan pays heed to diagonal parking as an efficient way to supply parking, which should also be viewed as watershed/stormwater strategy. Parking is regulated by zone rather than by standard formulae that apply everywhere (or are negotiated through a Conditional Use Permit).

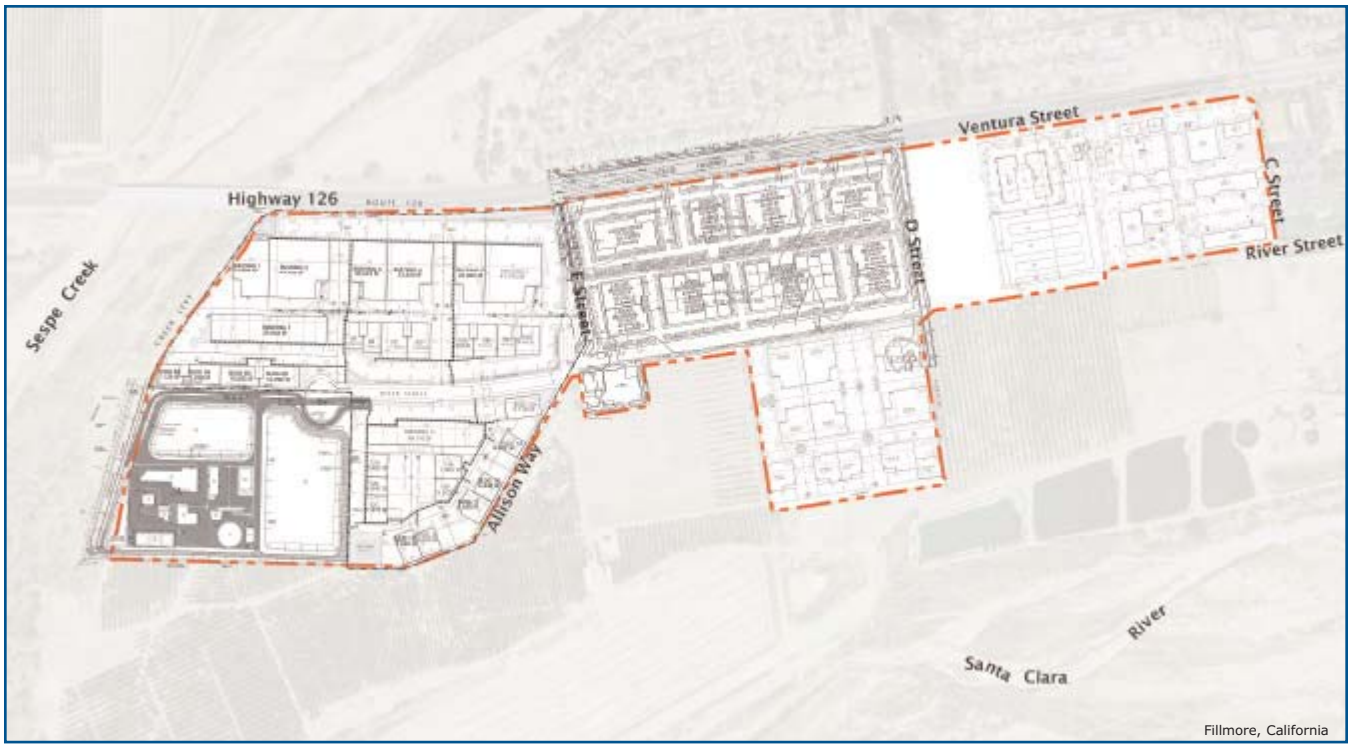
Drainage – From a watershed planning perspective, this plan represents the evolution of site and district planning for restoration and stormwater management, in particular the design of public infrastructure and streets. Natural drainage was mapped out first, and the rest of the site plan was designed around these natural flows.

The North Fillmore Plan generated controversy based on the density, the amount of housing and whether the development fit within the overall jobs/housing balance. The plan was subject to a referendum in 2007, which resulted in modification of the plan.

Fillmore Business Park Plan

Fillmore has also recently adopted the updated Fillmore Business Park Plan (2008) to provide a 90-acre campus district for business and commercial ventures.

The purpose of this district is to provide an area where commercial and industrial firms can locate with assurance of a high level of design quality, open space, environmental protection and site amenities. The regulations have been written to "promote efficient use of land, provide open space, and insure quality construction." The height standards and bulk may be adjusted, and retail uses are allowed.



Fillmore Business Park

The updated plan supports, but does not guarantee, a district that combines the best of land use and water planning. Among some of the elements and possible improvements:

Pedestrian Orientation and Site Design – The plan includes extensive language on pedestrian access, infrastructure and connections. The plan calls for buildings to be clustered to facilitate pedestrian travel and connections both within the project and to adjacent properties.

Suggested Improvements – In the final design, clustering within the site may not be as important as clustering in relationship to adjacent properties and the linkage to downtown. In addition, the plan calls for "meandering" sidewalks. While this could help break up the streetscape, directness of route, one of the most important aspects of pedestrian infrastructure, will be weakened. In areas where pedestrian travel is for leisure, meandering paths are desired. However, where sidewalks and paths are part of everyday tripmaking and travel time is important, shortening walk distances rises in importance.

Parking – Language in the plan refers to distributing parking in smaller clusters so that lots are not a dominant part of the landscape. In addition, the plan calls for heavy landscaping of parking areas, and pedestrian walkways through lots. There is also strong language from Fillmore's code on shared parking among sites internal and external to the site.

Suggested Improvements – Fillmore should look for the ability to lower the overall number of spaces. While there is language on shared parking, there is no follow-on language to obtain the benefits of shared parking: fewer surfaces devoted to parking. There is also no language on use of pervious pavement or pavers or other strategies to manage parking lot runoff.

Landscaping – The plan features heavy landscaping, which will benefit from water recycling on the site.

Suggested Improvements – Even with water recycling, the reuse of stormwater will need to be integrated once the permit language is in effect. The landscaped setbacks are also a dominant feature on the site, perhaps too dominant. The setbacks, up to 20 feet in width, consume space and add distance. While this may be appropriate for the parkway, as site

plans are submitted, reviewers should scrutinize the setbacks in areas where pedestrian tripmaking is essential.

Transit – The plan includes renderings for transit ridership, and the site will be subject to an extensive Transportation Demand Management plan.

Suggested Improvements – Despite the language emphasizing pedestrian and transit use, the plan calls for coordination with VISTA after development commences to see if a stop is warranted. Given the fact that 1,500 to 3,000 jobs could be held on-site, the City should begin looking at stops early in site design to find the most advantageous sites. From the watershed's point of view, these travel improvements can be linked to housing in the area to further reduce the overall development footprint and impacts.

Simi Valley's Kadota Fig Neighborhood Plan

The Kadota Fig neighborhood in Simi Valley is characterized by large residential lot sizes, subdivision pattern, and the animal keeping allowed in this area. The semi-rural feel in some parts of the neighborhood contrasts with the overlap of the TAPO planning area, which is slated for a mix of uses and densities, including additional housing.

The Specific Area Plan addresses several opportunities and constraints:

- Many large vacant or underused lots, though under split ownership.
- Overlap with Redevelopment Project areas which open up additional incentives and tools.
- The ability to preserve a large portion of existing land uses and densities while introducing design controls at the edge of new development.

Unique to Kadota Fig is the use of "graduated density" to incentivize lot consolidation.[1] Whereas split ownership poses planning problems, lot consolidation increases the potential for amenities, density, and investments in a more coordinated fashion. The subject of lot consolidation will also be a factor with the new permit, since the coordination of stormwater management on a larger lot will be easier than assessing performance on individual smaller lots. Moreover, maintenance will likely be simplified under one owner.

Fillmore's Piru Smart Growth Plan

The 62-acre Piru Specific Plan was informed by a 2006 smart growth study and a community planning charrette. The community examined the additional residential development, and resulting impacts on rural identity and the strong agricultural economic base. The City needed additional affordable options, but also desired an enhanced tax base through the plan.

The environmental story within the Piru plan shows a subtle, yet important contrast with the North Fillmore Plan. The attention to affordable housing and locating housing close to town, like the Fillmore plan, helps direct housing to areas near jobs. The plan also looks at a use mix to complement the downtown area. The housing and use mix angle is not played up for its environmental role, but is a good example of reducing the development footprint through rural smart growth.

In contrast to the North Fillmore plan, the Piru plan's attention to parking and landscaping takes less advantage of environmental planning and site design techniques. For example, within the Piru plan, the following elements are presented.

Parking – The emphasis on parking is for "well landscaped" parking that acts as a "screen." Drainage in the plan refers to concrete swales. The plan calls for "enhanced parking," as an alternative to asphalt paving, but does not include language on use of environmental materials and techniques such as pavers. In addition, the plan has language on minimizing the length of parking lots for aesthetic reasons, though this could also be read as language to reduce the overall footprint.

Irrigation – While the language on irrigation recognizes water conservation (e.g., sensors, drip irrigation), the forthcoming stormwater

permit and Urban Landscaping Water Conservation rules are likely to push innovation in landscaping. In turn, local codes and specific area plan language will need to be fine-tuned to address changes in irrigation, landscape design, parking lots and use of stormwater for landscaping.

Camarillo Commons

The Camarillo Commons Specific plan area is a 55-acre area adjacent to Highway 101. The planning effort was initiated in 2005 and included extensive public participation for the redesign of the area, as well as an "Opportunities and Constraints" plan to ascertain market potential.

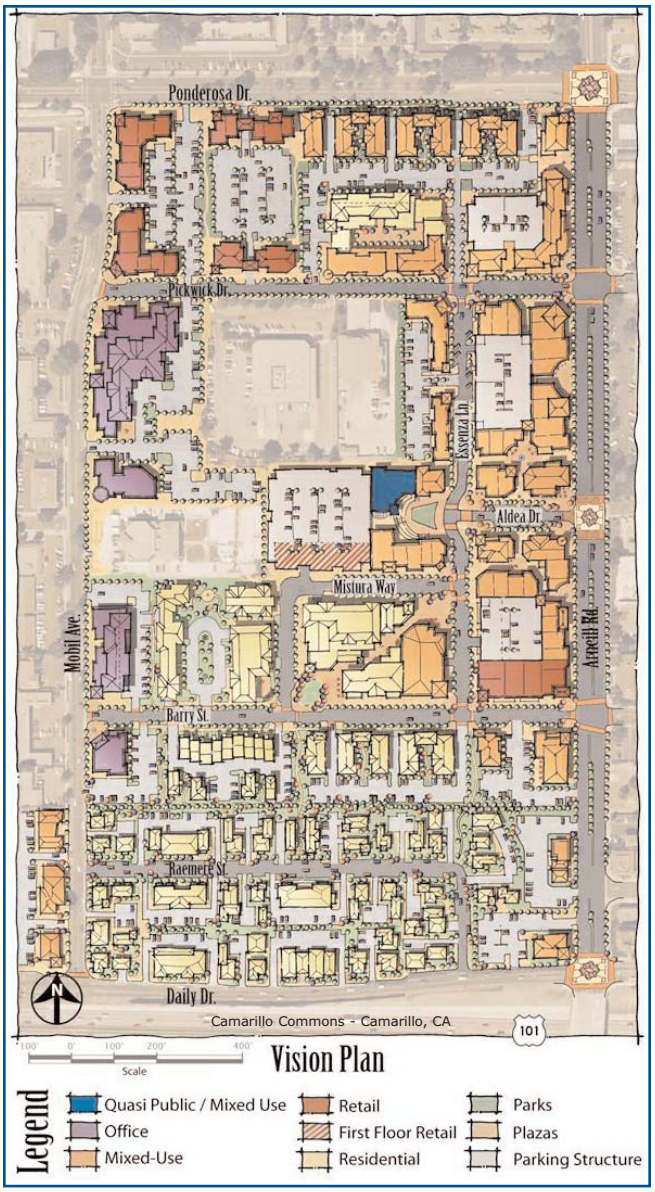
The build out envisioned under the approved 2007 Plan calls for up to 470,000 square feet of commercial development with over 500 units of residential. The plan area contains the older Ponderosa Mall, which is ripe for redevelopment and integration with existing residential areas and Camarillo Old Town.

Camarillo has an annual cap of 400 new dwelling units per year; the City can transfer unused units to the next year, and affordable housing units are not subject to the cap. Thus, the plan acts to orchestrate this housing dynamic.

There are several aspects of the plan worth noting, as well as recommendations for improvement as site plans are developed:

Parking – The plan contains a comprehensive parking plan (page 62) with suggested parking ratios and circulation, which reflect lower than standard ratios for a variety of uses. There is also a section on parking structures and their treatment. The more interesting aspect of the parking plan is found in the market study. The study reviewed the feasibility parameters for multi-family housing. For each project, the study suggests the following:

- 4-8 acres per project (minimum).
- 2.25 parking spaces per dwelling unit = 135 to 180 spaces for residential (plans call for lower residential ratios).



Camarillo Commons, Arneill Road Section

- 4 spaces per 1,000 square feet (net) commercial = 100 to 160 spaces (plans call for 1/300 square feet net).
- Total of 235 to 340 spaces for each project.

Suggested Improvements – While the plans call for reduced parking overall, the market study bases its assumptions on conventional practices. Camarillo may encounter this "market-based" argument for more parking even as the plans call for more land efficiency. The City may need to become a shared parking broker for this and future specific planning areas and be prepared for requests for variances. In light of the forthcoming permit, the City may be able to defend

the lower ratios from an environmental permit angle.

Transit – The plan includes a reference to transit and its integration into future planning.

Suggested Improvements – Note that the Fillmore planning process explicitly referenced VISTA and existing transit. Given the site's location, attention to walkability, and urban layout, there are many options for location of transit stops.

Site Plan – The underlying theme of walkability and connectivity are among the strongest of any Specific Area plan. The plan itself is also easy to read and visual. The "At a Glance" pages are very instructive, in particular the maps showing the location and size of each planning category. The site plans also include provisions for both minimum and maximum site parameters such as setbacks and parking.

Suggested Improvements – This plan goes further than many others on compact design, and may suffer under the permit for its "effective impervious surface" area. Camarillo Commons demonstrates the watershed paradox of the permit. Within Ventura County, the Commons area presents a prime location to develop a higher-density node close to jobs on already-disturbed property where neighborhood buy-in was developed early on. Camarillo may want to pursue a master drainage study now to coordinate the planning area.

DOWNTOWN PLANS

Each city in Ventura County features downtown redevelopment planning by way of Downtown Redevelopment Programs and Districts. Most downtown districts are covered by a Downtown Master Plan and special zoning code (usually Central Business District, or CBD). Code elements in CBDs often focus on unique aspects of historic districts and redevelopment:

- Historic Preservation and remodeling standards including materials, façade details, windows and awnings.
- On-street parking.
- Signage.
- Structured, shared parking.
- Zero setbacks (or build-to lines).
- Regulation of first-floor uses.
- 100% building lot coverage.
- Uses on sidewalks.
- Affordable housing (including senior and farm worker housing).

The implementation of each plan is well underway, and the cities in Ventura County demonstrate some of the best examples of redevelopment, planning and shared public/private activity within older downtowns.

Ventura's Downtown Specific Plan

Ventura's Downtown Specific Plan was adopted in March of 2007. The plan was developed in conjunction with the 2005 General Plan amendments calling for partnerships, funding and area planning for several areas of town, notably the Downtown Plan. Like other cities in Ventura County, the Downtown Specific Plan emphasizes redevelopment, housing, walkability, historic preservation and economic development.

The City of Ventura includes language that breaks the mold on comprehensive and specific area planning goals:

1. Ventura's Unique Character: Preserve Ventura's special sense of place by insisting on high standards of architecture, urban design and landscaping so that new development complements the eclectic architecture and historic richness of our Downtown.
2. California's New Art City: Weave art and culture into the fabric of everyday life in Downtown through the growth and expansion of cultural institutions and by nurturing creative and artistic expression in the public realm.
3. Animating the Public Realm: Maintain and enhance public features such as parks, streetscapes and open spaces. Provide access to our natural areas, including the hillsides and Ventura River and re-connect Downtown to the ocean. Encourage development and events that activate the public realm.

4. Economic Vitality: Establish Downtown as a preferred place to work as well as live or visit. Ensure the future economic stability of Downtown by providing an active daytime workforce in offices and studios and by promoting successful retailing, tourism and the provision of high wage, high value jobs.
5. Housing Renaissance: Provide high quality, urban housing for a diverse range of income levels. Encourage efficient utilization of Downtown's limited land resources by promoting infill development.
6. Mobility: Create an integrated transportation system that effectively serves the Downtown area, making Downtown a place where people prefer to walk, bike or ride public transit rather than drive a car.
7. "Park Once" Management Strategy: Efficiently manage supply and demand for Downtown parking to accommodate visitor, commuter and resident parking needs.
8. Sustainable Infrastructure: Safeguard public health, safety and prosperity by providing and maintaining facilities that enable the community to live in balance with natural systems. Continue to ensure public services keep pace with new development in the Downtown.

The Downtown Parking Management Program consists of two major implementation strategies: Managing parking supply and managing parking demand through a "Park Once" policy.

The plan was tiered so that implementation is phased over time:

- Immediate Term: Adjust parking ratios to reflect the urban setting
- Near term (2007-08): Conduct a parking study to inform future actions and hire a firm to manage downtown parking.
- Medium Term (2008-11): Institute a Commercial Parking Benefit District, with proceeds from paid parking dedicated to improvements, institute a plan to "unbundle" parking costs from residential rents, offer parking cash-out and multi-modal parking planning. Institute parking pricing, including variable rate meters, as part of a parking pricing system.
- Long Term (2011 and beyond): Institute car-sharing, improve ongoing programs and fine-tune with results of studies.

PROVISIONS FOR AREA-WIDE PLANNING WITHIN MUNICIPAL CODES

Specific Area Planning can be resource- and time-intensive. However, there are code fixes that a city or county can adopt short of creating an entire plan to foster a smaller, more environmentally friendly development footprint. Two examples from Santa Paula are illustrative:

Santa Paula – Planned Development

One good example comes from Santa Paula's code, which includes a Planned Development (PD) district. This zoning district was developed with the explicit role of providing standards and a process where transition from high to low densities are needed.

"The PD overlay zone may be considered for use only in the following circumstances:

A. Where a property is proximate to public parks, public buildings, areas of public interest such as locations of natural beauty, of exceptional natural resources, and areas of historical significance;
B. Where a disparity exists between adjacent zones warranting special conditions to protect the more restricted zone; and/or
C. Where a new residential project or conversion of an existing residential use or uses proposes residential units on smaller lots than permitted in the zone but provides compensating open space and recreational facilities, provided overall density conforms to limits established in the Santa Paula General Plan." (Planned Development Zone, Chapter 16.31).

The significance of this language is twofold. First, Provision B allows specialized stipulations along the edges of neighborhoods. While the underlying zoning is maintained, the PD zone allows for specialized mitigation, such as controls for overflow parking. Secondly, this zone

allows for open space and natural resource protection. Thus, the PD zone may play a larger role once the draft permit becomes final. The PD zone could serve as a stormwater incentive overlay.

Santa Paula – Mixed Use

Santa Paula, as well as other cities, allows provisions for mixed use. An additional density bonus, in excess of the 25% basic bonus, can be approved for mixed use zoning if commercial, office or other land uses would be compatible with the housing project, as well as with the existing or planned development in the area. (Chapter 16.13, Division 7: Density Bonuses)

The significance of this language is the incentive, within code, to add commercial uses to existing residential areas. This may seem like a minor adjustment, but allows mixed use at the borders of Specific Area Planning areas where appropriate.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 184.

11. Stormwater Management in Codes

Ventura County and its cities already have code language related to stormwater management and/or stormwater quality. That language is presented:

1. In a "Stormwater Quality" section of code intended to bridge NPDES or other regulatory language to local codes, and
2. Within Subdivision and/or building codes with language on drainage.

These codes will need to be completely reworked for both permit compliance and water quality improvements.

Where Stormwater Permits and the Development Process Meet

The draft stormwater permit will add another layer of complexity to planning and codes. Although the permit is still open to public comment and subject to changes, there are aspects of the draft permit that are likely to remain pertinent to joint land and water planning. They include:

- Public outreach and participation.
- Watershed planning.
- Low Impact Development (LID).
- Limits on effective impervious area.
- Integration with other regulatory programs (TMDLs).
- Hydromodification and its control.
- Redevelopment Project Area Master Plans (RPAMPs).
- Continued support for existing Watershed and Stormwater Management Plans.

The draft permit actually lists, in order of preference, strategies for stormwater management via development and redevelopment:

1. Low Impact Development Strategies – The most basic definition of LID is using site design methods to mimic the natural hydrology of the site in its natural pre-development stage.
2. Integrated Water Resources Management Strategies – Integrated strategies include various stakeholders and alignment of multiple planning efforts related to water and natural resources protection.
3. Multi-benefit Landscape Feature BMPs – These BMPs include bioretention, swales, tree boxes and green roofs. These can be installed on private property or be part of larger public works and parks projects.
4. Modular/Proprietary Treatment Control BMPs – Modular or structural controls are listed last. The type and performance of these devices varies, as does the target stormwater impact. Vaults are used to control volume and release, while others contain filters to trap specific pollutants of concern.

Where individual sites cannot meet the performance standards entirely on-site, there are provisions for alternative compliance:

- In lieu of fees – Where a developer can show that the stormwater management requirements cannot be met on the site, permits prescribe steps cities can take to develop a "fee in lieu of" program. Fees can also be pro-rated where a developer handles some runoff on urban sites. The key to success is to have already identified areas best suited

This mall is slated for redevelopment. In the short term, elevated beds were dug out and inlets constructed.

to handle the district-wide runoff and treatment needs.

- Off site mitigation – This alternative arrangement also requires that a city identify stormwater "hot spot" or treatment needs. For specific area plans, this type of mitigation (or fee) can supply funding for areas prone to street flooding or areas where legacy pollutants are carried via runoff into waterways.
- Shared drainage arrangements – Some permits are beginning to specify sub-watershed drainage arrangements, in particular where on-site stormwater control is undesirable or infeasible.

The Redevelopment Conundrum

The draft permit draws out redevelopment for special consideration, in recognition that redevelopment brings special challenges (covered in Chapter 5). Moreover, stormwater management

This photograph demonstrates the requirement for elevated landscaped islands.

is not always effectively carried out through conventional site approvals for redevelopment:

- Water quality programs that rely on redevelopment may fall short when the property improvements most important for stormwater management are not attracting investment.
- The most important aspect of the stormwater permit is not to get high standards written into code; it is to get water quality improvements by introduction of BMPs. This is often lost in the conversation on codes and permits; no improvements take place for redevelopment until the threshold for land disturbance is met (in the case of draft permits, at least 5,000 square feet or 10,000 square feet for single-family homes).
- Stormwater management in older areas can be more effectively carried out on a subwatershed basis, not through individual projects over time.

The draft Ventura permit includes a district solution called Redevelopment Project Area Management Plans (RPAMPs). These districts could be used "in part or whole" to meet the post-construction stormwater management requirements. The intention of the RPAMP is to add flexibility and recognize that redevelopment and intensity have watershed benefits not captured in standard engineering and compliance models. For example, compact development

In the future, setback requirements, combined with performance standards, will deliver a different type of yard. This current setback would meet permit language for ineffective impervious area, but has little function for stormwater management.

Though widely criticized, stormwater ponds will likely continue to retain runoff not captured entirely by LID practices. This pond serves double duty as a neighborhood amenity.

and redevelopment can prevent impacts when development demand could otherwise only be satisfied on undeveloped land far from developed areas.

Camarillo Commons appears to be a good candidate for a RPAMP. community participation on the increased density decision can also be regarded as a watershed effort to direct future growth to a less intrusive development form and location within the watershed. Currently, there is little recognition of this type of effort, but one that RPAMPs are well suited to address.

How these districts operate will be the subject of a larger effort once the permit is in effect. There are several issues with RPAMPs as they relate to joint land use and water planning:

- The permit language notes that a RPAMP can act "in part or whole" to satisfy post-construction requirements, suggesting a sliding scale. This sliding scale would need to be determined and could depend on numerous factors, such as the final intensity of the site, proximity to an impaired waterway and other considerations.
- In Ventura, most stakeholders agree that some minimum measures to capture and treat stormwater are essential to improving water quality.
- The boundaries of the RPAMP would need to be set.
- Oversight from the Water Board, the Ventura Watershed Protection District and other groups would need to be clarified up front so that the city and developers obtain predictability.
- The preventative impacts of a smaller overall footprint and density need to be characterized. Current stormwater methodologies tend to be focused on mitigation at the site level. For example, a four-story building with four stacked units is essentially one rooftop, not four. However, this is generally not a factor in hydrology assessments.

■ Technical Review Sheet

The Technical Review Sheet for this chapter begins on page 194.

12. Ventura County Watershed-based Planning Strategies: Water Quality Monitoring Plan

Purpose

This project does not implement a specific watershed management project, but focuses on aligning water quality and land use planning policies. It is not possible to measure the direct benefits of any one policy, much less the range of policy recommendations included in this plan.

However, it is increasingly important that local land use agencies that are responsible for development decisions be able to assess the impacts of those decisions on water quality and watershed health. This is particularly important as stormwater requirements related to NPDES permitting are implemented, because local planning and public works programs will need to refine policies and practices over time based on their efficacy.

Thus, this plan discusses guidelines for linking policy adoption and water quality impact monitoring. The purpose is to:

- Establish a monitoring plan for the local water quality organizations and institutions.
- Develop guidelines for monitoring water quality benefits from changed policies and practices.
- Develop a monitoring plan for watersheds that contain communities that adopt the project's recommendations.

Background

Several water quality monitoring programs exist in Ventura County that range from small scale and low-tech stream assessments to highly technical and intensive watershed modeling. Rather than reinvent the wheel by establishing a new water quality monitoring program, this plan is best suited to highlight opportunities in existing water quality monitoring efforts to measure the impacts of current and future development practices, and to propose methods for measuring the water quality benefits of implementing the recommendations proposed in this plan. Thus, the Water Quality Monitoring Plan is composed of two parts:

1. A brief discussion of relevant monitoring programs that are in place and could be used to measure the long-term benefits of policy changes recommended herein.
2. Recommendations for new or additional types of monitoring that are needed to measure the impacts of advanced stormwater management strategies, particularly those that are not captured by current models or programs.

Part I. Existing Water Quality Monitoring Programs

Total Daily Maximum Loads (TMDLs)

Various reaches within the watersheds of Ventura County, particularly Calleguas Creek, are listed as impaired on the Clean Water Act (CWA) Section 303(d) list. TMDLs have been established for salts, metals, nutrients, bacteria, toxicity and historic pesticides. Urban runoff is identified as a pollutant source in several of these TMDLs, which are developed to identify actions to address the impairments caused by various contaminants. TMDLs are being incorporated into NPDES permits and will require ongoing monitoring to assess progress in addressing source control activities.

Municipal Action Levels

The draft stormwater permit establishes Municipal Action Levels (MAL), which are essentially numeric water quality thresholds for selected pollutants and are based on nationwide monitoring data for pollutants in stormwater. The permit states that "permittees shall implement a timely, comprehensive, cost-effective stormwater pollution control program to reduce the discharge of pollutants in stormwater from the permitted areas so as not to exceed the MALs."

If the MALs remain in the final permit, an issue of considerable debate, they will have a large role in shaping future monitoring efforts in the county.

The MALs will require "end of pipe" monitoring at various discharge sites throughout the county. The end of pipe monitoring does not neatly link with the permit's site-level focus for best management practices, and makes it difficult to delineate pollutant sources in a manner that enables progressive improvements in the employment of various BMPs.

While the MAL approach will likely remain a contentious issue, there is no doubt that permit and TMDL compliance will be the major drivers of water quality monitoring efforts by local agencies. These efforts provide a foundation for measuring the impacts, positive or negative, of adopted policies and changes in development practices over time.

A major gap exists in monitoring and accounting for the impacts of policies that affect larger development patterns, and ultimately determine the amount and location of impervious cover in local watersheds.

Ventura County Stormwater Monitoring Program

Ventura County's Stormwater Monitoring Program seeks to link stormwater management with scientific assessment of water quality and hydrology. The program's central activities include the collection and analysis of stormwater samples across Ventura County and the analysis and interpretation of the resulting data in order to adapt management measures and programs. The following objectives guide the program's efforts:

- Characterizing stormwater discharges from monitoring sites representative of different land uses – industrial, agricultural and residential.
- Establishing the impact of stormwater discharges on receiving waters by conducting receiving water quality, mass emission and bio-assessment monitoring.
- Identifying pollutant sources based on analysis of monitoring data, inspection of businesses and investigation of illicit discharges.
- Defining stormwater program effectiveness using data collected before and after implementation of pollution prevention programs.

The Ventura County Watershed Protection District administers the program and oversees development of reports describing and interpreting data. With respect to land use planning and stormwater management, the most sophisticated work conducted to date has been in the Calleguas Creek watershed, the most developed and most impacted of the county's three major watershed systems.

Calleguas Creek Watershed Plan Hydrology and Hydraulics Model

The Ventura County Watershed Protection District developed a complete watershed model of the Calleguas Creek system. Sub-watersheds were carefully digitized; imperviousness compared to latest aerial photos; and routing reaches measured from Rocky Peak to Mugu Lagoon. The majority of the sub-areas are less than 100 acres. For each sub area, the input includes these parameters:

- Area in acres.
- Time of concentration in minutes.
- Percent effective imperviousness.
- Hydrologic soil type.
- Rainfall zone with storm frequency.

The model produces a 200-point hydrograph for each sub-area, which is added to the next area downstream to account for changes in Times of Concentration between sub areas. Channel storage from routing point to routing point also is accounted for, treating each reach as if it were a reservoir. Timing at junctions between two laterals, or the main channel and a lateral, can be requested to help in doing hydraulic analysis.

In March 2003, the Ventura County Watershed Protection District completed an assessment of Present Conditions using this model. In April 2005, the District completed an assessment of Future Conditions with Projects implemented. This type of assessment provides a valuable tool for analyzing water quality and hydrology implications of various development decisions.

As a next step, the County and cities should consider extending the model to other watersheds to allow broader regional accounting. Other monitoring efforts are undertaken by local agencies in accordance with state and federal requirements. These efforts also offer data that can be used in stormwater monitoring.

Draft Tentative Stormwater Permit – Water Quality Monitoring Program

The draft tentative stormwater permit includes MALs that will require new levels of monitoring by co-permitees. The draft permit also requires a monitoring program consisting of mass emission, toxicity, TMDL stormwater (wet weather) MS4 water quality-based effluent limits, TMDL non-stormwater (dry weather) MS4 water quality-based effluent limits, trash and debris study, Pyrethroid assessment that includes bio-assessment of Calleguas Creek tributary stations, continuation of the hydromodification study, low impact development study, participation in the Southern California Regional Bio-assessment Program and Southern California Bight Project (SCBP).

Of these, the hydromodification study and low impact development study are most related to land use planning, and linking local policies to watershed water quality assessment. The components of each, as described in the draft tentative permit, are listed below.

Hydromodification Control Study

1. The Principal Permittee shall conduct or participate in special studies to develop tools to predict and mitigate the adverse impacts of hydromodification, and comply with hydromodification control criteria. These are the following:

a. Develop a mapping and classification system for streams based on their susceptibility to the effects of hydromodification.

b. Establish protocols for ongoing monitoring to assess the effects of hydromodification.

c. Develop dynamic models to assess the effects of hydromodification on stream condition.

d. Develop a series of tools that managers can easily apply to make recommendations or set requirements relative to hydromodification for new development and redevelopment.

2. The Principal Permittee may satisfy this requirement by participating in the Development of Tools for Hydromodification Assessment and Management Project undertaken by the SMC and coordinated by the SCCWRP.

3. The Principal Permittee shall continue to partner with the SMC and collect data or sponsor its collection for the Ventura County sites to reduce statistical uncertainty and/or improve model predictability.

4. The Principal Permittee shall submit a letter to the Regional Water Board Executive Officer stating how they will satisfy this requirement, no later than two months after Order adoption date.

Low Impact Development study

1. The Principal Permittee shall conduct or participate in a special study to assess the effectiveness of low impact development techniques in semi-arid climate regimes such as in Southern California.

2. The Principal Permittee may satisfy this requirement by participating in the SMC project titled "Quantifying the Effectiveness of Site Design/Low Impact Development Best Management Practice in Southern California."
3. The Principal Permittee shall submit a letter to the Regional Water Board Executive Officer stating how they are satisfying this requirement, no later than two months after deciding to either conduct or participate in special study.

These studies provide a basis for monitoring the long-term watershed water quality impacts of land use and development decisions. However, there is also a need to assess the water quality impacts (positive or negative) of different land use patterns. Computer modeling can also be used to assess the water quality outcomes of land use planning decisions or alternative policy approaches, such as building at higher densities, mixing land uses or accommodating future growth on redevelopment sites.

Part II – Options for additional monitoring and modeling to support water quality and land use alignment

This plan recommends policies to support the coordinated implementation of smart growth principles and low impact development techniques as primary tools for preventing, reducing and mitigating the impacts of development on water quality and watershed function. It is difficult to measure the water quality effects of policies, due to the protracted nature of land use and development.

The near-term impacts of implementing better land use strategies will be incremental and difficult to measure, yet there is a pressing need to better understand their benefits.

While some tools are available to test the implementation of site-level LID practices, understanding and monitoring the benefits of smart growth poses a special challenge: it is difficult to measure the water quality benefits of mixed-use development, infill or higher densities, as these strategies do not fit neatly into traditional engineering models.

The design of a community's built environment influences water quality in numerous ways. A central finding of this project is that some of the greatest gains in aligning community design with stormwater management efforts lie in patterns of land use and development, areas that are not adequately employed in stormwater planning.

Few studies have investigated this relationship or the methods for quantifying and crediting the benefits of good urban form, which accrue from infill, redevelopment, mixing land uses, efficient provision of parking, street design and connectivity, and enabling higher-density development.

Draft versions of the Ventura County stormwater permit have included a basis for integrating smart growth principles into the regulatory framework of the permit (the Redevelopment Project Area Master Plan, or RPAMP), but that effort has faltered in part due to a dearth of methods for measuring and crediting the water quality benefits of smart growth.

To address this challenge, the Local Government Commission has proposed that the Regional Board, Ventura County co-permittees, and other stakeholders engage in a modeling exercise to illustrate those benefits and enable a clearer translation to the requirements in the permit.

In October 2008, a sub-group of the stakeholder advisory committee held a conference call to discuss options for undertaking this type of exercise using Index, a GIS-based modeling and visualization tool that can be used to analyze the water quality benefits of different land use decisions. The outcome of this exercise can be used to assess the likely water quality impacts of different development scenarios, which aids in decisionmaking.

Ultimately, this type of approach needs to be coordinated with other water quality monitoring plans to measure the impact of smart growth planning decisions.

A recent hypothetical modeling exercise was completed to compare the water quality impacts of various development scenarios against smart growth alternatives. As part of this plan, the Local Government Commission recommends that this tool or a similar method be used not only in Ventura County but also more broadly in Southern California. This type of assessment is not only needed for water quality monitoring, but for establishing a system for crediting smart growth practices within the regulatory framework of the permit.

In addition to the technical steps of developing a methodology and then carrying out a modeling protocol, this will require stakeholder collaboration to ensure that the program is understood and trusted.

To accomplish this, the Local Government Commission has recommended a facilitated meeting to develop proposals for measuring and crediting the water quality benefits of smart growth within the permit's land development program. The meeting would engage local stakeholders as well as a core group of science and policy experts. The structure of the meeting is described on the next page.

Assessing the Water Quality Benefits of Smart Growth for Stormwater Management in Ventura County

Purpose

To advance a program that integrates smart growth, low impact development, and other watershed-based planning strategies in the Ventura County stormwater permit.

Overview

There is a need to address concerns with the Planning and Land Development program of the draft Ventura County stormwater permit. Questions about proposed "on-site" requirements, and their impact on other environmental and community planning goals, remain. While various representatives are meeting to discuss options, a preferred solution has not yet emerged.

To address this issue, the Local Government Commission proposes to convene select representatives and topic experts to evaluate alternatives and carry a preferred program forward. Two half-day meetings (on the same or consecutive days) will be used to develop a proposal for integrating smart growth, low impact development and other best practices into the regulatory framework of the permit. The meetings will focus on identifying performance criteria and methods for assigning credit to smart growth practices with a proven benefit to water quality.

Each meeting will be lead by a professional facilitator. The group will identify the core components of a compliance program to propose to the Los Angeles Regional Water Quality Control Board.

Objectives

1. Agree on water quality and watershed goals of the Planning and Land Development Program of the Ventura County stormwater permit.
2. Identify methods for measuring and crediting smart growth practices and other regional/sub-regional BMPs within the program and integrating these with existing LID requirements.
3. Agree upon and propose an approach for inclusion in the permit.

Proposed Meeting Structure

Two half-day meetings will be held on consecutive days and will focus on the goals, methods and program defining performance criteria.

MEETING 1: Core Components of a Program

- Agree on program goals.
- Review and discuss methods for measuring and crediting smart growth and related BMPs in the program.
- Outline core components of the program;

MEETING 2: Methods and Performance Criteria

- Discuss performance criteria and propose alternatives.
- Recommend a preferred approach to carry forward and develop into a program.
- Identify one or more pilot project(s) to test.
- Agree upon action steps and conditions of approval.

Endnotes

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3 "Language of Conservation" project for the Nature Conservancy and Trust for Public Land, 2004. For summary: www.scribd.com/doc/98505/Language-of-Conservation.

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1 Center for Watershed Protection, 1998.

2 Proposition 218, enacted in 1996, restricts property-related fees, which are defined as fees imposed "as an incident of property ownership" and presumably include stormwater fees. Regulatory fees would not be covered under 218; some communities in California are using this route to cover some costs related to stormwater management.

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Appendix A.

Ahwahnee Water Principles for Resource-Efficient Land Use

Preamble

Cities and counties are facing major challenges with water contamination, stormwater runoff, flood damage liability, and concerns about whether there will be enough reliable water for current residents as well as for new development. These issues impact city and county budgets and taxpayers. Fortunately there are a number of stewardship actions that cities and counties can take that reduce costs and improve the reliability and quality of our water resources.

The Water Principles below complement the Ahwahnee Principles for Resource-Efficient Communities that were developed in 1991. Many cities and counties are already using them to improve the vitality and prosperity of their communities.

Community Principles

1. Community design should be compact, mixed use, walkable and transit-oriented so that automobile-generated urban runoff pollutants are minimized and the open lands that absorb water are preserved to the maximum extent possible. (See the Ahwahnee Principles for Resource-Efficient Communities)

2. Natural resources such as wetlands, flood plains, recharge zones, riparian areas, open space, and native habitats should be identified, preserved and restored as valued assets for flood protection, water quality improvement, groundwater recharge, habitat and overall long-term water resource sustainability.

3. Water holding areas such as creek beds, recessed athletic fields, ponds, cisterns and other features that serve to recharge groundwater, reduce runoff, improve water quality and decrease flooding should be incorporated into the urban landscape.

4. All aspects of landscaping from the selection of plants to soil preparation and the installation of irrigation systems should be designed to reduce water demand, retain runoff, decrease flooding, and recharge groundwater.

5. Permeable surfaces should be used for hardscape. Impervious surfaces such as driveways, streets, and parking lots should be minimized so that land is available to absorb stormwater, reduce polluted urban runoff, recharge groundwater and reduce flooding.

6. Dual plumbing that allows greywater from showers, sinks and washers to be reused for landscape irrigation should be included in the infrastructure of new development.

7. Community design should maximize the use of recycled water for appropriate applications including outdoor irrigation, toilet flushing and commercial and industrial processes. Purple pipe should be installed in all new construction and remodeled buildings in anticipation of the future availability of recycled water.

8. Urban water conservation technologies such as low-flow toilets, efficient clothes washers, and more efficient water-using industrial equipment should be incorporated in all new construction and retrofitted in remodeled buildings.

9. Groundwater treatment and brackish water desalination should be pursued when necessary to maximize locally available, drought-proof water supplies.

Implementation Principles

1. Water supply agencies should be consulted early in the land use decisionmaking process regarding technology, demographics and growth projections.

2.City and county officials, the watershed council, LAFCO, special districts and other stakeholders sharing watersheds should collaborate to take advantage of the benefits and synergies of water resource planning at a watershed level.

3. The best, multi-benefit and integrated strategies and projects should be identified and implemented before less integrated proposals, unless urgency demands otherwise.

4. From start to finish, projects and programs should involve the public, build relationships, and increase the sharing of and access to information.

5. Plans, programs, projects and policies should be monitored and evaluated to determine if the expected results are achieved and to improve future practices.

* * * *

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Appendix C.

Watershed Planning Code Audit: Technical Review Sheets

Across the United States, cities and counties are increasing turning a critical eye to zoning codes and land development regulations. Why?

First, improving land development patterns cannot proceed without first understanding what current codes deliver. Second, a growing number of initiatives related to climate change, watershed management and stormwater control call for code audits. Finally, an audit provides an opportunity for all stakeholders, not just planners and lawyers, to view how seemingly simple sentences drive what happens on the ground.

While audits are great, there is one big question – what are we looking for?

After some investigation, the Local Government Commission (LGC) decided this audit should be carried out from the watershed's point of view. The audit looked more closely at the intersection of land development and the water cycle, which brought us to two defining questions:

- What drives excess impervious cover and land disturbance at the regional and neighborhood levels?
- What drives excess impervious cover and land disturbance at the site level?

At the inception of the project, two new and fairly large events transpired: the issuance of the Los Angeles Regional Water Quality Control Board's draft stormwater permit and a myriad of climate change initiatives. Because localities will need to deal with all of these, it seemed reasonable to fold these initiatives into the review because the role of dispersed land use and land disturbance affects many aspects of environmental protection.

The LGC settled on the following lines of inquiry to assess codes and develop more detailed questions:

- Site Design and Green Infrastructure.
- Infill and Redevelopment.
- Compact Design.
- Use Mix.
- Streets and Mobility.
- Parking and Loading.
- District and Specific Area Planning.
- Stormwater Management.

HOW TO USE THIS GUIDE

This audit is presented to meet the needs of many audiences:

Code Review (Chapters 4-11) – The main body of the review is written in a narrative style, which can be used by code pros, as well as stakeholders new to the legal language of zoning codes or watershed science.

Technical Review Sheets and Summary of Recommendations – The Technical Review Sheets are intended for technical staff responsible for compliance with permits, laws and initiatives. We suggest reading through the Summary of Recommendations first to mark those code items that look the most promising. The recommendations are divided into short-, medium- and long-term activities that could be undertaken. From there, technicians can cross reference more detailed language within the Review Sheets on each recommendation.

The Summary of Recommendations is presented to show how undertaking recommendations can address planning and code activities at once.

Caveats

The LGC could have undertaken a wider range of activities to fully assess codes. Moreover, reviewing hundreds of pages of tiny type requires simplification and interpretation. As such, this audit comes with some caveats:

- This audit is very detailed; some of the code language and recommendations may seem tangential or unrelated to your work. However, what applies in one community may not apply in others. The goal was to illuminate how the code looks from the watershed's point of view.
- A full audit would have included additional interviews, analyses of maps and walking tours within cities to view what was actually built under the code language.
- Shrinking the development footprint involves many interlinking parts; as such, there is repetition among the chapters.
- The LGC received numerous comments on factors that will continue to shape the built environment outside of code, such as the "fiscalization" of land use, ballot initiatives and California's tax structure. While a code review cannot directly address these issues, the watershed and climate initiatives shine a brighter light on the adverse environmental impacts that occur on a broader scale.

  One of the best uses of an audit might be to ask tough questions about the emerging stormwater permit and funding challenges, and how previous decisions and ballot initiatives might be creeping into local balance sheets now.

SUMMARY OF RECOMMENDATIONS

Natural Systems and Green Infrastructure

Short Term – Revise existing code language.

- Revise "Purpose and Intent" Statements to include watershed services.
- Review individual use sections in code to increase opportunities for stormwater management.
- Develop language for hydromodification related to watershed management.
- Use example code language from other cities.
- Refine code language on drainage.
- Revise the stormwater code (and open space) to prioritize BMP selection based on permit language.
- Update code language to allow use of topography for stormwater management.
- Expand use of porous materials in code for low traffic areas.
- Revise language on landscaping in parking.
- Allow use of non-plant materials in landscaping.
- Revise language to limit grading.
- Clarify conformance/non-conformance once the permit is adopted.
- In subdivision codes, review language on "public facilities" and dedication rules.
- In subdivision codes, revise language to better use public facilities for stormwater management.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Revise Tree Preservation Codes to add stormwater management and performance.
- Tie larger-scale source water protection to codes.
- Amend rural housing and commercial codes. to direct clustering.

- Create BMP installation certification process.
- Include maintenance in code-directed landscape installations.
- Review Building Codes and Specifications for barriers to LID.
- Review the impact fee structure for stormwater against the permit.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Develop/revise landscape design manuals with permit compliance in mind.
- Create customized landscape plans for long-term effectiveness.

Infill and Redevelopment

Short Term – Revise existing code language.

- Revise "Purpose and Intent" statements for redevelopment to include watershed benefits.
- Use stormwater management as a condition of obtaining a variance on parking.
- Make minor code changes to bulk requirements for redevelopment.
- Develop specialized variances focused on parking for redevelopment.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Review the CIP for planned public works projects that might be used for economic development.
- Review the potential for public-private partnerships to sponsor BMPs.
- Develop master parking plans for redevelopment areas.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Institute use of smart growth models and standards.
- Create a LID Overlay for redevelopment areas.

Compact Design

Short Term – Revise existing code language.

- Revise "Purpose and Intent" statements to focus on compact development.
- Look for opportunities in "Energy Conservation code."
- Refine code language on access within and among parcels/projects.
- Include LID options for design menus in compact districts.
- Amend parking codes to increase compact design.
- Review and revise (if needed) building footprint caps for compact areas.
- Include "Height as a BMP" in stormwater outreach materials.
- Amend setback language to emphasize stormwater management role.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Review Density Bonus provisions as related to the permit.
- Support or incentivize land efficient parking.
- Revise code language on clustering to improve transportation and stormwater performance.
- Institute a cap on the parking coverage for parcels.

Long Term – Incorporate larger programs that integrate planning, stormwater and transportation planning.

- Determine where lower site requirements can be established for multi-family development projects.

Use Mix

Short Term – Revise existing code language.

- Survey effectiveness of overlay districts.
- Where possible, add uses to allowable use mix.
- Affirm a use mix role with compatibility in code language.

- Add a use mix to commercial codes.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Insert land use language contained in Transportation Demand Management sections to use codes.
- Review accessibility to neighborhood serving retail in the vicinity of large residential areas.
- Adopt a residential threshold for which neighborhood retail is provided.

Streets and Mobility

Short Term – Revise existing code language.

- Adopt a minimum standard for street width.
- Review and enhance subdivision code language on internal and external connectivity.
- Launch a re-connectivity initiative.
- Establish a minimum width of 10 feet for alleys and private streets.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Convene a multi-disciplinary committee to review street codes.
- Initiate a "Green Alleys" program.
- Revise guidance on use of funds for streets to guide green retrofits and investments.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Update the Ventura County Road Standards to reduce overall impervious cover and stormwater impacts.

Parking and Loading

Short Term – Revise existing code language.

- Readjust code to consider only staffed space.
- Revise code to adjust down for fractional spaces.
- Develop a model shared parking agreement.
- Modify parking code to allow for at least 30% compact spaces.
- Allow overflow parking in setbacks.
- Adopt the Transportation Engineers updated "Parking Generation" manual.
- Eliminate language prohibiting charging for parking.
- Use preferred parking areas as pilot projects for green parking techniques.
- Institute parking minimum and maximum space requirements.
- Revise subdivision codes for centralized RV and boat parking.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Conduct a citywide or district parking study.
- Initiate a parking plan for draft Specific Plans.
- Provide direction on use of on-street parking in parking supply calculations.
- Survey on-street parking and include in stormwater management planning.
- Unbundle the cost of parking from rents for certain residential projects.
- Assess existing shared parking arrangements.
- Conduct a citywide parking study to assess parking requirements and fees.
- Review and reduce parking requirements in areas undergoing or targeted for walkable redevelopment.
- Survey demand for RV parking in multi-family housing.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Require parking plans for all future Specific Plans with attention to stormwater management.
- Review the effectiveness of the review process for reducing parking.

- Develop language allowing shared parking/loading/circulation.
- Include shared loading requirements in Specific Plans.

Compact, District Design

Short Term – Revise existing code language.

- Conduct walking tours of pedestrian/compact areas to assess transportation/watershed factors.
- Require assessment of natural drainage as first step in site/plan design.
- Review and strengthen Specific Plan language on shared site amenities.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Convene a panel of Emergency Responders on the Permit and Road Design.
- For planning areas, include disposal of accumulated pollutants in BMPs in maintenance plans.
- List and prioritize Specific and other Plans adjacent to (or connected to) impaired receiving waterways.
- Adopt modeling software that combines water/climate/planning.
- Adopt policies on "clustering" to improve environmental and watershed performance.
- Develop "density and compatibility" tools for Specific, Master and redevelopment plans.
- Convene local real estate brokers and discuss new design imperatives.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Map areas inappropriate for infiltrative BMPs and develop Master "In Lieu of Fee" plan.
- Develop or Revise Circulation Plans for "Green Streets."
- Develop a "Green Infrastructure" scorecard to assess the environmental performance of open space identified in Specific and Master Plans.

Stormwater Management

Short Term

- Revise and update existing code requirements related to Stormwater Management.
- For the next General Plan cycle, develop broad themes of joint water/land development objectives.
- Elevate the role of sub-area planning as a watershed tool in General Plans and codes.
- Explore use of existing planning tools to delineate sub-regional mitigation programs or RPAMPS and include in integrated water resources management plan.
- Improve design of pending capital improvements for permit compliance.
- Develop a first year plan for alignment, with notice of changes requiring State or Water Board action.
- Create a multi-disciplinary BMP team.
- Create a Water Mitigation Enterprise Fund.

Medium Term

- Create specialized "menu combinations" of BMPs based on the land development context and pollutants of concern.
- Scope out neighborhoods where pollutant/volume loading is high yet where developer-driven BMP installment potential is low.
- Begin to develop hydromodification control strategies related to land development, redevelopment and retrofit.

Long Term

- Implement a Watershed-wide EIR and pre-map a compact/redevelopment preferred alternative.
- Explore software to track smart growth, structural and non-structural BMPs.

Chapter 4. Natural Systems and Green Infrastructure

TECHNICAL REVIEW SHEET: OPEN SPACE AND ENVIRONMENTAL SITE DESIGN

I. Introduction

The technical review of codes and policies focuses on open space policies at the site level and larger neighborhood and district levels. The review looked for policy and ordinance language that both supported and served as a barrier to use of open spaces for ecological services.

II. Who to bring and where to look: relevant code sections and key contacts for the review

In general, landscaping and open space elements of code are contained in the "Land Development" or "Zoning Code" chapters. However, some stipulations are included within individual land use classifications (e.g., sections on "Open Space Residential" zones within housing and planned unit developments). Because code updates and revisions are common, it may be helpful to use the web site search function in municipal codes to seek terms such as "open space," "landscaping" or other terms related to natural areas.

Code sections

▼ Camarillo

Title 19: Zoning

Chapter 19.34 O-S Open Space Zone

▼ Fillmore

Article III – General Regulations

SECTION 6.04.18 – Property Development Standards

Most site design and landscaping standards contained in Section 6.04.66 Development Permits and Section 6.04.28 Landscaping Standards

▼ Moorpark

Moorpark Municipal Code

Title 17 - Zoning

▼ Oxnard

Oxnard Code of Ordinances

Chapter 14 – Building Regulations (drainage)

Chapter 15 – Subdivisions

Chapter 16 – Zoning Code

Chapter 22 – Water (includes water conservation)

▼ Santa Paula

Municipal Code

Chapter 15 – Subdivisions

Chapter 16.13 – Residential Zones

Chapter 16.15 – Commercial Zones

Tree Preservation Code – 156.580

Chapter 54 – Stormwater Quality Management

▼ Simi Valley

Title 9 – Development Code

Title 9 includes sections related to landscaping, subdivision design, tree preservation, parks and site requirements within the various land use categories.

Landscape Design Guidelines

▼ Thousand Oaks

Title 9 Planning and Zoning

Chapter 3 – Subdivisions

Chapter 4 – Zoning

Chapter 8 – Stormwater Management

▼ Ventura

Ordinance Code for the City of Buenaventura

Division 20 – Parks, Beaches and Trees

Division 24 – Zoning Regulations

Division 26 – Subdivision Regulations

▼ Ventura County

Ventura County Road Standards

Ventura County Land Specifications

2007 Ventura County Building Code

III. Starting the review: Questions at a glance

Part 1 – Language that supports DISTRICT LEVEL environmental design

- Is there code language that includes watershed or water resource management and acquisition within the purpose of open space zoning?
- Is there a holistic landscaping guidance manual or menu that uses/can be used for LID?
- Does the City/County tree protection ordinance include meeting watershed objectives?
- Does code account for source water protection and land planning?
- Does the floodplain or another ordinance prevent damage and/or consider downstream impacts through the use of code?

Part 2 – Code and ordinance language that may be a barrier to DISTRICT LEVEL environmental design

- Does zoning in rural areas (R-E or open space) address rural needs, or is the density/placement more suitable for growth areas?
- Do Subdivision or Zoning District codes stipulate conventional curb, gutter and conveyed drainage as required improvements?
- Is there code language that might prohibit shared drainage among properties or for public/private handling and treatment?

PART 3 – Code and ordinance language supporting SITE LEVEL environmental form

- Does Zoning Code incorporate Low Impact Development principles?
- Does landscaping code for planned or multi-family development stipulate landscaping and plant materials that are water friendly?
- Does code allow for alternative siting of buildings through flexible setbacks?
- Does the landscaping code require maintenance agreements or easements?

Part 4 – Code and ordinance language as a barrier to SITE LEVEL environmental form

- Does code language limit driveway paving material to asphalt, Portland cement or some other highly impervious material?
- Does the landscaping code include language, such as elevated landscaped beds or required materials that limit or prohibit infiltration?

Part 5 – Code and ordinance language that may or may not support environmental design depending on language and interpretation

- How does code address use of fees for drainage?
- How does code deal with non-conforming structures?
- How does code treat land acquisition for parks/open space and dedication of easements?

CODE REVIEW

Part 1 – Code and ordinance language supporting DISTRICT LEVEL environmental design

* *

Is there code language that includes watershed or water resource management and acquisition within the purpose of open space zoning?

Issue: The "Purpose and Intent" statements in code (or even as preface to individual code sections) provide a legal anchor for language directing or restricting site and building design. While not as explicit as code elements, the Purpose and Intent statements can be useful for meeting legal challenges to code language related to resource protection.

Example language

General:

The General Plan language on open space protection and environmental site design will provide the general contours of protective language, which would then tie into the Purpose and Intent statement of the code or sections, and to the zoning code and land development regulations.

Specific Language:

Camarillo – The Purpose statement for the Open Space Zone includes the following pur-

pose for land under this category: "C. To protect, maintain and enhance watershed management to assure a continuing supply of safe water." (Chapter 19.34)

Recommendations:

Revise "Purpose and Intent" Statements to include watershed services – Each City and the County should first review the General Plan language on Open Space and Land Use in undeveloped or rural areas. For the stormwater permit, make sure there is language that supports watershed protection, drinking water and replenishment of supplies (if applicable). Specifically, "Purpose and Intent" language may need to also address hydromodification on a broader scale, not just language on channel protection in the floodplain section of code.

* *

Is there a holistic landscaping guidance manual or menu that uses/can be used for LID and water conservation?

Issue: The effective handling of stormwater on-site relies on complex systems of soil, plant selection, sunlight, size, and storage. Water conservation rules for landscaping also come into play, so landscaping now will need to serve many purposes.

Example language

General:

Check to see if your City/County has a landscape design manual, or other design manuals that can be modified. If you have a current manual that is referenced in code, you will likely need to update the manual specifications based on the stormwater permit and water conservation model code. As noted below, code and manual language on long-term maintenance will be crucial if landscaped areas are considered BMPs.

Specific Language:

Simi Valley has a unique Menu of Standards within its Residential and Open Space District. This menu could be easily modified with LID and on-site options (the current landscaping references are mostly aesthetic).

Ventura County developed Ventura County Landscape Design criteria (1992). Note this manual places enforcement within the Planning Department.

The City of Camarillo's Water Conservation coordinator provides on-site evaluations and recommendations on water conservation. This could provide a model for a hybrid conservation/LID coordinator.

Recommendations: Develop/Revise Landscape Design Manuals with permit compliance in mind – Consider developing/revising Landscape Design manuals that emphasize functional aspects of landscaped areas for both water conservation and stormwater handling. The sections of the manual to pay attention to are:

- Plant Selection – Plants will need to tolerate extreme ranges of temperature and moisture.
- Soils – Soils (natural or engineered) will be a key factor in stormwater calculations.
- Water Budgets – The budget is traditionally a water conservation focus; it will be altered by inclusion of on-site stormwater handling.
- Planter Design – Pay attention to building foundation planters, as well as under/over-drains. Some codes prohibit flow over sidewalks and driveways.
- Irrigation – Automatic shut-off systems are required, and will be needed to supply water during the dry season.
- Maintenance – Maintenance will need to be geared towards stormwater performance (in addition to plant survival and routine grounds keeping). If landscaped areas collect toxic pollutants (e.g., CU, PAH), the manual will also need to address disposal.
- Enforcement – Determine who will perform enforcement of a hybrid permit/landscaping code.
- Urban Heat Island Abatement – Effective policies to increase tree canopy serve double duty to lessen heat islands and energy use. Thus, this manual could be a cross-reference to a local climate plan.

Moreover, guidance will need to be geared to development context. Different locations of town and development projects will likely need different landscape approaches, for example:

1. High Density Redevelopment – streetscape and parks for landscaping with shared and structured drainage, green building (in particular roofs).
2. Small Area Planning (Redevelopment) – Streetscape and parks for landscaping, shared drainage among buildings, high performance landscaping at the parcel level.
3. Small Area Planning (New Development) – Design around natural drainage, on-site and shared among parcels, green building.
4. Large Planning (Redevelopment) – Larger scale shared drainage, restoration of some/all natural patterns, mix of shared and on-site measures, green building.
5. Large Planning Area (New Development) – Identification of Open Space preservation and natural drainage, cluster, mixed development with shared drainage and high performance landscape and streetscape.

Review individual use sections in code to increase opportunities for stormwater management. Several sections of code related to site design will likely require modification, including:

1. Landscaping in parking.
2. Building code language for foundation plantings.
3. Sidewalk and street code to address stormwater flows that may now be prohibited.
4. Landscape requirements within individual land use sections for residential/commercial/mixed use.

* *

Does the City/County tree protection ordinance include meeting watershed objectives?

Issue: Tree canopy is one of the most effective, yet overlooked BMPs for handling stormwater. The Forest Service estimates that one mature deciduous tree in Southern California can reduce runoff by 4,000 gallons per year, offsetting the need for volume control elsewhere.

Example language

General:

Check code language (typically a tree preservation section) to determine how effective policies are in (1) encompassing the greatest number of trees, (2) fostering growth to ensure canopy, and (3) location of trees to obtain stormwater benefits.

Specific Language:

Santa Paula lists the minimization of "soil erosion and other related environmental damage" as a purpose of the tree preservation code. "No native oak and sycamore tree, heritage or historic tree, where that tree is on public or private property, or any other mature tree on public property except as provided for in division (B) of this section, or is associated with a proposal for urban development, shall be removed." Santa Paula also lists minimization of erosion as benefit. (Chapter 156 – Zoning, section 156.584)

Recommendations: Revise Tree Preservation Codes to add stormwater management and performance – Check the tree preservation code and consider:

- Revising code to include trees on private property for a stormwater BMP program.
- For the stormwater permit, create a new tree inventory program as a BMP quantifying trees in the existing program for stormwater benefits.
- Including a calculation of stormwater services lost for land development activities that remove trees or canopy – institute this loss into impact fees.

* *

Does the zoning code account for source water protection and land planning?

Issue: Source water protection includes both wellhead protection for public supplies and land conservation planning to facilitate aquifer and stream recharge.

Example language

General:

Restriction on land use in the vicinity of wellheads (and in some cases stream intakes) is the most common type of zoning related to source water protection. Most restrictions apply to land uses with a high risk of contamination by virtue of chemicals used or operations (e.g., underground tanks). Increasingly, aquifer recharge requirements are expanding the scope of protective measures to include land conservation and development restrictions.

Specific Language:

United Water supplies several cities in Ventura County with water. It conducts outreach and education on several aspects of land/source water protection.

Recommendations: Tie larger-scale Source Water Protection to codes. Language on source water protection is likely to be found in the General Plan, although some cities may have language on well head or stream intake protection. If this language lies within a water code, the jurisdiction may want to also include it in the municipal code.

* *

Does the floodplain or another ordinance prevent damage and/or consider downstream impacts through the use of code?

Issue: Attention to floodplain development has increased over the past decade as a result of National Flood Insurance rules. The stormwater permit will also increasingly be a factor due to the requirement to address "by ordinance or other regulatory mechanism," channel protection and hydromodification. Ordinance language may also deny development approval if water quality or downstream impacts cannot be prevented or mitigated.

Example language

General:

The most protective language tends to address (1) attention to prevention rather than mitigation of impacts, (2) restriction or prohibition of high impact development in floodplains, (3) focus not only on property, but environmental services of floodplains, and/or (4) attention to downstream or cumulative effects of floodplain activity.

Specific Language:

Within the Subdivision Regulations, Oxnard notes that "(A) Approval may be denied to any map if discharge of waste from the proposed development into an existing community sewer system would result in violation of existing requirements prescribed by a State regional water quality control board." SEC. 15-64. While not directly related to the permit, this language could be viewed as tying the design of a map/subdivision to meeting permit requirements.

The City of Santa Paula's Floodplain Chapter states, as its purpose, the following:

"(A) Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

(B) Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

(C) Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;

(D) Controlling filling, grading, dredging, and other development which may increase flood damage." (Title XV, Chapter 151 – Flood Damage Prevention)

The City of Ventura has a floodplain permitting process and overlay zone with the following language through the Flood Plain (FP) Overlay Zone. The purpose of the overlay is to "protect human life and health; minimize expenditure of public money for costly flood control projects; minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets and bridges located in areas of special flood hazard; and assist in notifying potential buyers that property is in an area of special flood hazard." The zone prohibits any residential use and septic tanks in the flood zone. The Overlay district contains language referring to a separate Floodplain development permit. (Part 4 – Floodplain Restrictions, Chapter 12.410)

Ventura County's Subdivision Regulations on floodplain management notes:

"The design of a subdivision shall conform to the Ventura County Flood Plain Management Ordinance and shall provide for the proper drainage of the subdivision and all lots and improvements therein based on the runoff that can be anticipated from ultimate development of the watershed in accordance with the General Plan." (Subdivision Regulations, Section 8204-5)

Oxnard – A section entitled "Watercourse Protection" includes the following language:

"(A) Every person owning property through which a watercourse passes, or the person in charge of day-to-day operations of the property, shall keep and maintain the property reasonably free of trash, debris, vegetation and other obstacles which would pollute, contaminate or significantly alter the flow of water through the watercourse.

(B) All existing structures within or adjacent to a watercourse shall be maintained so that such structures will not become a hazard to the use, function or physical integrity of the watercourse." (SEC. 22-223. Watercourse Protection)

Recommendations: Ventura County and its cities will need to review all ordinance language related to floodplain and floodplain development.

Develop language for hydromodification – For a stormwater permit, language may need to be tightened with respect to hydromodification and channel protection. Planning will need to be tied to floodplain and flood fringe areas. Ventura County and its cities may need to initiate a special planning process based on the hydromodification plan.

Use example code language from other cities related to watershed management – Cities and the County can borrow language already adopted (examples above): (a) that ties map approval to consistency with permits, (b) includes water height and velocity control, (c) includes downstream effects, (d) emphasizes the public interest in floodplain protection and purpose, and (e) notifies prospective buyers – not just new owners on the environmental conditions, limitations, and risk associated with the property.

* *

Part 2 – Code and ordinance language that may be a barrier to DISTRICT LEVEL environmental design

* *

Does zoning in Rural areas (R-E or open space) address rural needs, or is the density/placement more suitable for growth areas?

Issue: Individual housing units in rural areas tend to be less visible than those constructed in a subdivision, but they still have impacts on water resources. The number and density of housing for rural areas is typically addressed in the residential section of code under a Rural, Estate or Open Space section.

Example language

General:

Like other residential sections in code, rural residential is defined by (1) minimum lot size, (2) density per acre or multiple of acres, (3) accessory units, and (4) parking. In general, the minimum lot size for housing to support viable agriculture among cities and the County is 40 acres.

Specific Language:

Housing in the Agricultural Exclusive (A-E) zone is one unit per 40 acres. (Ventura County)

Recommendations: One of the most pressing growth management questions is how to address housing in rural areas and if it occurs, what management strategy is needed. This is answered more in the General Plan than the code. While the density for housing tied to the agricultural economy has been more or less established at one house for every 40 acres, the range of rural, semi-rural and Open Space residential density is quite large. In this case, the County and its cities may want to conduct a similar calculation to see how much land is needed to support infiltration and flood prevention.

Amend rural housing and commercial codes to direct clustering – Note that most cities include zoning districts to allow for "clustering" of houses in rural areas to preserve open space and ecological services. As part of the code review, also conduct a "map" review to see where these zones are, and if certain rural areas might be candidates for such an overlay.

* *

Do Subdivision or Zoning District codes stipulate conventional curb, gutter and conveyed drainage as required improvements?

Issue: One common barrier to Low Impact Development is the institutionalization of conventional conveyance and drainage within codes.

Example language

General:

Language will typically mandate: (1) conveyance along a curb and gutter, (2) directed flow to the nearest waterbody of channel, (3) requirement for concrete or hardened materials, (4) requirement for conveyance to public property, and (5) a list of improvements as a condition of subdivision map approval.

Specific Language:

Under Santa Paula's development standards for drainage – "All development projects must include on-site drainage and storm water control improvements which, to the satisfaction of the City Engineer, safely and adequately convey runoff to public drainage control and storm drain facilities, avoid impact on adjacent properties, and meet applicable National Pollutant Discharge Elimination System requirements." (Development Code, Chapter 16.40 – Development Standards)

Santa Paula's Subdivision code also notes that all "drainage facilities must be located with street rights-of-way or public easements." Furthermore, Subdividers are required to supply minimum improvements, which include "adequate drainage of the subdivision streets, highways, ways and alleys; adequate grading and surfacing of streets, highways, ways and alleys and curbs, gutters and sidewalks."

"Further, the design shall provide that any concentrations or increases or surface water resulting from the development of the proposed subdivision are conveyed by means of adequate facilities to suitable natural watercourse or drainage facility in the area." (Section 9-3.606. Thousand Oaks Subdivision Code)

"Planters enclosed within a reinforced brick or masonry planter box, or a poured-in-place Portland cement concrete curb, not less than six inches high." (Section 24.415.100. Landscaping and Screening, City of Ventura)

Recommendations: Refine code language on drainage – Refining code language on drainage will introduce low impact approaches. Like parking, there is no one element that can be eliminated or amended; the entire drainage system for sub-basins and the existing devel-

opment context will dictate improvements to code. However, the following areas can be reviewed for code changes:

- New language to focus on a multi-distributed system of stormwater conveyance, treatment and storage.
- Park Design.
- Street Design.
- Review of code directives on materials.
- For redevelopment, new policies to replace impervious hardscape with new pervious pavers, concrete and the like (this will need to be done in conjunction with roads).
- Treatment of stormwater prior to conveyance to a natural watercourse.
- Dedication and/or maintenance of "green" conveyance systems.

* *

Is there code language that might prohibit shared drainage among properties or for public/private handling and treatment?

Issue: Language that requires stormwater to be managed entirely on individual sites may have unintended environmental effects, in particular in urban areas or historic downtowns where redevelopment sites do not have room to treat and store the required volume or runoff. The role of shared drainage among properties can have environmental performance that equals – or exceeds treatment of runoff on a site-by-site basis. Any permit is also likely to allow the use of a sub-basin approach to develop combinations of on-site and shared stormwater management.

Example language

General:

When reviewing possible low impact development codes, language often establishes that performance standards be met on all individual development and redevelopment sites, regardless of the larger development context. This can drive upward the amount of land needed per unit of development, and also rule out shared drainage opportunities that would deliver better performance.

Specific Language:

"Encroachment" is defined in Santa Paula's Streets section:

"Encroachment means any pole, conduit, cable, pipeline, fence, sign, building, or any temporary or permanent structure or object of any kind or character which is placed in, under or over any portion of the street right-of-way."

This language may preclude shared used of structural and non-structural BMPs in public-private partnership. (§96.20. Definitions. Title IX, General Provisions, Chapter 96 – Streets)

Recommendations: Revise the stormwater code (and open space) to prioritize BMP selection based on permit language – This language is likely to state a preference for as much on-site management as possible, with shared non-structural stormwater management to hande overflow. The permit is likely to place the lowest priority on structural devices.

Review planning areas' boundaries vis-a-vis sub-watershed boundaries – Review existing and pending redevelopment and specific area plans to see where boundaries may require adjustment to consider shared drainage. Consider use of basin modeling software in initial stakeholder outreach for plan modification/development.

Similar to code language on shared parking, Ventura County and its cities can develop model language in stormwater and/or land development codes for shared drainage. While proximity is a key component of shared parking, successful shared drainage and treatment will be tied to drainage patterns. The elements of a shared drainage code could include:

1) Applicability – define the areas of town or number of properties that can be involved.

2) Reference to a watershed or basin plan to delineate boundaries.

3) Registered location of the shared facility(ies).

4) Model agreement among users.

5) Monitoring schedule.

6) Maintenance agreements and if needed, bonding and insurance.

* *

Part 3 – Code and ordinance language supporting SITE LEVEL environmental form

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Does the zoning code incorporate Low Impact Development principles?

Issue: Zoning codes and General Plans may not include language that provides legal support for low impact development. Even where language on green site design is included, that language may not tie the full span of activities (and performance) associated with low impact development.

Example language

General: Because they are "principles," LID language setting the stage for code elements is best situated in "Purpose and Intent" statements. Note too, that performance specification for LID may not be contained in code, but rather in engineering specifications and manuals.

Specific Language:

The City of Ventura refers to on-site management of stormwater in code related to the Stormwater Pollution Prevention Plan, which is:

"a document which describes the on-site program activities to eliminate or reduce to the maximum extent practicable, pollutant discharges to the storm drain system. A stormwater pollution prevention plan prepared and implemented pursuant to any NPDES permit meets the definition of a stormwater pollution prevention plan for the purposes of this chapter." (Chapter 8.600, Stormwater Quality Management, Article 1)

Recommendations: The draft permit lists the following language related to LID:

"LID is a stormwater management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect predevelopment hydrologic functions."

As such, Ventura County and its cities may want to develop a model for purpose and intent language for (1) General Plans,(2) stormwater quality and (3) subdivision codes. That language should replicate any permit language, for example,

- Emphasis on land conservation.
- Emphasis on platting and conserving the natural drainage systems as a first step in site/subdivision design.
- Use (to the maximum extent practicable) of natural or existing on-site features for stormwater management.
- Multi-distributed, small scale hydrologic controls.
- A post-construction hydrologic performance that matches pre-construction or natural conditions.

* *

Does landscaping code for planned or multi-family development stipulate landscaping and plant materials that are water friendly?

Issue: Code language often contains language on suitable plantings. Plant lists are shifting from traditional plantings (e.g., gardenias) to native plants and even non-plant installations.

Example language

General:

Language on plant material may be included in individual zoning codes, language for planned or special districts, or language on parks.

Specific Language:

In Camarillo, "landscaping and other ground space treatment shall be provided on all areas not used for buildings, parking, roadways, pathways or recreational facilities. Existing natural landscaping elements should be retained

where possible and integrated into the landscape plan. …B. Landscaping shall consist of a combination of trees, shrubs, groundcover with careful consideration given to the eventual size and spread, susceptibility to disease and pests, durability and adaptability to disease and pests, durability and adaptability to existing soil and climatic conditions. Fountains, ponds, sculpture and decorative screen walls as an integral part of the landscaping scheme are permitted."

Oxnard's R-4 zoning district specifically allows for landscaping, flower and vegetable gardens and fruit trees not grown expressly for profit (i.e., community gardens).

Recommendations: Outside of a comprehensive Landscape Manual, revise code language on landscaping for increased stormwater management – determine whether landscaping is better addressed within code, or if reference to a manual in code will better achieve multiple objectives. Oxnard's language on community gardens reflects a growing interest in local food production; this can be tied to an urban open space strategy for reuse of stormwater if a cistern is used.

* *

Does code allow for alternative siting of buildings through flexible setbacks?

Issue: Flexible setback language allows a site designer to first assess the areas of a site best suited for infiltration and treatment, and locate a building or parking on another portion of the site.

Example language

General:

Language allowing flexibility in site design is typically related to multi-family and mixed-use projects.

Specific Language:

The Planned Residential Unit Development code offers flexibility in setbacks, parcel sizes and building location on sites to "encourage a variety of housing and ownership types to satisfy the full range of housing needs." (Division 12. Residential Planned Unit Developments, Oxnard)

For condominiums, Santa Paula allows for flexible site design to take advantage of topography. (Chapter 16.85: Condominiums and Conversions, Santa Paula)

Recommendations: Update code language to allow use of topography for stormwater management – Flexible setbacks would be most successful if they fit (1) the overall neighborhood design, and (2) a landscape that offers slope and depressions for on-site water conveyance and infiltration. Look for, and adjust, code language to allow developers leeway in using topography for infiltration and high performance natural BMPs.

* *

Does the landscaping code require installation inspections, maintenance agreements and/or easements?

Issue: According to USEPA, one of the biggest challenges with stormwater management is long-term maintenance of BMPs. This also applies to non-structural and natural BMPs. As such, code language (or manuals that are referenced by code) that includes long-term maintenance language for landscaping can be modified to include BMPs as well to meet permit requirements

Example language

General:

Language on maintenance can be included in Subdivision code, Landscaping code, and/or Design manuals.

Specific Language:

Fillmore requires a maintenance easement for landscaping installations as well as minimum maintenance efforts: "Maintenance Rules for Landscaping Shall consist of regular watering, mowing, pruning, fertilizing, debris clearing, weed removal, and replacement of dead plants." (Section 6.04.2845)

Oxnard has a parking area landscape maintenance code that might be adaptable for BMPs. (Section 16-642. Parking Area Landscape Maintenance)

Recommendations: Include maintenance in code-directed landscape installations – The stormwater permit will include language on long-term maintenance. Thus, any existing or new language on landscape maintenance should ensure that any landscaped area/parking identified as a BMP is included in a long-term maintenance or easement plan.

Create customized landscape plans for long term effectiveness – Ventura County and its cities should conduct research on a range of LID installations suitable for the county's rainfall and climate, and develop guidance either in code or within a manual. According to the Center for Watershed Protection, BMP failure often lies in faulty installation, so a separate chapter detailing installation processes and inspections is critical.

Create BMP installation certification process – Because BMP maintenance expands the duties of landscaping professionals, a certification course in BMP installation and maintenance may also be warranted.

* *

Part 4 – Code and ordinance language as a barrier to SITE LEVEL environmental form

* *

Does code language limit driveway paving material to asphalt, Portland cement or some other highly impervious material?

Issue: Code language that mandates impervious driveway, walkway and sidewalks eliminates the opportunity for on-site stormwater management. Performance measures in stormwater permits may also be difficult to meet if a pervious option is unavailable.

Example language

General:

Most local zoning codes include language on suitable materials for driveways, walkways and even sidewalks within subdivisions. This language may be contained in (1) subdivision codes – look for language on "improvements" or "driveways," and (2) individual land use codes. Note that there are often justifiable objectives, such as emergency access, which will need to be met with design solutions.

Specific Language:

"Residential driveways shall be constructed according to SPPWC Std. Plan 110, Type A with the following limitations:

- Widths must be between 10 feet and 27 feet wide.
- The sum of W's for all driveways shall not exceed 40% of the property frontage, however at least one W = 3 m (10 feet) driveway is allowed on each lot."
- Driveways are required to be constructed of PCC (Portland Cement) or asphalt where there is no PCC curb and gutter. (Ventura County Road Standards)

Under the Development Code, no front yards may be covered by more than 50% with nonpervious surface (paving). However – (H) Any abandoned or nonfunctional driveway must be removed and replaced with standard concrete curbs, gutters, and sidewalks." (§16.46.070 Driveway and Access Standards – Residential Uses. Santa Paula)

Within the parking code, the City of Ventura has a special section on surfacing: "All driveways, drive aisles, parking areas, and accesses to such parking areas required by this chapter, as well as all outdoor display areas for vehicles and all outdoor storage areas, shall be completely surfaced with asphalt or Portland cement concrete surfacing. Adequate drainage shall be provided for all such asphalted or concreted areas in accordance with the requirements of the building official and the city engineer." (Section 24.415.090. Surfacing. Ventura)

Recommendations: Expand use of porous materials in code for low traffic areas – On individual development sites, walkways and

driveways have less traffic, and thus are the best near term candidates for pervious materials. While adoption of such materials will take time, removing code barriers is the first step. The areas to pay attention to are:

- Handicap access areas, where a smooth surface is needed adjacent to ramps and entries.
- Alternatives to curb and gutter (see below).
- As with regular paving materials, root-zones still exist.
- Installation and maintenance instructions in code or manuals.

* *

Does the landscaping code include language such as elevated landscaped beds or required materials that limit or prohibit infiltration?

Issue: Parking lot islands are typically elevated to provide wheel stops, contain landscaping materials and provide visual and landscaped demarcation in a lot. However, codes often mandate this configuration, which eliminates use of stormwater for landscaping.

Example language

General:

Language on landscaped islands is typically contained in "Landscaping in Parking" or within a separate Landscape code in the Subdivision Recommendations.

Specific Language:

"A. Paving shall be either a Portland cement or asphalt surface and graded to drain adequately with the design to the satisfaction of the city engineer.

B. All parking stalls shall be clearly striped and maintained as such.

C. A continuous six-inch concrete curb above parking lot level shall be installed and serve as a wheel stop for cars on all periphery areas of the parking lot and as an edging for planting areas and islands and protection for walls for entrances and exits." (19.44.270 Parking area improvement. Camarillo)

The code notes all front yards must be landscaped with plants, with a 20% cap on use of non-plant materials. The use of non-plant materials is increasing for water conservation, but non-plant materials can also be a better choice for stormwater management installations. (Development Code title chapter 16.13, §16.13.060 Landscaping. Santa Paula)

Under the Subdivision regulations, language stipulates: "The subdivision shall contain no undrained depressions." (Subdivision Regulations, section 8204-5. Ventura County)

Recommendations:

Landscaping in parking – Almost all municipalities include this language, which renders meeting the stormwater permit's impervious area disconnection directive almost impossible. There is not a quick solution, but rather this requires new language on the beds and the curbs. Where landscaping is below grade, curb cuts would help. Evaluate alternative wheel stop designs for parking areas.

Non-plant materials in landscaping – For meeting the stormwater permit, Ventura County and its cities will need to slow the velocity of runoff leaving a site. Landscape designs to lower velocity include directing flow over rocks, sculptured swales and other non-plant features for energy dissipation. As such, evaluate code limits on non-plant landscape elements to see if they will interfere with meeting the permit.

Revise language to limit grading – Evaluate the "Grading" section of code to see if there is language that may restrict the ability to collect and infiltrate stormwater. Any language that prohibits depressions or requires a uniform grade will interfere with on-site stormwater control.

* *

Is there zoning or building code language that could restrict or prohibit infiltrative landscaping?

Issue: Many cities adopt the California Building Code by reference. This code lists minimum construction requirements. Language on drainage, foundations, and diversion of roof runoff are the most related to stormwater management.

Example language

General:

This code language is likely to be located in the Development Code where the California Building Code may be adopted by reference, or elements of the State code may be presented. In Ventura County, the Ventura County Building Code and Ventura County Standard Land Development Specifications include specific language on site preparation.

Specific Language:

Santa Paula has adopted the California Building Code; a new Section 1804.7 is added to read:

"Provisions shall be made for the control and drainage of surface water around buildings. Concentrated drainage such as rainwater from gutters and downspouts, scuppers, and roof valleys shall be diverted away from building foundations by means of concrete splash blocks and/or other approved non-erosive devices. 1804.7.2 Gutters and Downspouts. When buildings are located on expansive soil having an expansion index greater than 50, gutters, downspouts, piping, and/or other non-erosive devices shall be provided to collect and conduct rainwater to a street, storm drain, or other approved watercourse or disposal area."

The Ventura County Land Development Specifications govern the submittal and work processes, materials specifications and site preparation specifications:

"303-5 Concrete Curbs, Walks, Gutters, Alley Intersections, Access Ramps and Driveways 303-5.1.4 Concrete Substitution. Class 280-C-14 (470-C-2000) may be used in lieu of Class 310-C-17 (520-C-2500) and Class 280-D-14 (470-D-2000) in lieu of Class 310-D-17 (520-D-2500) as specified in 201-1.1.2 for street surface improvements, excluding concrete pavement, when no class is specified on the plans or in the special provisions."

Recommendations: Review Building Codes and Specifications for barriers to LID – Barriers within the State Building Code are a larger issue and one being pursued by the California Stormwater Quality Association. The County and it cities need to evaluate current specifications for language that would be a barrier. Note, specifications on engineered soils, pervious paving materials, and the like will need to be added and updated.

Among the specifications and manuals to audit are:

- Ventura County Grading Cover Sheet
- Ventura County Land Development Specifications
- Ventura County Building Code – This code will need to undergo review and modification for low impact development. The 2007 update includes a small section on "Green Building." Most new codes address stormwater, but not performance standards. Ventura needs to be ready to address: drainage and its ultimate conveyance, minimum and maximum soil compaction, use of engineered soils, a new section on post-construction, a process to update as new pervious materials are tested and accepted, a process to approve non-erosive devices for managing runoff near foundations, and cisterns and underground vaults.

* *

Part 5 – Code language that may or may not support environmental design depending on language and interpretation

* *

How does code address use of fees for drainage?

Issue: The new stormwater permit may alter existing fee calculations based on impacts to the public conveyance system. LID approaches promise to send less water from properties into the public system, ostensibly lowering impacts on infrastructure. On the other hand, the new rules may increase the cost of complying with hydromodification, water quality and volume standards.

Example language

Specific:

Within Camarillo's Subdivision code: "Fees shall be required for the purpose of defraying the actual or estimated costs of constructing-planned drainage facilities for the removal of surface and stormwater from local or neighborhood." (18.70.010 Drainage and Sanitary Sewer Fees)

"The amount of each impact fee is calculated based upon the gross square footage of non-residential development, number of residential dwelling units, type or density or intensity of use, vehicle trip generation, or other appropriate methodology which ensures that the fee is roughly proportional to the impacts of new development on public facilities, including storm drainage." (Title XVI – Development Code Chapter 16)

Santa Paula allows fees to be dedicated to planning and includes credit provisions.

Recommendations: Review the impact fee structure for stormwater against the permit. Ventura County and its cities need to evaluate the existing fee structure against permit changes. On the one hand, fees should go down as more stormwater is managed within a project's boundaries. However, other aspects of the permit assign new costs to controlling previously unrecognized impacts. This will be true not only for developer impact fees, but also any ongoing homeowner or project fees.

* *

How does code deal with non-conforming structures?

Issue: Once adopted, the new post-construction requirements will need to be adopted into code. There is the possibility (depending on interpretation and how code is written) that existing buildings without stormwater controls could be considered non-conforming.

Example language

Specific:

Fillmore's code emphasizes the elimination or updating of non-conforming structures.

Article 13 governs Non-conforming Structures (Ventura County). The following language applies:

"Where structures have been rendered non-conforming due only to revisions in development standards dealing with lot coverage, lot area per structure, height or setbacks, and the use therein is permitted or conditionally permitted in the zone, such structures are not required to be terminated under this Article and may be continued and expanded or extended on the same lot provided that the structural or other alterations for the expansion or extension of the structure are either required by law, or are in conformance with the regulations in effect for the zone in which such structures are located."

Recommendations: Clarify conformance/non-conformance once the permit is adopted – 5% Effective Impervious Area (EIA) is related to lot coverage, though not in traditional accounting for lot coverage. This may need to be addressed to clarify whether existing lots are counted as non-conforming once the permit kicks in. If needed, this section could be amended to include EIA percentage.

* *

How does code treat land acquisition for parks/open space and dedication of easements?

Issue: Subdivision and other codes include language on dedication of land, facilities and easements to the County or cities.

Example language

Specific:

The City of Moorpark may require a reservation of land within any subdivision for public facilities such as parks, libraries, recreational facilities, fire stations, or other public uses, subject to the conditions enumerated in Section 66479 of the Subdivision Map Act. Following reservation of land within a subdivision, an agreement shall be executed between the subdivider and the public agency benefited by the reservation to acquire the reserved land, as specified in Section 66480 of the Subdivision Map Act. Termination of such reservations shall occur as specified in Section 66481 of the Subdivision Map Act. (Ord. 334 §1 Exh. A (part), 2006) (Subdivision Code, 16.48.030 Reservation of Land for Certain Public Facilities)

Ventura County's Subdivision regulations require the subdivider either to provide or enter into a secured improvement agreement with the appropriate Park District to provide the following: all required curbs, gutters, sidewalks, drainage facilities, fencing, street lighting, stop lights, street signs, matching pavement and street trees to full County standards; stub-in of all requested utility line services to the park facility; all standard improvements required by the appropriate Park District; and initial on-site grading required for developing the park facility (Subdivision Code, Section 8209-6.4)

Recommendations: In subdivision codes, review language on "public facilities" and dedication rules – The shift from hardened conveyance systems to natural ones requires re-evaluation of land acquisition and a new category of "public facilities" which are now above ground, not below. Ventura County and its cities will also need to consider how parkland can be used for sub-basin stormwater management. This is often the best way to efficiently use land, but code parameters may or may not support such an approach.

In subdivision codes, revise language to allow use of public facilities for stormwater management – Scrutinize land pending for future land acquisition and include that as part of a larger "infiltration" strategy that can be used within an incentive system:

- Classify land purchases within permit compliance, and allow developers to participate.
- Identify land most valuable for receiving water quality, flood abatement or filtration and integrate in overall SOAR, watershed, parks or stormwater program.
- Begin to assign public lands for stormwater management, including street rights of way, parks, school property and County/city-owned properties.
- Align CIP funds for the same purpose.

* *

IV. Additional questions to ask and information to consider

Expansive Soils and High Water Tables

Under the California Building Code, when buildings are located on soil having an expansion index greater than 50, water must be diverted away from foundations. Communities may want to map areas with Expansive Soil indices above 50, along with areas of high water tables. This map could be used to show areas where infiltration is difficult (or impossible) and develop alternative paths of compliance.

Accessory Buildings

For commercial areas, and restaurants in particular, controlling "dumpster juice" reduces many contaminants entering storm sewers. However the definition of building, combined

with the possibility of combustible materials, might set in motion requirements for sprinklers and other amenities just to cover trash. Check with the building code manager to see how covered dumpster areas are handled through code.

SOAR Boundaries, Vacant Land and Build-Out Studies

Ventura County and its cities periodically compare the supply of vacant land to growth projections and build out (based on General Plan use designations and densities). The vacant land study uses mid-range density targets, although development projects have consistently been built at lower average densities. In the past, this lower range development portfolio has been expressed in term of housing and economic development, but can also be regarded as missing environmental targets as well. Given housing demand in the region and State, the lower build out begs the questions of "If not here at higher density, then where?" and "What is the environmental footprint of that demand built elsewhere?"

SUMMARY OF RECOMMENDATIONS

Short Term – Revise existing code language.

- Revise "Purpose and Intent" Statements to include watershed services.
- Review individual use sections in code to increase opportunities for stormwater management.
- Develop language for hydromodification related to watershed management.
- Use example code language from other Cities.
- Refine code language on drainage.
- Revise the stormwater code (and open space) to prioritize BMP selection based on permit language.
- Update code language to allow use of topography for stormwater management.
- Expand use of porous materials in code for low traffic areas.
- Revise language on landscaping in parking.
- Allow use of non-plant materials in landscaping.
- Revise language to limit grading.
- Clarify conformance/non-conformance once the permit is adopted.
- In subdivision codes, review language on "public facilities" and dedication rules.
- In subdivision codes, revise language to better use public facilities for stormwater management.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Revise Tree Preservation Codes to add stormwater management and performance.
- Tie larger-scale Source Water Protection to codes.
- Amend rural housing and commercial codes to direct clustering.
- Create BMP installation certification process.
- Include maintenance in code-directed landscape installations.
- Review Building Codes and Specifications for barriers to LID.
- Review the impact fee structure for stormwater against the permit.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Develop/revise Landscape Design Manuals with permit compliance in mind.
- Create customized landscape plans for long term effectiveness.

Chapter 5. Infill and Redevelopment

TECHNICAL REVIEW SHEET: REDEVELOPMENT AND INFILL

I. Introduction

The power of redevelopment operates at several levels: watershed, district and site. Redevelopment is particularly important for Ventura County given the need to retrofit the built environment and carefully execute infill within the urban growth boundary. Land development regulations and codes include language that both supports and inhibits redevelopment and infill. For purposes of this review, redevelopment includes both traditional downtown and vacant/blight programs, but also redevelopment and rehabilitation of individual parcels and properties. This section will look at the code language and provide recommendations, with attention to water-friendly practices.

II. Who to bring and where to look: relevant code sections and key contacts for the review

Redevelopment of a property will be directed by the underlying code (e.g., Residential-4) and/or overlay zoning. Trigger levels can be found in "Applicability" standards and within individual codes. For the most part, codes directing key redevelopment and infill are included in Specific Area Plans or Downtown Plans. Most cities have a code that directs redevelopment in Central Business Districts, though the universe of redevelopable parcels is much larger. Larger infill sites are likely to have a coordinated specific plan, while smaller individual sites may or may not lie within a district plan/code.

Code sections

▼ Camarillo

Title 19 – Zoning

Chapter 19.25 Camarillo Old Town Zone COT

Chapter 19.21 Camarillo Commons Mixed-Use Zone

▼ Fillmore

Article III – General Regulations

Section 6.04.18 – Property Development Standards

Fillmore Central Business District Specific Area Plan

▼ Moorpark

Moorpark Municipal Code

Title 17 - Zoning

Moorpark Specific Area Plans

Downtown Specific Plan Amendment

▼ Oxnard

Chapter 16-Zoning Code

Division 10 – Central Business District

Chapter 8 – Vehicles and Traffic

▼ Santa Paula

Municipal Code §16.15.030 Development Standards for Central Business District

▼ Simi Valley

Title 9 – Development Code

Land Use Alternative Papers (including Specific Area Plans)

▼ Thousand Oaks

Municipal Code

Title 9 Planning and Zoning

▼ Ventura

Ventura Downtown Specific Area Plan

Specific Plan Procedures, Municipal Code, Chapter 24.555

▼ Ventura County

Non-Coastal Zoning Ordinance

Article 8: Parking, Access, Landscaping and Transportation Demand Management

Coastal Zoning Ordinance

Chapter 16 – Zoning Code

Division 10 – Central Business District

Who to include in the review

- Public Works
- Zoning Code Administrator
- Code Enforcement
- Housing
- Economic Development or Redevelopment Agency Chair (number and location determined by proximity to redevelopment areas)
- Chamber of Commerce
- Environmental Groups
- Neighborhood Associations (number and location determined by proximity to redevelopment areas)
- Development finance experts (who will be able to provide examples of other non-code barriers or incentives for infill)
- Housing and affordable housing organizations
- Transit and Transit-Oriented Development (TOD) advocates or experts if redevelopment involved

III. Starting the review: Questions at a glance

Part 1 – Incentives and barriers at the DISTRICT LEVEL – planning for infill and redevelopment

- Does the County or City have one or more Mixed Use zones, and are they applied to areas suitable for redevelopment and infill?
- Does the County or City have active programs to support redevelopment and infill?
- Does the County or City allow use of alternative traffic and parking models to determine the transportation and parking factors for site design?

Part 2 – Code language that supports and incentivizes infill and redevelopment at the SITE LEVEL

- Does the "Purpose and Intent" section of code support redevelopment?
- Does the code have variable site design elements to encourage infill and redevelopment?
- Does the City or County have variable parking and loading requirements for redevelopment/infill districts?

Part 3 – Code language that can be a barrier to at the SITE LEVEL for infill and redevelopment

- How does code specify applicability for new code parameters for redevelopment projects?
- Are there limitations in bulk dimensions that could suppress redevelopment and infill? (Look for footprint in codes)

CODE REVIEW

Part 1 – Incentives and barriers at the DISTRICT LEVEL – planning for infill and redevelopment

* *

Does the County or City have active programs to support redevelopment and infill?

Issue: Support programs for redevelopment and infill are not standard elements of code, but may be incorporated by reference. Initiatives such as vacant property programs can intersect with code and code enforcement, and hence need to be considered with any code review.

Example language

General:

Redevelopment and Economic Development offices may have plans or lists of capital improvements.

Specific:

The City of Fillmore Redevelopment Agency offers financial assistance for housing rehabilitation to very low- to low-income families within the Central City Project Area. Note part of this is a garden beautification grant that may have potential for stormwater retrofits.

Likewise, Santa Paula has a renovation assistance program for low-income homeowners.

Recommendations: Review the CIP for planned public works projects that might be used for economic development – Any new permit will likely transform economic development programs to include public works projects (master BMPs) as incentives. This would require advanced mapping and modeling to assign either contribution levels for in lieu of programs or incentives where a city or the County underwrites the improvement. Where possible, cities and the County can identify redevelopment priorities with water infrastructure investments to see if certain investments move up in priority as economic development.

Review the potential for public-private partnerships to sponsor BMPs – Note that the permit has two parallel tracks: (1) BMPs supplied by developers on individual projects and (2) BMPs at the supra-site level funded by contributions or public funds. There may be a third public-private partnership option, which could also extend to long-term maintenance.

* *

Does the City or County allow use of alternative traffic and parking models to determine the transportation and parking factors for site design?

Issue: Cities and counties often require the use of conventional traffic models, which have been developed based on Greenfield, single-use development. These models have been shown to overestimate parking requirements and transportation impacts, and hence the amount of land needed for redevelopment (and development in compact sites).

Example language

General:

Language on models is not typically located in code, but rather in department policy or a Specific Area Plan. However, placing language on the accepted models, including smart growth models, in code, signals legal and policy support for their use.

Specific:

The City of Camarillo used the Tri-City Traffic Model for the Camarillo Commons Specific Area Plan. This model was developed for Brea, CA.

Recommendations: Institute use of smart growth models and standards – Ventura County and its cities should include reference to the range of models that can be used for redevelopment districts. The Institute for Transportation Engineers has published materials on street design, and will be publishing updated parking generation estimates for smart growth and redevelopment project areas.

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Part 2 – Code language that supports and incentivizes infill and redevelopment at the SITE LEVEL

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Does the "Purpose and Intent" section of code support redevelopment?

Issue: Support for infill and redevelopment is strengthened when established as a primary purpose of land development and zoning codes.

Example language

General:

"Purpose and Intent" language can be stated as an explicit objective related to infill and redevelopment, or a general purpose of the code. Strong language tends to specify (1) redirecting growth to established areas through code, and (2) flexibility within codes to support and encourage redevelopment and infill.

Specific:

"CBD – This zone shall integrate residential, commercial, cultural and recreational land uses; encourage conservation of land resources and minimize auto travel; encourage a lively pedestrian-oriented commercial district; and provide for the location of employment and retail centers in close proximity to residential development of varying densities." (Oxnard, Zoning Code SEC. 16-145. Purpose and Intent)

Recommendations: Revise Purpose and Intent statements for redevelopment to include

watershed benefits – Ventura County and its cities can, in the Purpose and Intent section, explicitly recognize the role redevelopment and infill play for watershed protection and restoration.

* *

Does the code have variable site design elements to encourage infill and redevelopment?

Issue: Because older development sites are often constrained (e.g., odd lot sizes and shapes), uniform code language can render redevelopment of a site difficult or impossible. While variances are one way to address constraints, another is through flexible site design as a right.

Example language

General:

Flexible site design can be included in individual use codes or through an overlay for a planned district outside a Specific Area Plan. As a first step, check the overlay codes for areas targeted for planned infill and redevelopment.

Specific:

Thousand Oaks has special rules for single-family housing built under RPD standards. For "infill zones" with density greater than 4.5 units/acre, the code allows reduced setbacks, driveways and other site parameters. (Thousand Oaks, Section 9-4.911)

In Santa Paula's R-1 residential zoning category for infill development, any front yard requirement will be deemed to be met when the depth of the front yard provided at least equals the average of that established by existing buildings which occupy 50% or more of the lots within the same block on zone. Development Code Chapter 16.3. In older neighborhoods, this can add flexibility and bring houses closer to the street over time.

Recommendations: Create a LID Overlay for redevelopment areas – If a City or the County does not have an overlay, consider such a zone to begin to introduce flexibility and water-friendly site design features for redevelopment areas.

* *

Does the City or County have variable parking and loading requirements for redevelopment/infill districts?

Issue: Updated (and increased) parking requirements that redevelopment projects must follow are one of the larger barriers to redevelopment, even where the additional spaces are not needed. Loading zone language can also be a barrier when there is a requirement that all loading take place within a site's boundaries.

Example language

General:

Flexible language may be found within the parking code or within codes that govern redevelopment and infill districts.

Specific:

Loading dimensions must be 12 feet by 20 feet, though larger may be required. Access shall not impede the right of way. Exemptions available for minor streets and where turnaround cannot be met. (Fillmore, CBD zone)

Oxnard's code contains a separate section on variances for parking:

"Notwithstanding subsection (A) of this section, the approval body may grant a variance from the parking requirements of this chapter pertaining to a nonresidential project, so that some or all of the required parking spaces are located off-site, or so that in-lieu fees or facilities are provided instead of the required parking spaces, if both the following conditions are met:

(1) The variance will be an incentive to, and a benefit for, the project; and

(2) The variance will facilitate access to the project by patrons of public transit, particularly guideway facilities (i.e., near established bus lines).

Decreases – The number of parking spaces required by this article may be decreased

pursuant to sections 16-650 and 16-651." (Oxnard – Section 16-565. Variances; When Permitted)

Oxnard also allows for alternative parking and loading requirement through adopted redevelopment plans (Section 16 – Zoning Code)

Recommendations: Develop master parking plans for redevelopment areas – Ventura County and its cities are already developing master parking plans for areas where on-street and shared parking can be used to more efficiently allocate parking. Make sure that loading is included, because on-street spaces may be available for loading (for example, spaces are used in the early morning for loading, but made available later in the day for public parking).

Develop specialized variances focused on parking for redevelopment – Oxnard's use of code to direct variances is helpful when parking is the only variance needed.

* *

Part 3 – Code language that can be a barrier to at the SITE LEVEL for infill and redevelopment

* *

How does code specify "Applicability" for new code parameters for redevelopment projects?

Issue: Over the years, the trend in zoning code parameters has been, by and large, more land consumptive (e.g., parking and setback requirements). Existing development is grandfathered in until some level of conversion or rehabilitation takes place. The trigger for such improvements factors into decisions on redevelopment and rehabilitation, and may be serving as a barrier to improvements not only for buildings, but for blocks and districts as well.

Example language

General:

The "Applicability" section of code may contain language as to when changes are required. Also look within individual use codes. Language will usually refer to a certain level of investment (if the renovation is 50% or more of the value of the structure, or by a level of floor space).

Specific:

Updated parking requirements are triggered when 25% of a site, or 1,500 square feet or more floor space is added. (Oxnard Commercial Business District code)

Recommendations: Use stormwater management as a condition of obtaining a variance on parking – Ventura County and its cities may want to review where parking requirements are difficult to meet on individual sites, and use stormwater management as a condition for a variance. This will also help install stormwater management on lots where land disturbance will be less than 5,000 square feet.

* *

Are there limitations in bulk dimensions that could suppress redevelopment and infill? (Look for footprint in codes)

Issue: As with parking, updated bulk dimensional requirements (height, building footprint cover) may be triggered with redevelopment. Some of these dimensions have changed over time and may have the effect of diluting use intensity. For example, the zoning for certain uses may limit building coverage to 30%. This requires that 70% of the site be used for something other than the primary economic or housing activity. This is likely to be a bigger issue outside of downtowns and more an issue for redevelopment of smaller areas along corridors.

Example language

General:

The "right" yard requirements, setbacks and height will depend on several factors, including the intensity of use, development objectives and transportation plan for the district.

Specific:

Building coverage limits within Camarillo zoning codes in areas subject to redevelopment: Camarillo Old Town (65% maximum), Community Neighborhood (30%) and Commercial Planned Development (30%). Under a planned development permit, the coverage is up to 50%.

Recommendations: Make minor code changes to bulk requirements for redevelopment. While most redevelopment districts are already subject to downtown codes and Specific Area Plans, consider mapping any potential districts to determine if the underlying code supports redevelopment and infill. In the short term, consider minor code changes to allow variability in bulk dimensions:

1. Allow a range of building footprint coverage for a minimum and maximum – consider the need for on-site stormwater handling when assessing this min/max requirement. Also note that parking will be competing for space.
2. Check frontage requirements where smaller-scale redevelopment is to take place: for example, a 150-foot minimum frontage requirement might encourage strip type development when other formats (street edge retail) are desired.
3. Many codes cap height at two to three stories, but allow for taller buildings subject to review. Check with planning and zoning to see how this is currently used or could be improved.
4. Setbacks – Codes increasingly allow "build to" or zero setback lines.

For the long term, consider planning and visioning initiatives now to develop a coordinated plan or pre-Specific Area Plan. This will help outline items such as master drainage and stormwater treatment and management for the sub-basin ahead of time.

* *

IV. Additional questions to ask and information to consider

Building Rehabilitation versus Redevelopment

Most cities have successfully used a rehabilitation code/district for historic preservation where the historic street and plat framework was, by design, land efficient. A developer's role typically involved rehabilitation of individual buildings, not wide-scale redevelopment of an area. The next generation of redevelopment will need to tackle not only buildings, but the re-creation of a new underlying, land efficient pattern.

Under the stormwater permit, individual building rehabilitation that disturbs less than 5,000 square feet will not trigger BMP installation. As such, wide-scale building rehabilitation is not likely to advance stormwater or land planning objectives. The proposed permit includes the use of a Redevelopment Project Area Management Plan; reception has been mildly supportive, but concerns about the complexity linger.

There are two short-term ways to address this planning/BMP gridlock:

1. Create a tracking system to see if there are trends in rehabilitation versus redevelopment. Through the system, Ventura could ascertain the extent to which the permit requirements and/or other barriers are preventing larger redevelopment and the benefits from that.
2. Figure out how to use existing planning and code systems for the RPAMP. This could be aligned with climate planning. Note that climate and watershed planning intersect at key points, such as compact footprint, intensity, increased non-auto travel and auto storage, and retrofit.

Redevelopment and Single-Family Homes

Under the April 2008 proposed permit, "existing single-family structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area" (page 52). There are several points worth noting:

- For most cities, the largest land area by zoning code designation is single-family residential.
- While the trigger for the new rules is 5,000 square feet, this threshold is double for single-family homes.
- As such, the proposed permit eliminates the greatest opportunity for retrofit.
- This means that – through redevelopment – developers will supply improvements on comparatively small land areas. Improvements for single-family neighborhoods, which comprise the greatest area draining to impaired waterways, will come from public investment, mainly from street and detention retrofits.

This is why the trigger for new parking for redevelopment may be a better opportunity and condition for BMPs than the permit itself. Ventura County and its cities should map Single Family area zones where 10,000 square feet of replaced or created impervious cover is likely (or not likely) to occur.

Fiscal Drivers of Land Use

Ventura County and other observers note that the fiscalization of land use (i.e., using planning and zoning primarily for economic advantage) will thwart efforts seeking more efficient land use and redevelopment. The "chase for ratables" is an obstacle to better development patterns nationwide and not likely to be addressed by an update to stormwater permitting or a code review.

However, a code review, combined with increasingly quantified measures of watershed impacts, shines a brighter light on the costs and benefits of decisions. The costs of diminished aquifer recharge, increased flooding and rising expenses to meet TMDLs can be traced to changes in the landscape, and the decisions behind those changes.

SUMMARY OF RECOMMENDATIONS

Short Term – Revise existing code language.

- Revise "Purpose and Intent" statements for redevelopment to include watershed benefits.
- Use stormwater management as a condition of obtaining a variance on parking.
- Make minor code changes to bulk requirements for redevelopment.
- Develop specialized variances focused on parking for redevelopment.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Review the CIP for planned public works projects that might be used for economic development.
- Review the potential for public-private partnerships to sponsor BMPs.
- Develop master parking plans for redevelopment areas.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Institute use of smart growth models and standards.
- Create a LID Overlay for redevelopment areas.

Chapter 6. Compact Design

TECHNICAL REVIEW SHEET: COMPACT DEVELOPMENT

I. Introduction

Compact development, by design, reduces the overall footprint of development. Whether in new projects or redevelopment districts, reducing the development footprint is central to land conservation and minimizing impervious cover.

II. Who to bring and where to look: relevant code sections and key contacts for the review

The questions underlying the code review ask (1) what leads to excess land consumption and impervious cover at the site level, and (2) what leads to excess land consumption and impervious cover at the district level? Zoning code provisions address the extent of land disturbance and cover at both the site level and the larger district level. Within zoning codes the following chapters and sections are relevant:

Site level – Land Development and Zoning Code Chapters, Parking and Loading

District Level – Land Use Codes that affect districts (for example, Downtown Codes, Mixed Use Districts), Subdivision Codes, Specific Area Plans (note some district zoning codes are expressly developed for a Specific Area Plan).

Code sections

▼ Camarillo

Title 19 – Zoning

Chapter 19.44 Off-Street Parking

▼ Santa Paula

Title XVI – Development Code

Chapters 1607-16.33 – Zoning Districts and Land Use Regulations

Chapter 16.46 – Off-Street Parking and Loading

Chapter 16.80 – Subdivisions

Chapter 16.108 – Transportation Demand Management

▼ Simi Valley

Title IX Development Code

▼ Ventura

Chapter 24.415 Off-Street Parking Regulations

▼ Ventura County

Non-Coastal Zoning Ordinance

Coastal Zoning Ordinance

Who to include in the review

- ▼ Public Works
- ▼ Transportation (if possible, someone familiar with State DOT rules)
- ▼ Zoning Code Administrator
- ▼ Code Enforcement
- ▼ Housing
- ▼ Economic Development or Redevelopment Agency Chair (Chamber of Commerce)
- ▼ Environmental Groups
- ▼ Neighborhood Associations (number and location determined by proximity to redevelopment areas, proximity to parking "hot spots")
- ▼ Developer or representative from a financial institution

III. Starting the review: Questions at a glance

Part 1: Are there incentives and barriers to compact form at the DISTRICT LEVEL?

- ▼ Does the Purpose and Intent statement list compact development or efficient land use as a primary goal?
- ▼ Does the code include a Mixed Use Zone? Is the Mixed Use zone applied to the appropriate areas (typically the Downtown/Central Business District area)?
- ▼ Are density bonus provisions effectively used to promote compact development?

- Does code language prioritize and facilitate development of contiguous or adjacent parcels?
- Are there parking provisions related to compact development?

Part 2: Does the code include incentives for compact development at the SITE LEVEL?

- Is there flexibility for compact development?

Part 3: Is there code language that can serve as a barrier to compact community form at the site level?

- Does the Purpose and Intent statement send mixed signals on compact development?
- Are there parking provisions in code that undercut compact development?
- Within bulk regulations – do building coverage limits undermine compact development?
- Within bulk regulations – do height limits undermine compact development?
- Within bulk regulations – do setbacks undermine compact development?
- Do numerous code requirements drive large development footprints?

CODE REVIEW

Part 1: Are there incentives and barriers to compact form at the DISTRICT LEVEL?

* *

Does the Purpose and Intent statement list compact development or efficient land use as a primary goal?

Issue: The "Purpose and Intent" statements in code provide a legal anchor for language directing or restricting site, building and district design. For compact development this statement is particularly important since the move towards land efficient development can run counter to conventional land development regulations and codes.

Example language

General:

Compact development statements are likely to appear at the beginning of the code (for the overall Land Development or Zoning Section). There may also be statements in Purpose and Intent codes at the beginning of individual use codes (e.g., Transit Oriented Development codes).

Specific:

The text (including tables and matrices) and zoning map contained in this chapter constitute the comprehensive zoning regulations for the city and are adopted to protect and promote the public health, safety and general welfare; to provide the environmental, economic and social advantages which result from an orderly, planned use of resources; to establish the most beneficial and convenient relationships among land uses; and to implement the city's general plan. (Moorpark Zoning Code, 17.04.020 Purpose of Title)

"This zone shall integrate residential, commercial, cultural and recreational land uses; encourage conservation of land resources and minimize auto travel; encourage a lively pedestrian-oriented commercial district; and provide for the location of employment and retail centers in close proximity to residential development of varying densities." (Santa Paula Zoning Code Section 16-145. Purpose and Intent)

Recommendations: Revise "Purpose and Intent" statements to focus on compact development – Revise statements to more clearly express compact or land efficient development. If your code already has this language, use this code review as a guide to see if code parameters match the intent.

Look for opportunities in "Energy Conservation code or plans – See if there are opportunities within the "Energy Conservation" code for more information on land efficiency, including:

1. Language on street layout to address directness of route for all modes.
2. Language to address connections among uses. Some residential projects prefer walls;

even so, a keyed gate that allows passage by residents is an improvement over no connections.

3. Reference use of traditional street geometry that typically includes shorter blocks, improved crosswalks, and more narrow streets. This should cross reference any street code or road standard as well.

* *

Does the code include a Mixed Use Zone? Is the Mixed Use zone applied to the appropriate areas (typically the Downtown/Central Business District area)?

Issue: Mixed use codes are emerging as viable alternatives to traditional Euclidean zones. Some cities have promulgated several codes and districts to custom design land development regulations. Most (if not all) of these new designations introduce a compact format based on matching tripmaking, use mix and a smaller footprint.

Example language

General:

Look for internal codes with the designation "M-U." When assessing the M-U zone consider whether the site design requirements add to, or detract from, the compact form sought.

Specific:

In Camarillo Common's CMU Zone, the following requirement on Building Coverage applies:

"Buildings and other structures may not occupy more than fifty percent of the area for which the planned development permit is issued, where other sections of the code are met and with which all standards have been complied. The remaining area may be used for landscaping, automobile parking and circulation, and must be completely improved for these purposes. (Ord. 980 §2 (part), 2005.)" (Chapter 19.23 CMU (Village Commercial Mixed-Use) Zone)

The purpose of the code is to "promote pedestrian use;" however, the site design elements begin to erode compactness.

Recommendations: Review the history of how mixed use codes were adopted, with attention to resources needed, conflicts, legal obstacles and performance to date. For existing M-U codes, examine whether the use mix and compact form envisioned are actually being built.

* *

Are density bonus provisions effectively used to promote compact development?

Issue: Density bonus language is now present in all California zoning codes. They can be a powerful tool for efficient land use. The Density Bonus law works by granting both density provisions and concessions.

Example language

General:

Most code language on density bonus law is located in a separate section under Land Development or zoning. For the most part, the code language reflects boilerplate language with minimum State requirements.

Specific:

There are a couple of variations worth noting. Camarillo gives preference to residents for bonus units. Fillmore allows density bonuses in commercial areas (limited to CBD). Oxnard establishes density bonus provisions through meetings with staff.

Recommendations: Even with clear language on density bonuses, they have not been widely used for other reasons (process, financing, opposition). The increasing push for land efficient development for water and climate protection will likely renew focus on density bonus incentives.

Review the Density Bonus provisions as they relate to the permit – The Density Bonus law (Government Code Section 65915-65918) allows a developer to seek "waivers and modifications" of "development standards." Localities may not enforce any "development standard" that would preclude the construction of a project with the density bonus and the incentives

or concessions the developer is entitled to. Section 65915(e). The statute defines "development standards" as "site or construction conditions" that apply to a residential development pursuant to any ordinance, general plan element, specific plan, charter amendment, or other local condition, law, policy, resolution or regulation. The stormwater permit may not have much impact if the Density Bonus provisions are rarely sought. However, in areas where on-site requirements are more expensive to meet, any stormwater concessions in the Density Bonus law may become more valuable. Ventura County and its cities may want to obtain legal opinion to shape possible policy parameters.

* *

Does code language prioritize and facilitate development of contiguous or adjacent parcels?

Issue: For compact development, advance planning to consider contiguity for new development and redevelopment is essential. In Ventura County, General Plans and the Guidelines for Orderly Development both establish development via contiguity.

Example language

General:

At the larger scale, language on contiguous development is likely to be included in the General Plan or Subdivision regulations. For connections among larger development projects, the language is likely to be included in the Subdivision code. Some cities have a section on Access and Circulation that relates to all sections of code, while other cities describe access within individual districts.

Specific Language:

"Street layout shall be designed to provide for future access to, and not impose undue hardship upon, property adjoining the subdivision." (Camarillo, Chapter 18.16 Subdivision Design)

"Every development project must provide safe and adequate internal vehicle and pedestrian circulation that, to the maximum extent feasible based on specific development site physical characteristics, separates pedestrian circulation from vehicular circulation, incorporates defensible space design considerations, and complements the internal circulation and public access provided on any adjacent development sites. Where feasible, parking lots must connect. Future vehicle and pedestrian connections must also be provided." (Santa Paula, Chapter 16.40 General Development Standards, Access and Circulation).

Santa Paula has developed an overlay district that can be used as a buffer between new high density districts and existing neighborhoods. "The PD overlay zone may be considered for use only in the following circumstances:

(A) Where a property is proximate to public parks, public buildings, areas of public interest such as locations of natural beauty, of exceptional natural resources, and areas of historical significance;

(B) Where a disparity exists between adjacent zones warranting special conditions to protect the more restricted zone; and/or

(C) Where a new residential project or conversion of an existing residential use or uses proposes residential units on smaller lots than permitted in the zone but provides compensating open space and recreational facilities, provided overall density conforms to limits established in the Santa Paula General Plan." (Planned Development Zone, Chapter 16.31)

Recommendations: Refine code language on access within and among parcels/projects – Check for code language for access not only within, but between parcels. Check to see if there is one section defining access for the entire code, or if access is defined within each zoning district. Consider an overarching section on access for all development (with exceptions where access should be limited for security or public health). If one overarching section is inappropriate, add or improve language to key zoning districts where additional access, especially for pedestrians, is needed (e.g., Commercial Neighborhood, Multi-family). In particular, note:

1. Safe, identifiable passageways among uses with supporting pedestrian infrastructure.
2. Linkages among everyday uses, including services, recreation, shopping and work.
3. Internal connections among uses to relieve traffic from major travelways.
4. Passageways that provide the most direct route while satisfying safety and visibility needs.

* *

Are there parking provisions related to compact development?

Issue: Most of the policies reviewed under the Parking Technical Review Sheet deal with the footprint of parking, and thus are also relevant to any review of compact development. There are, however, specific provisions in code that relate compact development and parking.

Example language

General:

For compact development, certain code features are powerful. Within "Off-street parking" look for language that (1) allows shared parking, (2) incentivizes underground or use of structured parking, and/or (3) use of existing parking on on-street spaces.

Specific:

For multi-family projects, Oxnard allows provision of up to 50% of parking spaces on driveways.

Buildings, including accessory buildings may cover up to 50% of the planned development permit parcel area; except, if covered parking is provided under the principal building: Building coverage may be increased by 180 square feet per parking space provided, and landscaping increased by 1% per 5 covered parking spaces provided. Camarillo, Section 19.22. This provides an incentive to supply underground parking.

Parking and access in the Oxnard Central Business District –

(1) Notwithstanding any other provision of the code, the number of required parking spaces shall be met by one or a combination of the following methods (with review by Planning Commission):

(a) Within the subject property;

(b) On-street immediately adjacent and contiguous to the property line;

(c) Public parking lots within 700 feet of the nearest point of the subject property;

(d) Public parking structures within 1,000 feet of the nearest point of the subject property;

(e) Off-site private parking within 500 feet of the nearest point of the subject property.

Recommendations: Support or incentivize land efficient parking – Where development of a district-wide parking plan is not feasible, the use of flexible standards similar to Oxnard's may be a short-term option.

(Additional recommendations on parking can be found in Chapter 9.)

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Part 2 – Does the code include incentives for compact development at the SITE LEVEL?

* *

Is there flexibility for compact development?

Issue: Bulk regulations (setbacks, height, yard requirements) can cumulatively add up to increase the size of a parcel needed for development projects. Flexible standards can help lower the amount of land needed while allowing developers to take advantage of a site's natural hydrologic features.

Example language

General:

Within residential codes, flexibility can take the form of (1) zero lot line development, (2) use of averaging for lot sizes, density and dimen-

sions (e.g., average lot widths), or (3) optional standards.

Specific:

Simi Valley has "optional standards," which gives developers choice among amenities. Senior and affordable housing need to meet nine and seven standards respectively, while multi-family projects must meet 11. Amenities related to compact development include credits for infill projects and variable setbacks. (Section 9.24)

Ventura County's Subdivision regulations allow for alternative lot widths to minimize grading. (Section 8204-2.3)

In Moorpark's Code: "Residential Planned Development – provide areas which will be developed utilizing modern land planning/ unified design techniques and flexibility to encourage:

1. Coordinated and compatible neighborhood design;
2. Efficient use of land (e.g., clustering and preservation of the natural features);
3. Variety and innovation in site design, density and housing unit options, including garden apartments, townhouses and single-family dwellings;
4. Lower housing costs through the reduction of street and utility networks; and
5. A more varied, attractive and energy-efficient living environment as well as greater opportunities for recreation than would be possible under other zone classifications." (Moorpark Residential Planned Development Code)

Recommendations: Include LID options for design menus in compact districts – Simi Valley's optional standards provide one possible approach to assist developers in meeting the permit for compact design while providing other amenities as well. Simi Valley may want to consider including low impact options in the list.

Revise code language on clustering to improve transportation and stormwater performance – Several cities have a residential planned development code to support several housing types under one code. These codes can be improved by:

1. Including stormwater management in design and clustering criteria.
2. Linking the clustering to tripmaking so that housing is not clustered at the point furthest from roads, retail and other external services/uses.

* *

Part 3: Language that can serve as a barrier to compact community form at the SITE LEVEL

* *

Are there parking and/or landscaping provisions in code that undercut compact development?

Issue: In addition to other code parameters that drive upward the amount of parking needed, there may be other provisions in code that run counter to efficient site design.

Example language

General:

Site amenities can add to the amount of land needed per project. For example, landscaping, screening, open space and setbacks.

Specific:

Landscape strip a minimum of 10 feet wide. (including the middle of drive aisles of adjacent sites). For 5-21 spaces: at least 5% landscaped; 10% for more than 22 spaces. (Section 24.415.100. Landscaping and Screening. Ventura)

Recommendations: Amend parking codes to increase compact design – Review use codes for landscaping and screening requirements on individual parcels and the parking code for landscaping in parking. Consider amending shared parking codes to include shared drainage, and amend any model parking code to include maintenance.

* *

Within bulk regulations, do building coverage limits undermine compact development?

Issue: For compact development, maximum building coverage tends to dilute land efficiency by limiting economic activity to a small portion of the site, but requiring the rest of the site to be developed with parking and minimal landscaping.

Example language

General:

Within each use category, zoning codes typically specify a maximum building footprint or coverage (for example, 40%).

Specific:

In Simi Valley, the Civic Center zoning district "is intended to provide an area devoted primarily to public facilities and supportive commercial activities, and to encourage a concentration of these facilities in a centralized location." However, the minimum landscaping is 25% (as opposed to 15% for other uses). Target uses include libraries, performing arts, community centers and restaurants. (Title IX, Development Code, Chapter 9.26)

Recommendations: Review and revise (if needed) building footprint caps for compact areas – In compact areas, footprints typically range from 60% to 100%. As a first step, check the footprint within areas designated as compact or walkable to see what the range is. A low end range may reflect the lowest cover considered adequate for parking provisions. For un-built plans, revisit parking and increase building footprints where walkability or transit is a focal point.

Institute a cap on the parking coverage for parcels – Consider instituting caps on the amount that can be devoted to surface parking, not just building footprint.

* *

Within bulk regulations, do height limits undermine compact development?

Issue: Height limits (expressed as number of floors of height from some base level) are used to moderate building form. However, growth that cannot go up tends to spread out. State and local policy around the country is evolving to include increased heights for transportation, walkability and economic development. For water resources, height can assist in a smaller overall development footprint since more development is accommodated under one roof.

Example language

General:

Height limits are contained, by and large, in Chapters governing individual uses. Also look in Specific Plans, as different limits may apply. In addition, some cities allow additional height through a Design Review or Conditional Use Permit approach.

Specific:

In Simi Valley, the height limit for High Density and Very High Density Housing is three stories or 40 feet, whichever is less. All other housing is limited to two stories (30 feet) or less. (Title IX, Land Development, Chapter 9.24 – Residential Zoning)

Recommendations: In Ventura County, codes typically specify up to three stories, though additional floors may be approved in certain planning areas. This is not necessarily a negative approach, however additional stories may be needed to accomplish other transportation and economic development goals. For redevelopment, increases in height will typically occur through the Specific Area planning process, not through a blanket change increasing the height limit in all codes.

Include "Height as a BMP" in stormwater outreach materials – Height is a very sensitive issue in Ventura, in particular for views. However, watershed health and open space are also important. For the permit, Ventura may want to incorporate the watershed benefits of

efficient land use into communications products so that the tradeoff of height versus impervious cover is fully presented.

* *

Within bulk regulations, do setbacks undermine compact development?

Issue: Setbacks define how far from the property line a building's foundation must be from the front, rear and side boundaries. Setbacks in California tend to be smaller than those found around the country; however setbacks will also be important site features when LID requirements are enacted.

Example language

General:

Setbacks are typically presented for individual uses. Dimensions are presented for front, rear and side setbacks with some minimum distance for a building's foundation from the property line. Another type of setback is the build-to line. For example, zero setback or build-to line brings the building to the sidewalk. A zero lot line provision (usually for residential) allows a house to be built to the property line on one or more sides, with some minimum setback for a yard on the other edges.

Specific:

In the Simi Valley Civic Center district noted above, in addition to the landscaping minimum of 25%, the minimum front setback is 100 feet. In addition, Simi's code for Very High residential states that for front setbacks, the minimum is 20 feet, but an additional foot of front setback is required for each additional one feet in height over 15 feet. Thus, the taller the building, the farther from the street. (Title IX, Development Code, Chapters 9.24 and 9.26)

Recommendations: Amend setback language to emphasize stormwater management role – Setbacks are going to be somewhat of a battleground with the new permit. In some instances, developers will need to provide greater than minimum setbacks for stormwater management requirements. However, this may conflict with other efforts to shrink the development footprint for other objectives.

1) Make sure all language on setbacks allows stormwater management and low impact landscaping.
2) Use setback averaging to tie setback flexibility to topography and slope. For example, if a larger side setback is needed to take advantage of depressional areas, a smaller rear setback can be used (with some smaller minimum).

* *

Do numerous code requirements drive large development footprints?

Issue: Multi-family residential codes, as well as other commercial and mixed-use codes, have seen growth in the number and range of site design requirements. While these requirements represent amenities for residents and users, they can unintentionally drive up the parcel sizes needed for projects that are only available distant from infrastructure and services.

Example language

General:

Most codes have several categories of multi-family housing (e.g., residential – medium density or residential – very high density). Codes for multi-family housing may also be included in Planned Residential codes that include many different housing types within one zoning district.

Specific Language:

Fillmore: The rules for multi-family projects are (1) building footprint a maximum of 60% of the site, (2) parking (1.5 to 2.5 spaces/unit and guest spaces), (3) 3% landscaping in parking area, and (4) communal open space (30% of the site). (Article III, Section 6.04)

Oxnard: SEC. 16-362. Development Standards. Recreation facilities – Multiple-family attached dwelling units of 12 units or more shall provide

common recreational facilities with interior yard space areas to include, but not be limited to, one or more of the following:

(1) Swimming pools;

(2) Spa;

(3) Tennis and/or basketball or volleyball courts;

(4) Barbecues and outdoor picnic facilities;

(5) Recreation buildings;

(6) Exercise courses and stations;

(7) Children's play equipment;and

(8) Such other facilities as are approved by the planning commission.

Open area – Projects having 12 or more units shall provide at least one lawn area of not less than 2,500 square feet and having a minimum dimension of not less than 35 feet."

Recommendations: Determine where lower site requirements can be established for multi-family development projects – Multi-family residential projects are a critical component for compact development. To evaluate land efficiency with your multi-family codes, tabulate the requirements to see what the cumulative requirements are.

Also, check trends in multi-family development and redevelopment in particular whether this type of housing is increasingly located on distant parcels. While higher-density housing is likely to be included in Specific Area plans, there may be opportunities to lessen on-site requirements where parking and parks are co-located with other multi-family projects or public facilities.

* *

IV. Additional questions to ask and information to consider

Walkable, Compact Districts

Most cities in Ventura County include provisions for compact design and walkability, including implementing codes. However, the effectiveness of these districts (for climate and watershed goals) is related to their size, intensity, and location. For example, a city may have a great code for mixed use that is intended to meet multiple transportation, housing and retail goals. However, if that district is small and isolated, the effectiveness may not be robust enough to meet new water and climate mandates.

Growth Management Controls

Several cities have established caps on residential permits issued annually to control growth, with exceptions for affordable housing. The front-burner issues of rampant growth and affordability have not completely disappeared, but a new set of priorities is emerging. Energy efficient (both dwelling and location) housing, built in compact, transportation-rich areas commands urgent attention.

Ventura County residents, governments and NGOs will need to address this shift as it relates to growth management, housing and the next round of planning and zoning updates.

SUMMARY OF RECOMMENDATIONS

Short Term – Revise existing code language.

- Revise "Purpose and Intent" statements to focus on compact development.
- Look for opportunities in "Energy Conservation code."
- Refine code language on access within and among parcels/projects.
- Include LID options for design menus in compact districts.
- Amend parking codes to increase compact design.
- Review and revise (if needed) building footprint caps for compact areas.
- Include "Height as a BMP" in stormwater outreach materials.
- Amend setback language to emphasize stormwater management role.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Review the Density Bonus provisions as relate to the permit.
- Support or incentivize land efficient parking.
- Revise code language on clustering to improve transportation and stormwater performance.
- Institute a cap on the parking coverage for parcels.

Long Term – Incorporate larger programs that integrate planning and stormwater.

- Determine where lower site requirements can be established for multi-family development projects.

Chapter 7. Use Mix

TECHNICAL REVIEW SHEET: USE MIX

I. Introduction

In planning, Euclidian zoning that separates uses into districts has been implicated in the dispersal of development. From the watershed's point of view, this same critique lays at the vast amounts of impervious cover. As distance between uses grew, the ability to conduct business, shopping or leisure trips by any mode other than the automobile disappeared. At the same time, the increase in auto travel expanded the "habitat for cars" and its imperviousness. As such, bringing uses closer together can be a powerful practice for reducing the development, and hence impervious, footprint.

II. Who to bring and where to look: relevant code sections and key contacts for the review

Use mix has generally been addressed, or more accurately – restricted, in codes through a "Euclidean system" assigning separate uses to separate areas of a town or city. Within each code, a list of "Allowable Uses" detailed the uses allowed based on the underlying code assignment for a parcel of land. This review sheet focuses not only on a variety and mix of uses, but a variety of housing types as well.

Code sections

▼ **Camarillo**

Title 19 – Zoning

Chapter 19.44 Off-Street Parking

▼ **Santa Paula**

Title XVI – Development Code

Chapters 1607-16.33 – Zoning Districts and Land Use Regulations

Chapter 16.46 – Off-Street Parking and Loading

Chapter 16.80 – Subdivisions

Chapter 16.108 – Transportation Demand Management

▼ **Simi Valley**

Title IX Development Code

▼ **Ventura**

Chapter 24.415 Off-Street Parking Regulations

▼ **Ventura County**

Non-Coastal Zoning Ordinance

Coastal Zoning Ordinance

Who to include in the review

- ▼ Public Works
- ▼ Zoning Code Administrator
- ▼ Code Enforcement
- ▼ Housing
- ▼ Economic Development or Redevelopment Agency Chair (Chamber of Commerce
- ▼ Environmental Groups
- ▼ Neighborhood Associations
- ▼ Developer or representative from the retail industry

III. Starting the review: Questions at a glance

This section is in two parts. Part 1 addresses language that supports a more compact footprint, and Part 2 covers the converse, language that creates a barrier to more compact footprint.

Part 1: Language that supports a mix of uses

- ▼ Are there mixed-use codes and/or overlay districts?
- ▼ Does the list of "Allowable uses" enhance and support use mix?
- ▼ Do code provisions support housing variety?
- ▼ Does the code address compatibility to lessen potential conflicts among mixed uses?

Part 2: Language that serves as a barrier to a mix of uses

- Do subdivision regulations or other codes limit use mix?
- Do Commercial zones limit use mix?
- Are areas of town zoned for commercial neighborhood close to residential neighborhoods?

CODE REVIEW

Part 1: Language that supports a mix of uses

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Are there mixed-use codes and/or overlay districts?

Issue: Several cities in Ventura County are addressing a better use mix through specialized codes. These codes, which correspond to districts, intentionally bring together a use mix to support a more compact format. Overlay codes are created to create new zoning parameters to a distinct area; overlay zones can be mandatory or optional.

Example language

General:

Conventional codes tend to have a prefix to denote residential uses (R-), Commercial uses (C-) and industrial and/or manufacturing (M-). More recent codes, such as MU (Mixed Use) and Ventura's MXD code, have been created. Most cities have also adopted codes that mix housing or commercial types within one code, such as Residential Planned Development.

Overlay codes can be also found in the code, but may also be found in Specific Area Plans.

Specific:

In Ventura, all uses within the boundaries of an overlay zone must comply with the overlay zone regulations in addition to the zoning district regulations for the underlying zone, all other provisions of this zoning ordinance, and other provisions of law. (Sec. 24.300.020. Operation of overlay zone regulations)

The Santa Paula General Plan calls for adoption of a Mixed Use Category.

Camarillo's Commercial Neighborhood Zone states: "The commercial neighborhood zone is to provide facilities supplying both daily convenience goods and services as well as to provide an environment of a stable, desirable character which will be in harmony with existing and potential development of surrounding neighborhoods and which may be located in or adjacent to residential areas.

B. In order to produce commercial neighborhood centers which meet modern environment and design standards, each center shall be approved only under a planned development permit." Camarillo Commercial Neighborhood, Section 19.24.

Santa Paula's Transportation Demand Management Code includes: "Residential development projects: 350+ units. Residential development of 350 dwelling units or more must comply with...the following to the satisfaction of the City:

Development design must, to the greatest extent possible and as appropriate based on adjacent land use and markets, incorporate services such as dry cleaners, eating establishments, child care facilities, grocery markets, neighborhood work centers and other facilities which will reduce home-based vehicle trips and vehicle miles traveled. Such services must, to the greatest extent feasible, interconnect to circulation systems." (§16.108.030 Transportation Demand and Trip Reduction Measures)

Recommendations: Survey effectiveness of overlay districts – Survey districts where an overlay district is voluntary to gauge effectiveness (note overlay districts may be required for meeting stormwater and/or TMDL regulations). Be prepared to draft language similar to Ventura's if overlay language would be required to meet those regulations. Survey mixed-use districts to assess how well they fare economically and how patrons access the businesses (auto, transit, foot).

Insert land use language contained in Transportation Demand Management sections to use codes – Santa Paula's mixed-use language is strong, though its inclusion in the Transportation Demand Management section may not be as strong as its appearance in zoning district language. Consider moving it to the zoning code district.

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Does the list of "allowable uses" enhance and support use mix?

Issue: Within zoning districts, codes enumerate the uses that can be established in that zone. The "Allowable Use" list can be limited or expansive, depending on the jurisdiction. The more expansive the list, the greater the ability to have a use mix.

Example language

General:

The list of allowable uses is included under zoning districts. Most codes list the lowest intensity first (open space, low density residential) and present increasingly intensive uses (industrial). Some codes are pyramidal, which successively allow all the uses in the category presented before it. As such, some commercial codes will also allow residential as an allowed use.

Specific:

In Ventura, the C-1 and C-2 commercial zones have an extensive list of residential, retail and service uses.

Recommendations: Where possible, add uses to allowable use mix – Consider adding a small set of retail uses to Planned Residential and Planned Commercial codes with design and location requirements to insure proximity to residential.

Review accessibility to neighborhood serving retail in the vicinity of large residential areas – Review not only allowable uses, but the location and size of the zoning districts on the zoning map. For example, older residential areas are more proximate and better served by commercial districts. Ventura County and its cities may want to compare neighborhood access and proximity to actual use mix in neighboring districts. If neighborhoods are served by Professional Office (P-O) to a larger extent than neighborhood serving commercial zones, small expansions to use mix for P-O might introduce some use mix in the short term. Over the longer term corridor and specific area plans are needed to coordinate the fuller application of mixed use, multi-modal districts.

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Does the code address compatibility to lessen potential conflicts among mixed uses?

Issue: Use mix is commonly challenged on the basis of incompatibility, mainly when placed in proximity to residential areas. However, dispersing uses tends to increase imperviousness.

Example language

General:

Language on the transition from areas of one use to another is typically addressed as a design or landscaping feature.

Specific:

"The Planned Development (PD) overlay zone is established to allow alternative development standards to be applied in limited circumstances where a property or development would benefit from the application of unique and innovative design; to permit greater design flexibility than is feasible under the strict application of conventional zoning and subdivision regulations; and to assist in preservation of areas of natural scenic beauty." (Santa Paula, §16.31.010 Purpose and Intent)

Among other things, Fillmore's codes seeks to "Increase compatibility between abutting land uses and public rights-of-way by providing landscape screening and buffers." (Section 6.04.28 Landscaping Standards)

Recommendations: Affirm a use mix role with compatibility in code language – One first step

for local governments is to affirm that a mix of uses can be compatible, and is essential for obtaining multiple goals. This can be accomplished in code language (Purpose and Intent Language). Compatibility issues are often resolved through design options and operational controls. Santa Paula's Planned Development overlay is a model. Local governments can use overlay controls which may not change the underlying use, but which can be used to manage parking, streetscapes, height tapering and parks. For example, an overlay can be created to limit parking on neighborhood streets adjacent to mixed-use development.

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Part 2: Language that serves as a barrier to a mix of uses

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Do commercial zones limit use mix?

Issue: Codes can be written narrowly, to only include a certain sector of commercial activity, or to allow a wider variety of commercial (and in some cases residential) uses. The location of commercial uses is also important. The more proximate services and commercial activity is to residential areas, the smaller the area needed to supply these goods and services.

Example language

General:

Commercial districts are typically described in the Zoning Chapter. The most common commercial codes are General Commercial (e.g., C-1 or C-2), Neighborhood Commercial, Professional Office and Planned Commercial. The allowed uses can be wide ranging, which affects the intensity and land efficiency of these districts. Note that there has been an evolution in commercial code language: older Commercial General districts are being replaced by planned and mixed use designations.

Specific:

Commercial Office – By special use permit in Thousand Oaks:

"Coffee shops located in an office building; provided, however, there shall be no entrances directly from the street to such businesses, no signs or other evidence indicating the existence of such business visible from the outside of the building, and the office building shall be of sufficient size and character so that the patronage of such businesses may be expected to be furnished substantially or wholly by the occupants of the office building." (Title IX, Article 11 – Commercial Office)

Commercial General – Oxnard has a variation of the neighborhood shopping district in a C-1 zone. A shopping center may be constructed if the developer can show that the neighborhood within which the property is situated contains a minimum of 600 residents. Only one C-1 district/property as specified in the General Plan can be constructed in the neighborhood, and it must have one "major" tenant for daily needs, be architecturally compatible and meet traffic code.

Commercial Neighborhood – In one city's code, only two uses were allowed (convenience store, sandwich shop) in a commercial neighborhood zone. In Santa Paula, landscaping is required on at least 25% of the site, which may be burdensome for smaller sites (though it does provide space for on-site, natural stormwater management); in Thousand Oaks, buildings (including accessory buildings) cannot cover more than 25% of the site.

Commercial Planned Districts – Camarillo Planned Commercial District Development under this code a special permit must meet a combination of site requirements that cumulatively deliver an inefficient format (height capped at two stories, 30% building coverage cap, large frontage requirement, continuous wall). (Chapter 19.26 CPD Commercial Planned Development Zone)

Commercial Mixed – Updated mixed use codes are replacing older commercial designations. Camarillo's CMU (Commercial Mixed zone) has

an extensive list of uses, including residential uses. (Chapter 19.23 CMU (Village Commercial Mixed-Use) Zone)

Recommendations: Add a use mix to commercial codes – Review the list of specified or allowable uses in commercial districts (office parks) and where appropriate and needed, expand the list to match typical trip generation. Lack of options can stimulate a mid-day traffic rush hour. Strict application of office-only uses can also preclude more efficient parking among uses with unlike hours.

Review Planned and Mixed Use code language and improve or add language on pedestrian access to and from the site (not just internally). In addition, update landscaping and parking language to emphasize stormwater management, BMPs and maintenance.

Adopt a residential threshold for which neighborhood retail is provided – Similar to Oxnard's language on shopping centers, cities could adopt language that ensures shopping when some level of population is hit. A first step can be to add General Plan language that sets goals for shopping at some threshold (e.g., 400 residents or some population density measure).

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IV. Additional questions to ask and information to consider

Location of Mixed Use Districts

Ventura County and it cities will need to review maps of current and planned mixed-use districts. The benefits of mixed use and walkable districts are often described for the residents and workers in the district. However, adjoining neighborhoods also can have access to goods, services and amenities depending on access, proximity and the quality of streets and walkways.

Compatibility

"Compatibility" is used within codes to describe how adjacent, unlike uses should be addressed or prohibited. The term is difficult to define, in particular since there can be strongly held opinions that unlike uses are always incompatible. Bringing a use mix back to existing neighborhoods is likely to face opposition, in part because of this belief. Ventura County and its cities may need to address compatibility (and incompatibility) head-on, and then take steps to build policies and design options to lessen conflicts among uses.

Accessory Units

To date, provisions allowing second units have not been widely used and would likely play a bigger role in climate plans than in watershed planning. For stormwater management, second units are likely to add impervious cover (the unit and parking).

Nonetheless, there is growing attention to the housing mix as it relates to watershed health. The City of San Jose, CA, developed a permit system that "credits" provision of affordable units in town (rather than on the outskirts where this housing would otherwise be built).

SUMMARY OF RECOMMENDATIONS

Short Term – Revise existing code language.

- Survey effectiveness of overlay districts.
- Where possible, add uses to allowable use mix.
- Affirm a use mix role with compatibility in code language.
- Add a use mix to commercial codes.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Insert land use language contained in Transportation Demand Management sections to use codes.
- Review accessibility to neighborhood serving retail in the vicinity of large residential areas.
- Adopt a residential threshold for which neighborhood retail is provided.

Chapter 8. Streets and Mobility

TECHNICAL REVIEW SHEET: STREETS AND MOBILITY

I. Introduction

Streets play an important role in the overall footprint of development, as well as the location and position of individual lots. For stormwater, there is the added role of conveyance, since streets have traditionally been used to collect and divert drainage to nearby waterways. Unlike site design, street dimensions are governed under several standards, including State Standards, Fire Protection District code, Subdivision standards and district codes.

This review also investigated how codes address non-auto travel since the lower the demand for this infrastructure, the less need to supply the excess impervious cover. It should be noted that some code language that is related to non-auto travel, such as sidewalks, involves impervious cover. Nonetheless, this type of transportation cover can have lower impacts via lower emissions, more options for pervious paving, and less area per "travel lane."

II. Who to bring and where to look: relevant code sections and key contacts for the review

Code sections

▼ **Ventura County Road Standards**

▼ **Camarillo**

Chapter 19.44 Off-Street Parking

Chapter 19.46 Off-Street Parking

▼ **Fillmore**

Section 6.04.32 – Off-Street Parking Standards (begin page III-73)

Section 6.04.34 – Off-Street Parking Standards (begin page III-77)

▼ **Moorpark**

Article X – Off-Street Parking

Division 1: General, Division 2: Parking and Loading Requirements

Note: some parking requirements are included within individual land use classifications, for example, planned unit developments.

▼ **Oxnard**

Article X – Off-Street Parking

Chapter 16, Division 1: General, Division 2: Parking and Loading Requirements

Note: some parking requirements are included within individual land use classifications, for example, planned unit developments.

▼ **Santa Paula**

Title XVI, Chapter 16.46 - Off-Street Parking and Loading

Division 1 – Parking; Division 2 – Loading

▼ **Simi Valley**

Chapter 9-34 – Parking and Loading Standard (within Development Code, Parking and Loading Standards)

▼ **Thousand Oaks**

Article 24 – Off-Street Parking

▼ **Ventura**

Chapter 24.415 Off-Street Parking Regulations (Loading begins in Section 24.425.130)

Downtown Ventura Mobility and Parking Plan

Downtown Parking Management Program

▼ **Ventura County**

Non-Coastal Zoning Ordinance

Article 8: Parking, Access, Landscaping and Transportation Demand Management

Sections 8108 0-5: Parking; Section 8108-6 – Loading

Coastal Zoning Ordinance

Article 6: Parking, Access and Landscaping

Who to include in the review

- Public Works
- Transportation (if possible, someone familiar with State DOT rules)
- Transit Authority
- Zoning Code Administrator
- Code Enforcement
- Housing
- Economic Development or Redevelopment Agency Chair (Chamber of Commerce)
- Non-Governmental Organizations (transportation)
- Neighborhood Associations (number and location determined by proximity to redevelopment areas, proximity to parking "hot spots")
- Developer or representative from a financial institution
- Fire Protection District
- Climate Change Office

III. Starting the review: Questions at a glance

So much about impervious cover related to roads is contained in manuals developed by outside organizations and agencies. The code review has a discussion on those manuals. Recommendations are presented below.

Part 1 looks at flexibility in manuals and standards issued by agencies at the State or regional level.

- Is there flexibility in State and regional manuals?

Part 2 looks at code language that supports a more compact footprint through street and mobility programs.

- Do mixed-use district codes support a system for non-auto travel and tripmaking?
- Do codes call for connectivity to support a variety of travel options?

Part 3 looks at code language that can create barriers to more compact footprint through street and mobility programs.

- Do codes require large rights of way or language that could impede use of green techniques?
- Do codes require large rights of way for private streets and alleys?
- Is there language on large rights of way?

Part 4 looks to see if code language address allowable costs to provide green streets.

- How does code language address allowable costs to provide green streets?

CODE REVIEW

Part 1 – Flexibility in manuals and standards issued by agencies at the STATE or REGIONAL level

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Is there flexibility in State and regional manuals?

Issue: The engineering specifications for streets are often mandated in State manuals, which base road dimensions and design on national standards. These standards are viewed as dictating overly wide streets and rights of way. However, most manuals do leave room for flexibility and local discretion.

Example language

General:

Most cities adopt, by reference, standards and manuals issued by the State of California.

Specific:

The width of public streets and highways is governed by the California Streets and Highways (S&H) Code. Under State code, the width of all city streets except state highways, bridges, alleys, and trails, are to be at least 40 feet. The governing body of any city may, by a resolution passed by a four-fifths vote of its membership, determine that public convenience and necessity demand the acquisition, construction and maintenance of a street of less than 40 feet. (Appendix B, S&H Code §1805).

The Ventura County Road Standards prescribe minimum standards for public roads or roads to be dedicated to the County. The County allows land in proximity to cities to adopt the cities' standards.

Recommendations: Adopt a minimum standard for street width – As part of a stormwater management approach, use the flexibility in the California Streets and Highways (S&H) Code to adopt a minimum street width, with provisions to increase if necessary.

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Part 2 – Code language that supports a more compact footprint through street and mobility programs

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Do Mixed-use district codes support a system for non-auto travel and tripmaking?

Issue: Mixed-use codes can support a smaller development when the underlying street system and development plan are coordinated.

Example language

General:

Language that matches the transportation system with a use mix is typically included in specialized codes, often developed for Specific Area Plans.

Specific:

"Minimize automobile congestion by encouraging a range of commercial land uses and pedestrian-oriented development, safe and effective traffic circulation, and adequate off-street parking facilities." (Simi Valley, Development Code, Purpose and Intent)

"These regulations are intended to protect and preserve the character of the existing uses and to identify the development standards for new uses and buildings within the city. The primary purpose of the CMU zone is to provide for a combination of commercial, office, upper-story residential uses and compatible related development to promote pedestrian use and enjoyment of the mixed-use area. At the same time, it provides for development programs to complement the area and the city. Additional design guidelines may be adopted to provide further assistance in implementing this zone." The allowable uses in this code are also extensive, which allows freedom to match residential, service and commercial uses. (Camarillo, Village Commercial Mixed Use Zone, Chapter 19.23)

"Facilitate development that respects the desired pedestrian scale and character of Ventura's coastal environment by avoiding massive, monolithic structures, and instead encouraging a series of smaller scale buildings fronting publicly accessible walkways, streets, and/or open space(s)." (Ventura Coastal Mixed Use Zones, Chapter 24)

Recommendations: Convene a multi-disciplinary committee to review street codes – Review detailed street specifications, such as street geometry (e.g., width, turning radii) and land use codes that include required street dimensions. At the same time, write in potential stormwater management practices.

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Do codes call for connectivity to support a variety of travel options?

Issue: Unconnected streets are implicated in excess land development because pedestrian and bike travel is rendered difficult, if not impossible,and the footprint of auto travel lanes and parking expands.

For walkability, subdivision codes will include language on pedestrian and street connections. Most subdivision codes in Ventura County contain the minimum language for dedication of land for a transit stop. In general, the Transportation Demand Management section will also include the most robust language on transit connections and amenities.

Example language

General:

Language on street design tends to fall under (1) Ventura County Road Standards, (2) Subdivision regulations, and/or (3) Transportation Demand Management regulations. Local Access Management programs may also address connections among parcels.

Specific:

"Every development project must provide safe and adequate internal vehicle and pedestrian circulation that, to the maximum extent feasible based on specific development site physical characteristics, separates pedestrian circulation from vehicular circulation, incorporates defensible space design considerations, and complements the internal circulation and public access provided on any adjacent development sites. Where feasible, parking lots must connect. Future vehicle and pedestrian connections must also be provided." (Santa Paula, Development Standards, Chapter 16.40)

"The street and alley design shall be such as to cause no undue hardship to adjoining property. An adequate and convenient access to adjoining property for use in later development shall also be required." (Ventura, Subdivision Regulations)

Recommendations: Review and enhance subdivision code language on internal and external connectivity – For pedestrian connections, many codes only address subdivision-to-subdivision connectivity. Check to see if there is any language on internal connectivity and if not:

1. Improve language in the General Plan on reduction in auto travel and multi-modal travel, and within the Subdivision code, link Mandatory Denial to an inconsistent or under-performing transportation plan.
2. Consider use of a model such as Smart Growth INDEX to set benchmarks for Levels of Service or performance.
3. Develop new language on street and lot patterns that are directed at supporting effective pedestrian travel and tripmaking.

Review and enhance language on transit stop location, access and amenities – Even if this language exists, support for pedestrian tripmaking is dependent on the use mix and whether that mix meets the needs of residents, workers and visitors. For transit stops and amenities, code language typically only addresses the provision of land, but not location, size or access. Contact the Transit System and advocates to review and improve language on stops. Note that this review will also be a part of any climate action plan, so coordinate with the Climate or Transportation Office.

Ventura County and its cities should review documents to add connectivity to various places within code, including:

1. Subdivision regulations – make sure language not only includes connectivity, but connections to internal and external activity centers based on pedestrian directness of route.
2. Multi-family Residential – same as above.
3. Commercial codes – Review, add or improve language regarding access between parcels.
4. Check local Access Management guidance and adopt into commercial codes.

Launch a re-connectivity initiative – While new connections are important, reconnecting established residential and commercials areas will be even more important (and possibly more controversial). For both watershed and climate planning, consider a re-connectivity initiative. Implement stormwater practices in these connections and highlight with signs (e.g., pavers, engineered soils).

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Part 3 – Code language that can create barriers to more compact footprint through street and mobility programs

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Do codes require large rights of way or language that could impede use of green techniques?

Issue: Road standards, based on national standards, are used to set minimum rights-of-

way and street widths. Moreover, wide street widths are often upheld for emergency response purposes; however, the extra imperviousness and land consumption will now be a part of any discussion on road design.

Example language

General:

Road standards are controlled by (1) the Ventura County Road Standards, and (2) Standards set by the Ventura County Fire Protection District [http://fire.countyofventura.org/departmentservices/fireprevention/standards/]. There is likely to be language that integrates these standards by reference in individual city and County codes. Alternative to road standards can also be set in Specific Area Plans.

Specific:

The Ventura County Road Standards present minimum right-of-way and widths based on conventional road classification systems (which are based mainly on traffic volumes). As examples, the following minimum widths are established (Note: most width presented in meters; these examples have been rounded for illustrative purposes):

- Typical Residential Street – 36-40 feet with 53 feet ROW.
- Typical Neighborhood Commercial Street (two-way street with median) – 44 feet with total ROW =118 ft.
- Residential Driveways – Widths must be between 10 feet and 27 feet wide but no more than 60% of frontage width.
- Commercial Driveways – For frontage between 100 and 150 feet, driveways must be between 10 and 30 feet.

The Ventura County Fire Protection District Standards address mainly non-public roads and access for fire response. Standards include:

- Access for Existing Residential Parcels (divided prior to 1980) – All weather roads are required (will support a 20-ton vehicle in a 10-year storm); widths from 12-20 feet depending on number of units; a minimum 40-foot turning radius (to the outside of the road) is required at all turns and curves; if on-street parallel parking is desired, an additional 10 feet of width.
- Private Road Access – For 2-4 parcels: 12 feet of pavement with 4-foot graded and compacted shoulders within a 20-foot minimum easement; for 11 or more parcels: 24 feet of pavement with 4-foot graded and compacted shoulders within a 30- to 40-foot minimum easement (depending on total project size).

Recommendations: Update the Ventura County Road Standards to reduce overall impervious cover and stormwater impacts – Important elements of the Ventura County Road Standards have not been updated since 2000. The entire manual is ripe for review and updated with the new stormwater rules.

Short Term – Consider the following series:

1. A Series – Materials appear to be limited to Portland concrete and Asphalt concrete; check with Caltrans to see if there are technical sheets/specifications on porous or pervious systems and adopt (note: these were not widely considered in the 2007 Stormwater Handbook). There may be similar issues with base materials and shoulders.
2. A Series – The Road Manual adopts the 10-year storm event with some conditions (the proposed permit uses the 2-year/24-hour storm event). For culverts, the 50-year storm event is used. The focus on LID may reduce the amount of water, and thus suggest a new design storm (though climate change models suggest increasing the design storm). This recommendation is for discussion purposes.
3. C Series – This series shows cul-de-sac design. Cul-de-sacs are increasingly discouraged, and where allowed, are designed to include landscaping in the center for stormwater collection and treatment. Consider interim drawings with infiltration landscaping and specifications.
4. E Series – Ventura could begin with the residential driveway standards if an incremental

approach to updating the manual is needed. All plates in the B and E series would need significant refinement to illustrate disconnection of impervious surfaces as they relate to parking and traditionally paved surfaces. Future specifications may show not only cross sections, but oblique or three-dimensional aspects of site design.

Consider replacing current functional classification system – For the long term, consider replacing the functional classification system with a new system matching street geometry to neighborhood characteristics. There are efforts underway which would replace or augment the current system.

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Do codes require large rights of way for private streets and alleys?

Issue: Private streets and alleys have historically provided narrow lanes for access, parking, trash collection and deliveries. However, some codes have expanded the widths needed.

Example language

General:

Designs for alleys and private streets are typically presented in a Streets section or subdivision code. In unincorporated areas, the Ventura Fire Protection District presents minimum standards. Specific Plans can also include directions on design for streets, alleys and private drives.

Specific:

Private streets and/or driveways provided within the project shall be subject to the approval of the planned development permit and in accordance with the following standards:

For private streets, the minimum street width shall be as follows:

A. 26 feet curb-to-curb (when parking is provided off street);
B. 32 feet curb-to-curb (parallel parking on one side);
C. 36 feet curb-to-curb in single-family developments (parallel parking on both sides);
D. 40 feet curb-to-curb in multiple residential developments (parallel parking on both sides). (19.16 Residential Planned District)

Recommendations: Establish a maximum width of 10 feet for alleys and private streets – Check code language on alley widths. Historically, alleys have been roughly 10 feet to 20 feet wide depending on their uses. Alleys and private streets can be used to lessen pressure on the main thoroughfares, and hence their widths as well.

Initiate a "Green Alleys" program – Because of their lighter use, alleys are good candidates for permeable and green approaches. The City of Chicago has initiated a "Green Alleys" program. Alleyway retrofits might make good pilot projects.

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Part 4 – Code language that may or may not allow green streets

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How does code language address allowable costs to provide green streets?

Issue: Green street technology refers to paving materials and retrofit options that facilitate infiltration, treatment and storage. However, guidelines for road funding and construction tend to be anchored in traditional street design and paving materials.

Example language

General:

Language on allowable costs and appropriations can be in code, but also may appear in the County/City treasurer's guidance.

Specific:

The City of Oxnard notes:

"All monies received by the city from the State under the provisions of the vehicle motor tax for the acquisition of real property or interests therein or for the construction, maintenance or

improvement of streets or highways other than State highways shall be paid into the special gas tax street improvement fund." (Oxnard's Tax Code, Chapter 13 – Article V. Water and Street Funds) [Oxnard could clarify that "improvements" include stormwater retrofits and green approaches.]

Recommendations: Revise guidance on use of funds for streets to guide green retrofits and investments – Ventura County and its cities should review all code and manual language related to street "improvements" to include green techniques. In addition, review code or appropriate standards so that gas tax or other road building funds can be used to support stormwater management and green techniques.

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IV. Additional questions to ask and information to consider

Dedication of Streets

Subdivision codes address dedication of streets and easements back to the city or County. With the new stormwater permit, many BMPs will be integrated into both green and gray infrastructure. Because maintenance of BMPs will be an important component of the permit, code language on dedication and long-term maintenance will serve doubly as code and permit compliance language.

Paving for Dust Control

In California, air quality regulations to minimize dust may clash with rules on excess paving. Impervious cover that seems ripe for conversion, for example, road shoulders, driveways and private roads, may see paving requirements for dust control. Similarly, paving is also used through Integrated Pest Management (IPM) schemes to control weeds (e.g., pavement under bleachers).

Issues for Larger-Scale Resolution

Some of the largest drivers of street impervious cover can only be addressed at the regional or State level. The California Department of Transportation Highway Design Manual (HDM) [www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm#hdm] is an overarching regulatory manual that is translated into City and County road design manuals.

Street widths and emergency response continue to be an issue, mainly for accommodating large vehicles (weight and size). Because the underlying street system in all areas (urban, suburban and rural) tends to drive the overall extent of land development, and vehicle size seems to be driving street widths, this issue needs to be raised as a watershed issue. At a state and national level, new designs for vehicles appear to be ripe for consideration.

Caltrans' Highway Design Manual contains numerous barriers to use of infiltrative and green systems for controlling road runoff, which would need to first be removed and updated. The physical strength of roads is a key driver, as is the expected level of traffic (Traffic Index). Caltrans also issues Pavement Guidance [www.dot.ca.gov/hq/esc/Translab/ope/FlexiblePavement.html], which is updated on a regular basis.

Because the increasingly protective stormwater rules will be replicated across the state, Ventura County and its cities could join forces with other cities and counties to pursue the following:

- State policies and purchasing of emergency response vehicles that can maneuver on more narrow roads.
- Work with Caltrans on materials testing and rapid adoption of green practices.
- Clarification from the State Controller on the use of gasoline tax funds for green retrofits.

SUMMARY OF RECOMMENDATIONS

Short Term – Revise existing code language.

- Adopt a minimum standard for street width.
- Review and enhance subdivision code language on internal and external connectivity.
- Launch a re-connectivity initiative.
- Establish a minimum width of 10 feet for alleys and private streets.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Convene a multi-disciplinary committee to review street codes.
- Initiate a "Green Alleys" program.
- Revise guidance on use of funds for streets to guide green retrofits and investments.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Update the Ventura County Road Standards to reduce overall impervious cover and stormwater impacts.

Chapter 9. Parking and Loading

TECHNICAL REVIEW SHEET: PARKING AND LOADING

I. Introduction

Parking and loading zones are two of the most important drivers and visible signs of excess impervious cover in the built landscape. There are two main approaches to lessening the environmental impacts of parking: (1) reducing the overall number of spaces needed, and (2) using alternatives to impervious materials for parking spaces. The materials aspect of parking is covered in the Streets and Mobility Technical Review Sheet.

II. Who to bring and where to look: relevant code sections and key contacts for the review

Parking requirements can be found in many parts of the code. They can be presented as a stand alone chapter or incorporated into the "Land Development" or Zoning Code" chapters. The references below are to sections of code specifically addressing off-street parking standards, however, some parking requirements are included within individual land use classifications (e.g., sections on housing and planned unit developments). Some code language can also be found in "Transportation Demand" code sections, which are included, for the most part, in the Off-Street Parking code. Because revisions are common, the search function on we sites can also help in navigating the code.

Code sections

▼ Camarillo

Chapter 19.44 Off-Street Parking

Chapter 19.46 Off-Street Parking

▼ Fillmore

Section 6.04.32 – Off-Street Parking Standards (begin page III-73)

Section 6.04.34 – Off-Street Parking Standards (begin page III-77)

▼ Moorpark

Article X – Off-Street Parking

Division 1: General, Division 2: Parking and Loading Requirements

Note: some parking requirements are included within individual land use classifications, for example, planned unit developments.

▼ Oxnard

Article X – Off-Street Parking

Chapter 16, Division 1: General, Division 2: Parking and Loading Requirements

Note: some parking requirements are included within individual land use classifications, for example, planned unit developments.

▼ Santa Paula

Title XVI, Chapter 16.46 – Off-Street Parking and Loading

Division 1 – Parking; Division 2 – Loading

▼ Simi Valley

Chapter 9-34 – Parking and Loading Standard (within Development Code, Parking and Loading Standards)

▼ Thousand Oaks

Article 24 – Off-Street Parking

▼ Ventura

Chapter 24.415 Off-Street Parking Regulations (Loading begins in Section 24.425.130)

Downtown Ventura Mobility and Parking Plan

Downtown Parking Management Program

▼ Ventura County

Non-Coastal Zoning Ordinance

Article 8: Parking, Access, Landscaping and Transportation Demand Management

Sections 8108 0-5 – Parking; Section 8108-6 – Loading

Coastal Zoning Ordinance

Article 6: Parking, Access and Landscaping

Who to include in the review

- Public Works
- Fire Department
- Zoning Code Administrator
- Code Enforcement
- Housing
- Economic Development or Redevelopment Agency Chair (number and location determined by proximity to redevelopment areas, proximity to parking "hot spots")
- Chamber of Commerce
- Environmental Groups
- Neighborhood Associations (number and location determined by proximity to redevelopment areas, proximity to parking "hot spots")
- Large parking generators such as Universities and Hospitals
- Representative from local private parking enterprises
- Developer or representative from a financial institution familiar with parking finance

III. Starting the review: Questions at a glance

Each case below provides a guiding question, statement of the issue of concern, general policy approach and specific policy language, and recommendations. This section is in two parts. Part 1 addresses language that supports a more compact footprint, and Part 2 covers language that creates barriers to more compact footprint.

Part 1: Language that supports compact community form by reducing the parking footprint

- Does code language exclude non-staffed areas for determining the number of parking spaces required?
- Does code language specify how to treat fractional parking spaces such as rounding down the numbers of spaces required in the parking/square footage calculation?
- Does the City or County include code language for Parking Districts?
- Is there code language that guides usage of public parking spaces?
- Is there code language that supports the use of shared parking?
- Is there language directing a share of compact spaces as part of the overall total?
- Is parking allowed in setbacks?
- Does the code allow reduced parking requirements in proximity to transit or in pedestrian districts?
- Does the code allow for reduced parking requirements for assisted living, low income housing or other housing units likely to have lower parking demand?
- Is there code language with references to parking pricing?
- Does the code include language on preferred parking for carpools?

Part 2: Code and ordinance language that is a barrier to more environmentally friendly development form

- Is the City or County parking code written to set minimum requirements for parking spaces?
- Does the code specify prohibitions on shared parking, or otherwise list strict conditions on shared use of parking?
- Are there undifferentiated parking space requirements for redevelopment?
- Does the city or county required that circulation be wholly contained within site boundaries?
- How does the code treat parking for recreational Vehicles/Boats?
- Does code language direct the location of parking lots and spaces?

CODE REVIEW

Part 1: Language that supports compact community form by reducing the parking footprint

* *

Does code language exclude non-staffed areas for determining the number of parking spaces required?

Issue: The required number of parking spaces is mainly calculated using a ratio of # spaces/square feet. The ratio can lead to excess parking if code language does not recognize that some square footage in a building is not associated with parking demand, such as stairwells and garbage bays. Similarly, other square footage, such as loading bays, could be double-counted as to require space for both loading and parking, even though a loading bay does not generate parking demand.

Example language

General:

With the Off-Street Parking code, language to support a smaller parking footprint will specify what floor area should be excluded from the calculation. This language excludes space that creates no demand for parking, or which would result in double counting since the driver's "space" is accounted for via office or station space.

Specific:

"No off-street parking spaces are required for floor area exclusively used and maintained for elevators, stairways, restrooms, un-staffed electrical or mechanical equipment rooms, and employee only kitchens, lunchrooms, exercise, or locker rooms."

"No off-street parking spaces are required for floor area comprised of carports, garages, parking structures or other buildings devoted exclusively to provision of required parking spaces." (City of Ventura)

Recommendations: Readjust code to consider only staffed space – If code language directs a parking formula based on gross or total square footage, consider amending the code to exclude square footage that does not add to parking demand or would otherwise double count for parking.

* *

Does code language specify how to treat fractional parking spaces such as rounding down the numbers of spaces required in the parking/square footage calculation?

Issue: The formula used to calculate the number of required spaces often results in a fraction (for example, 12.3 parking spaces). Code language generally specifies how to treat fractional results, typically by instructions on rounding up or down.

Example language

General:

Look for language in the parking code on how to handle the rounding up or down of fractional parking spaces. Most codes call for rounding up any excess square footage after the calculation to the next, higher full space. Look for language that modifies the calculation.

Specific:

"Computation – any fraction up to one-half (1/2) may be disregarded, and any fraction equaling one-half (1/2) or more shall be construed as requiring one full parking space; floor area devoted to parking shall have no off-street parking space or landscaping requirements." (Cities of Thousand Oaks and Oxnard)

Recommendations: Revise code to adjust down for fractional spaces – If code is overly conservative on rounding up for fractional spaces consider a tiered formula, as noted above, that rounds up if the fraction is 0.5 or above.

Conduct a citywide or district parking study – Consider a parking study to determine excess parking. The Institute for Transportation Engineers will be issuing new guidelines for mixed use areas that recognize lower parking demand. See if this manual applies.

* *

Does the City or County include code language for parking districts?

Issue: The over-provision of parking can be traced, in part, to requiring parking on a parcel-by-parcel basis. Parcel based parking eliminates the opportunity to find shared parking and amplifies excess spaces as excess parking for each parcel is built out. By estimating parking needs at a larger, district level, a city or county can identify opportunities for shared parking, parking space reductions, and other strategies to lower the overall number of spaces needed.

Example language

General:

Within codes, parking districts are usually found in (1) Specific Area Plans, (2) redevelopment districts, or (3) parking overlay zoning codes. The language usually directs alternative methods for determining parking not only through computation, but also through demand management, shared parking, and use of public parking.

Specific:

The TAPO Area Planning Overlay includes language to lower parking: "The standard number of parking spaces specified may be reduced by up to 10% (to a maximum of 10 parking spaces) if pedestrian and vehicle interconnectivity is provided with at least one adjacent parcel, subject to approval." (City of Simi Valley)

For parking plans, Ventura's Downtown Mobility and Parking Plan introduces new requirements over a 10-year period and Santa Paula has a fee in-lieu of program for the Central Business District to fund public, shared lots. Oxnard has a special parking plan for downtown, and Camarillo includes a small parking planning area within code for the district.

Recommendations: Initiate a parking plan for draft Specific Plans – For draft Specific Area Plans, see if a Parking Plan or Parking district might be an addition to help locate parking throughout the district. For redevelopment districts not yet included in a Specific Area Plan but for which parking investments (land, structure) have been identified, establish a "fee in lieu of" plan.

Require parking plans for all future Specific Plans with attention to stormwater management – Include language in the General Plan that institutes the regulation of parking by districts for Specific Area Plans or for targeted areas of town where parking is under or oversupplied. For parking benefit districts, make sure that stormwater improvements are included as allowable costs from funds gathered at meters or as part of "in lieu of fees." These funds could help underwrite installation and long-term maintenance for trash excluders, oil-grit separators, and retrofit with green paving materials. Pay attention to pollutants in these areas and target BMPs to those pollutants, which for parking tend to be auto related (metals, oil, trash).

* *

Is there code language that guides usage of public parking spaces?

Issue: Public parking structures shrink the footprint of parking as an alternative to surface-only supply. On-street parking allows the use of existing impervious cover (in the form of on-street spaces) in the computation of required spaces.

Example language

General:

Parking structures are most commonly supplied in Ventura County through public parking decks. Language in code may refer to the ability to use publicly supplied parking to meet required parking needs. Structured parking may also be included in separate downtown planning documents rather than the zoning code.

Specific:

The City of Thousand Oaks convenes a "Parking Structure Design" review board to consider the design of structured parking.

In Oxnard's Central Business District code – Flexible parking language includes:

"(G) Parking and access –

(1) Notwithstanding any other provision of the code, the number of required parking spaces shall be met by one or a combination of the following methods (with review by the Planning Commission):

(a) Within the subject property;

(b) On-street immediately adjacent and contiguous to the property line;

(c) Public parking lots within 700 feet of the nearest point of the subject property;

(d) Public parking structures within 1,000 feet of the nearest point of the subject property;

(e) Off-site private parking within 500 feet of the nearest point of the subject property."

Recommendations: Provide direction on use of on-street parking in parking supply calculations – Check codes to see if proximate on-street spaces are allowed. Survey and map all on-street spaces to holistically supply parking.

Survey on-street parking and include in stormwater management planning – Conduct a survey on existing or potential on-street parking spaces to see if these spaces are appropriate for satisfying parking. As part of the survey include on-street space that could be used and calculate the impervious cover of a "parking space avoided." This could be established as a BMP and be included in stormwater permit plans and compliance language.

* *

Is there code language that supports the use of shared parking?

Issue: Shared parking allows use of one space for more than one use or building. This reduces the overall amount of parking needed. However, land efficiency only occurs when the shared spaces result in a lower overall number.

Example language

General:

Within codes, there is often language issuing support for shared parking, however, the effectiveness at shrinking the footprint of parking varies. Where the two uses are required to supply the same number of spaces as if computed separately, there is no benefit to the environment. Cities also support shared parking outside of legal code language, for example by overseeing shared parking agreements.

Specific:

"Shared parking for commercial and industrial uses, reducing the minimum required parking spaces by up to twenty-five percent (25%) while maintaining a minimum of twenty (20) parking spaces, may be allowed by the community development director when the director has determined that due to the operational characteristics of the on-site uses, parking demands will occur at different times." (City of Moorpark)

"(A) Special study required. Two or more uses may share parking facilities, subject to minor modification in accordance with Chapter 16.222 of this Title 16, and the provisions of this section. A parking demand analysis for the uses proposed to share parking facilities must be prepared by a registered traffic engineer or other appropriately licensed professional. When such analysis demonstrates, to the satisfaction of the Director, that the uses have different peak parking requirements, then the Director may reduce the parking space requirement. In no event, however, may the parking requirement be reduced below the highest peak-parking requirement of the use demanding the most parking." The section also requires agreements among users. (City of Santa Paula)

Oxnard's code contains a "Relief from Parking Provisions" section, which allows for joint use of parking where uses have different hours of operation or different peak hours of operation based on a study demonstrating adequate reductions. (City of Oxnard Municipal Code)

In commercial zones, off-site parking is allowed within 500 feet of the building for no more than 50% of spaces required. (Ventura County)

Camarillo has language on restricted parking in a complex:

"If parking area is reserved or restricted to a particular use, that reservation or restriction is in conflict with the intent of the parking provisions to satisfy the overall needs for a center or complex unless that parking is strictly limited to a period of time and not to a particular use. Such a limitation shall require the city approval prior to such installation." (City of Camarillo Parking Code, General Provisions)

The effect of this language recognizes that restricting parking by uses alters the parking supply when free spaces are off limits. Opening up parking to all users relieves the need for more parking overall.

Recommendations: Develop a model shared parking agreement – Develop a model shared parking agreement that building owners and property managers can use to spell out liability, maintenance and operations. Interview building owners who have taken advantage of shared parking under the code to see if parking is under/over-supplied and if there are managerial challenges. In zones where sharing is allowed (or encouraged), review the extent to which sharing of spaces is undertaken and what factors hinder/support sharing. It should be noted that for residential uses the shared parking facilities must be under the same ownership — otherwise the shared parking would be considered a subdivision of land.

* *

Is there language directing a share of compact spaces as part of the overall total?

Issue: Compact spaces are smaller than regular-size spaces, for example 16 by 8 feet instead of 9 by 19 feet. The smaller footprint of compact spaces requires less area and thus allows more efficient use of developed land. In general, the higher the proportion of compact spaces, the smaller the impervious footprint.

Example language

General:

Code language will specify (1) a minimum size for compact spaces, (2) a maximum percentage of spaces that can be designed for compact cars, and in some cases (3) a reduced drive aisle width.

Specific:

In Camarillo, the parking code allows for up to 30% or spaces to be designated as compact spaces. (Camarillo Municipal Code)

The City of Ventura's code notes that any surplus parking (i.e., that supplied over the minimum) can be sized as compact spaces.

Recommendations: Modify parking code to allow for at least 30% compact spaces – Several Ventura County codes allow for a 30% share of compact spacing, as well as reduced drive aisle widths. If the City/County code is less than 30%, see if a larger share can be instituted. Consider a requirement that space provision above the maximum be compact (as well as other "green" requirements).

* *

Is parking allowed in setbacks?

Issue: Building setbacks are used to position a building, parking and other features from the property line or boundary. Language that allows parking in setbacks makes more efficient use of land. Note that setbacks may also contain landscaping and on-site stormwater handling; parking would diminish the stormwater value of this type of setback.

Example language

General:

In general, code language will direct what may (or may not) be placed in a setback area. For stormwater, there may be competing demands on setbacks. Code language may prohibit activity, but allow landscaping and stormwater handling. On the other hand, allowing uses, like parking, in a setback, makes efficient use of the property.

Specific:

"Parking spaces required by this Chapter shall not be located in the front, side, or rear setback area of any residential zoning district, except within a detached garage or carport structure which may be located in a side or rear setback area, or as authorized by this Chapter." (Simi Valley Municipal Code, Development Standards)

Recommendations: Allow overflow parking in setbacks – Review whether parking is allowed in setbacks or not. Consider allowing parking in setbacks under certain circumstances. The circumstances could include the size and location of setbacks. Because setbacks should also be used for stormwater management – any parking should handle runoff to the maximum extent possible.

* *

Does the code allow reduced parking requirements in proximity to transit or in pedestrian districts?

Issue: Reduced parking requirements not only recognize reduced demand (because alternative modes are available), but also frees up space otherwise used by parking for compact development and pedestrian/transit oriented uses.

Example language

General:

In general, code language will (1) recognize that transit districts generate lower parking ratio, (2) specify conditions on the location, number and access to parking, and (3) studies needed to support the lower parking ratios.

Specific:

"Notwithstanding subsection (A) of this section, the approval body may grant a variance from the parking requirements of this chapter pertaining to a nonresidential project, so that some or all of the required parking spaces are located off-site, or so that in-lieu fees or facilities are provided instead of the required parking spaces, if both the following conditions are met:

- The variance will be an incentive to, and a benefit for, the project; and
- The variance will facilitate access to the project by patrons of public transit, particularly guideway facilities (i.e., near established bus lines).

Decreases – The number of parking spaces required by this article may be decreased pursuant to sections 16-650 and 16-651." (Oxnard Municipal Code – Section C. 16-565. Variances; When Permitted)

"Reduction of spaces. (1) The minimum number of required parking spaces for a use or combination of uses on the same or adjoining sites may be reduced by not more than 50% and other parking requirements adjusted…if the project is subject to the issuance of a discretionary permit, such as a conditional use permit, the Planning Commission will review the request for the adjustment of parking requirements.

(2) The applicant must demonstrate that parking demand will be reduced by one or more methods, including, but not limited to, carpools/vanpools, varied work shifts, use of company-operated buses, transit/vanpool fare subsidy, preferential parking for carpools/vanpools, shared parking facilities or bicycle parking facilities. The applicant must show how the measures will be implemented, the permanency of such measures, the number of vehicles the measures will replace, the person responsible for implementing the measures (if any) and other pertinent information." (Santa Paula Municipal Code, Section 16.46)

Recommendations: Review the effectiveness of the review process for reducing parking spaces – See if there is language in code and/or Specific Area Plans that sets lower parking standards for areas in proximity of transit. Where language directs a finding by the planning commission and/or planning director, review procedures and study how effective the review process has been.

Adopt the Transportation Engineers updated "Parking Generation" manual – The Institute for Transportation Engineers will issue new stan-

dards for walkable areas/transit. Consider integrating those standards by reference in the General Plan and other documents.

* *

Does the code allow for reduced parking requirements for assisted living, low income housing or other housing units likely to have lower parking demand?

Issue: Household demand for automobiles, and thus parking, differs. A reduced requirement for parking for housing that is likely to have lower demand not only reduces the overall footprint of development, but also lowers costs associated with housing. In this manner, affordable housing can be supplied closer to job and service areas.

Example language

General:

In general, code language will direct parking requirements for senior and assisted living facilities that are lower than for regular units. The parking code will typically differentiate the parking requirements, and most cities have a separate residential use code for senior housing.

Specific:

Santa Paula has two provisions for senior housing projects: (1) Efficiency/1BR – 1 space/ 2 units, and (2) Efficiency/1BR – 1 space/ 3 units when projects locate within 1/4 mile of shopping center or CBD (City of Santa Paula Land Development Code, 19.44.030).

Santa Paula also has reduced parking ratios in tandem with its Density Bonus provisions. Bonuses are offered for affordable housing, but include incentives for mixed use. In addition to bonuses, incentives are allowed for reductions in setback, square footage or lot size requirements; the ratio of vehicular parking spaces that would otherwise be required; an additional density bonus in excess of the 25% basic bonus, or approval of mixed use zoning if commercial, office or other land uses would be compatible with the housing project as well as the existing or planned development in the area where the proposed housing project will be located. (Division 7: Density Bonuses)

Ventura's Downtown Parking Management Program lists the unbundling of parking from residential costs as a medium term strategy (2008-11). The Downtown Specific Plan states: "Action D1.1: Implement new code and parking regulations for all new development in the Downtown Specific Plan area that requires residential parking costs to be "unbundled" from the cost of the housing itself."

Recommendations: Unbundle the cost of parking from rents for certain residential projects – Consider unbundling parking charges (details listed below) for affordable housing in transportation-rich areas. Note that paratransit (or call-on-demand transit service) will likely increase; identify planning areas that match senior housing, paratransit service and parking.

* *

Is there code language with references to parking pricing?

Issue: Pricing parking can be a proxy for pricing impervious surface. As such, assigning a cost to parking transmits market signals, to which drivers respond by reducing the demand for parking. Moreover, the pricing of parking can raise revenue to mitigate the impacts of parking (or more to the point, the impacts of the impervious cover). The current focus on pricing parking relates to reducing the footprint for compact development and redevelopment. However, with the new stormwater rules, a shift from pricing for parking to one of pricing for impervious surface may provide funds for the retrofit of parking areas.

Stormwater utilities are another way to price parking, in particular excess parking, though use of utilities is not as widespread in California as in Eastern states.

Example language

General:

In general, pricing for parking is included within districts as part of a coordinated plan.

Specific:

Ventura's Downtown Parking Management Program provides detail on the transition from a "free parking" environment to one that prices parking based on what the market will bear for parking. The City will begin with public parking, meters and Benefit Districts, with a later transition into zoning code changes and variable rate parking.

Moorpark and Camarillo include prohibitions for charging for parking in their Parking Codes.

Recommendations: Eliminate language prohibiting charging for parking – This language eliminates a potential source of funds for parking-related stormwater management.

* *

Does the code include language on preferred parking for carpools?

Issue: Preferred parking for carpools "rewards" carpooling. This, in turn, can help support additional carpooling, which reduces the demand for parking.

Example language

General:

California law mandates code language on Transportation Demand Management. The model code language from the State is factored into most codes.

Specific:

Santa Paula's code allows for parking reductions when carpooling (including preferred parking) are included in the parking plan (Transportation Demand Management).

Recommendations: Use preferred parking areas as pilot projects for green parking techniques – Since these spots tend to be closest to the building, highly visible and well marked, consider using them for demonstration projects, such as alternative pavers and infiltrative landscaping.

* *

Part 2 – Code and ordinance language that is a barrier to more environmentally friendly development form

* *

Is the City or County parking code written to set minimum requirements for parking spaces?

Impact: Setting a minimum required parking space requirement means that a land owner or developer must meet a minimum, but can add spaces if desired. This can result in more impervious cover than necessary. In some cases, the spaces are added to satisfy lenders (for future financial leverage) rather than in meeting demand for parking. In addition to the number of spaces, there are other minimum requirements that can drive the overall form of development, its location and cover. For example, garage requirements (as opposed to carport or uncovered parking) have been studied for impacts on affordability; the same requirements can impact the extent of impervious cover and the ease of handling runoff from parking spaces/garages.

Example language

General:

In general, codes present parking requirements as a minimum. This clause is typically found in the beginning of a zoning chapter or section, which commonly specifies that all code elements have been written as minimum measures. In other words, a developer can add as many additional spaces over the minimum requirement as the budget and/or space will allow.

Codes also often list minimum requirements for parking structures: garaged, carport and uncovered. There can be minimum size requirements for garages as well.

Specific:

Thousand Oaks' commercial use zone (C-1, Neighborhood Commercial), notes that the

building footprint is limited to 25% coverage, and "the remaining area shall be used for automobile parking and circulation and shall be completely improved, surfaces and marked for such purpose." Note that the landscaping in parking provisions denote some of that space for landscaping; however this language places coverage for parking as the predominant use of land. (The same section notes that the site requirements may be waived for redevelopment, which opens opportunities for more efficient use of land, and options for on-site stormwater management).

Recommendations: Institute parking minimum and maximum space requirements – One step in code innovation is the use of both minimum and maximum parking. For instance the minimum may be set at 4 spaces per 1000 square feet, but no more than 5 spaces per 1000 square feet.

* *

Does the code specify prohibitions on shared parking, or otherwise list strict conditions on shared use of parking?

Issue: Code language will often prohibit shared parking, or allow shared parking under terms that do not reduce the overall number of spaces. A code may also list so many requirements and conditions that it becomes a barrier to shared use of parking spaces.

Example language

General:

Codes specify the conditions under which two or more uses may share parking spaces. Conventional code language tends to require the same amount of parking as if the two uses were not considered together, which does nothing to reduce the impervious cover associated with parking. Even if a reduction is allowed, some codes require intensive research and review. While this type of study can be necessary to determine the number and alternatives to minimum parking, the scope and cost of research may pose barriers.

Specific:

"Shared or common parking must be approved by planning director and the total of such off-street parking spaces, when used together, shall not be less than the sum of the various uses computed separately." (City of Camarillo Parking Code, "Common Parking Facilities")

"Special study required. Two or more uses may share parking facilities, subject to minor modification in accordance with Chapter 16.222 of this Title 16, and the provisions of this section. A parking demand analysis for the uses proposed to share parking facilities must be prepared by a registered traffic engineer or other appropriately licensed professional. When such analysis demonstrates, to the satisfaction of the Director, that the uses have different peak parking requirements, then the Director may reduce the parking space requirement. In no event, however, may the parking requirement be reduced below the highest peak-parking requirement of the use demanding the most parking." The section also requires agreements among users. (City of Santa Paula Parking code, section 16.46.040)

Recommendations: Assess existing shared parking arrangements – Review codes for any language that would prohibit shared parking (note that under certain conditions, such as high security facilities, non-shared parking may be justified). Conduct a survey of developers and consultants who have performed shared parking studies to estimate costs; see if there is a formula that could be used to lower the costs of such studies.

Conduct a citywide parking study to assess parking requirements and fees – Conduct a citywide prospective parking management plan that developers can pay into as properties are developed or redeveloped. This method estimates future demand, number of spaces, location of lots and structures and use of on-street spaces.

* *

Are there undifferentiated parking space requirements for redevelopment?

Issue: Many older buildings were constructed when parking ratio standards dictated fewer spaces. Code language may include a trigger for instituting new, larger parking standards for redevelopment or significant remodeling, regardless of need and pose barriers to redevelopment.

Example language

General:

The "General Applicability" section of the parking code generally specifies where parking requirements apply. These rules also spell out what level of redevelopment and remodeling will trigger updated requirements. Code language will also specify when the new requirements must be provided for the project. Parking requirements related to redevelopment are often not contained in the General Code, but rather in a Downtown or Specific Area Plan.

Specific:

The City of Fillmore parking code requires new uses, change of uses and alterations to comply with current parking standards, including landscaping improvements. The ratios are expressed as minimums and may be exceeded. (6.04.3405). Any increase in intensity of a use (or area) by 25% or more must adopt updated parking rules. Discontinuance of a use for six months or more or expansion also triggers updated parking rules. However, lack of parking cannot be a sole reason for nonconformity.

In Santa Paula, new parking applies to "all new construction, expansion, renovation, conversion, and alteration of existing uses or structures in all zones. Off-street parking and loading spaces must be provided at the time of commencement of the use of the land or construction of the building, or at the time of renovation, conversion, alteration, or expansion by adding floor area, dwelling units, rooms, beds, or seats to a structure." (Santa Paula Development Code, Off-street Parking and Loading)

Recommendations: Review and reduce parking requirements in areas undergoing or targeted for walkable redevelopment. Bringing a redevelopment project up to code for parking can be a significant barrier to redevelopment. The stormwater permits add a second layer of code requirements (BMPs), which may increase design and development costs further. Ventura County and its cities could track remodeling versus redevelopment projects to determine whether reduced parking rules could be rewritten as an incentive for redevelopment.

* *

Does the City or County require that circulation be wholly contained within site boundaries?

Impact: In addition to parking and loading, code language includes instructions on the amount of space needed for circulation. Because sites are designed and built individually, common areas to accommodate vehicle maneuvers are typically part of site design. As such, large turning areas must be included completely on every site.

Example language

General:

Some codes require that all turning and vehicle maneuvering (including deliveries) occur completely within the boundaries of the site. While this prevents trucks from backing into traffic lanes, the ability to maneuver a truck completely on-site increases the land needed for a project. This code language also precludes, outside of a specific planning area, the ability to coordinate loading and delivery vehicle movement.

Codes also direct some minimum width for drive aisles, in most cases for access by emergency vehicles. Common widths are 20-25 feet for residential and up to 35 feet for two-way traffic accessing large commercial establishments.

Specific:

"A. Each loading and unloading space shall be located off the streets.

B. Standard loading spaces shall be not less than 12 x 50 feet and 14 ft high. Loading spaces for industrial uses up to ten thousand square feet shall provide a small loading space twelve feet by twenty-four feet.

C. Each loading space shall be accessible, provide adequate maneuvering area, and not interfere with the normal flow of traffic on the site." (Camarillo, Loading Section 19.46.020)

"Parking lots shall be so designed that no vehicle shall be required to back out into a street in order to leave the lot or to maneuver out of a parking space. Circulation of vehicles among parking spaces shall be accomplished entirely within the parking lot." (Ventura County Non-Coastal Zoning Code, 8108-2, Parking Lot Design)

Ventura's off-street parking regulations (Chapter 24 of the Municipal Code) state: "Driveway access to off-street parking spaces for sites with more than two dwelling units shall be at least 20 feet in width throughout, provided that, the city engineer or the fire department may require a greater minimum width depending on the driveway length, number of dwelling units served, turnaround needs, or other factors. (Section 24.415.070)

Recommendations: Develop language allowing shared parking/loading/circulation – This code language is generally used to address traffic flow and safety in keeping large trucks out of oncoming traffic. A shared circulation provision modeled on shared parking is an option. Develop language allowing shared parking/loading/circulation. In the short term, survey areas of the city to see if there are design options for reducing the amount of space devoted to truck maneuvering and loading through retrofitting of adjoining commercial uses.

Include shared loading requirements in Specific Plans – Consider shared loading facilities and turnarounds for new planning areas as well as redevelopment plans. In older cities, alleys were used to take delivery activity off streets. Coordinate such as strategy with local or regional access management standards and plans; one entry could replace several individual access points, which can help smooth traffic flow.

* *

How does the code treat parking for recreational vehicles/boats?

Issue: Parking for recreational vehicles is coded within "R" or residential sections of the code, including single-family housing. For multi-family housing, the requirements are typically listed as "x number of spaces per y number of units;" code also typically includes minimum parking space dimensions. Many cities also include commercial RV parking as an allowable use; as such, RV parking may be doubly supplied.

Example language

General:

Parking for recreational vehicles is typically found in the same section as parking requirements for residential units. Language under single-family units typically relates to where RV parking can be located (e.g., side yards). For multi-family projects, the language typically addresses a formula for providing spaces (e.g., 20% of units).

Specific:

Camarillo requires 1 parking space for every 5 units under its requirements for parking in multi-family residential projects.

Recommendations: Survey demand for RV parking in multi-family projects – While RV parking is an element of modern site design, the cities and county need to balance that need with environmental planning goals. Jurisdictions should survey how many spaces are devoted to RV parking, how many are used, and how many spaces are provided by the private sector through RV parking and storage.

Revise subdivision codes for centralized RV and Boat parking – Consider increased use of centralized or shared RV parking to lessen the area

needed per lot devoted to RV parking. In some instances, centralized RV/boat parking requirements could be included in the Subdivision Code.

* *

Does code language direct the location of parking lots and spaces?

Issue: For stormwater management, size may not be the only variable to consider. Location of parking on a site can affect the ability to control drainage, as well as how efficiently the site may be used. For this reason, some language can both support and be a barrier to better stormwater management.

Example language

Specific:

Camarillo's parking code allows the Planning Department to adjust downward the number of spaces needed, provided land is banked for future parking in case of conversion. On one hand, the banked land may be landscaped to handle stormwater. However, that benefit is lost upon conversion. Likewise, the extra land to be banked can add to the size of the site and reduce the land efficiency. The ultimate environmental performance of this provision depends on how the land might be converted and the overall development objectives in the district.

Simi Valley's Residential Code for multi-family projects requires a fully enclosed garage for each unit in the project that is designed with direct entry to the fully enclosed garage. If rendered in tuck-under parking, this makes efficient use of the unit's footprint; however the same language for individual units could prohibit centralized or underground parking, which is even more efficient.

Within the Parking Lot Design section of Ventura's Parking Code, no more than one-tenth of the number of parking spaces provided for the shopping center may be located behind buildings. This not only mandates a strip type form with most or all of the parking in front, but can also reduce the landscape architect's ability to use the most advantageous locations for infiltration.

Recommendations: The location of parking is garnering as much attention as the number of spaces within Specific Area Plans, New Urbanist Designs and plans for walkable neighborhoods. The advent of low impact development will add a new wrinkle to the location of parking since low impact designs will likely seek the areas best suited for natural infiltration.

Given the variety of site constraints and opportunities in Ventura County, there is no "one size" formula for the location of parking. As noted throughout this document, planning at a larger district scale is likely to help balance competing needs by using opportunities not only on individual sites, but throughout districts as well.

* *

IV. Additional questions to ask and information to consider

Parking demand studies

- Map parking "hot spots."
- Comparison of the parking footprint of a parking structure versus the same number of spaces in an all-surface parking configuration (including stormwater volume and pollutant loading estimates). The results of any such exercise could be integrated into stormwater outreach and education materials since parking is well understood by almost all stakeholders.
- Check standard economic development/ commercial development leases to see how parking is priced (or conversely if free parking is a major economic incentive offered)
- Maps of large surface parking facilities, with special attention to those proximate or connected to impaired receiving waters and monitoring stations.

SUMMARY OF RECOMMENDATIONS

Short Term – Revise existing code language.

- Readjust code to consider only staffed space.
- Revise code to adjust down for fractional spaces.
- Develop a model shared parking agreement.
- Modify parking code to allow for at least 30% compact spaces.
- Allow overflow parking in setbacks.
- Adopt the for Transportation Engineers updated "Parking Generation" manual.
- Eliminate language prohibiting charging for parking.
- Use preferred parking areas as pilot projects for green parking techniques.
- Institute parking minimum and maximum space requirements.
- Revise subdivision codes for centralized RV and boat parking.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Conduct a citywide or district parking study.
- Initiate a parking plan for draft Specific Plans.
- Provide direction on use of on-street parking in parking supply calculations.
- Survey on-street parking and include in stormwater management planning.
- Unbundle the cost of parking from rents for certain residential projects.
- Assess existing shared parking arrangements.
- Conduct a citywide parking study to assess parking requirements and fees.
- Review and reduce parking requirements in areas undergoing or targeted for walkable redevelopment.
- Survey demand for RV parking in multi-family.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Require parking plans for all future Specific Plans with attention to stormwater management.
- Review the effectiveness of the review process for reducing parking.
- Develop language allowing shared parking/loading/circulation.
- Include shared loading requirements in Specific Plans.

Chapter 10. Watershed Planning through Compact, District Design

TECHNICAL REVIEW SHEET: SPECIFIC AND MASTER PLANNING

I. Introduction

Shrinking the footprint of the built environment rests on coordinating site design elements to efficiently use and share impervious cover. The factors associated with effective planning for the environment have been covered in this review (parking, use mix, streets and mobility, compact design, use of open space), but are repeated here to emphasize their role in coordinated district design. Many cities also have community and neighborhood plans; these plans help identify capital improvements and smaller scale infill and redevelopment options.

For new development, Master Plans are often used for larger scale development projects. These plans include not only housing or a mixed-use project, but can include new schools, fire stations, civic buildings and parks/open space.

"Redevelopment Project Area" plans may be in place for older areas. Early versions included downtown redevelopment areas, but increasingly address corridors, older strip centers and areas outside of traditional downtowns. Because these newer plans lack the older grid and compactness, the plans focus less on building renovation, and more on revamping the underlying neighborhood pattern and redevelopment.

Several Specific Area Plans are, or have been, the subject of controversy in various cities. Issues of density, traffic, housing and economic development are playing out as they relate to quality of life. As noted in this code review, however, some of the development attributes facing criticism hold environmental benefits. The purpose of the review is not to pick a position for or against specific plans, but rather to better characterize the role of those plans vis-a-vis potential environmental outcomes.

II. Who to bring and where to look: relevant code sections and key contacts for the review

Who to include in the review

- Public Works
- Zoning Code Administrator
- Code Enforcement
- Housing
- Economic Development or Redevelopment Agency Chair (number and location determined by proximity to redevelopment areas, proximity to parking "hot spots")
- Chamber of Commerce
- Environmental Groups
- Neighborhood Associations (number and location determined by proximity to redevelopment areas, proximity to parking "hot spots")
- Design Review or Planning Committees and Commissions (if used to review plans)
- Large institutions such as universities and hospitals
- Representative from local private parking enterprise
- Developer or representative from a financial institution familiar with parking finance
- Regional and State (Caltrans) representatives

Code sections

- **Camarillo**

Camarillo Commons Specific Area Plan

Springville Specific Area Plan

- **Fillmore**

North Fillmore Specific Area Plan

Fillmore Central Business District Specific Area Plan

Business Park Specific Area Plan

▼ **Moorpark**

Moorpark Specific Area Plans

Carlsberg Specific Plan

Moorpark Highlands

Downtown Specific Plan Amendment

▼ **Oxnard**

Specific Area Plans

2020 General Plan

General Plan Update (as of October 2008)

▼ **Santa Paula**

General Plan Homepage (Note Downtown Specific Plan is under development)

East Area One Specific Area Plan

▼ **Simi Valley**

Land use Alternative Papers (including Specific Area Plans)

▼ **Thousand Oaks**

Specific Area Plans:

- El Rio/Del Norte Area
- Lake Sherwood/Hidden Valley Area
- North Ventura Avenue Area
- Oak Park Area
- Ojai Valley Area
- Piru Area
- Saticoy Wells Area
- Thousand Oaks

▼ **Ventura**

Ventura Downtown Specific Area Plan

Specific Plan Procedures, Municipal Code, Chapter 24.555

III. Starting the review: Questions at a glance

The questions for Specific Area Plans are arranged differently than the other technical review sheets, in part because the interlinking components require asking a different set of questions of specific area plans than of codes.

Part 1: Staging

- ▼ Does your process require early consultation with the Fire District and local emergency response team?
- ▼ Does the process require or support identification and use of natural drainage as a first step in planning the overall site design?
- ▼ Does the planning process support proactive quantification of benefits?
- ▼ Do guidelines on street design encompass connections, multiple modes and consideration of the district outside the project boundaries?

Part 2: Site Arrangement

- ▼ If development is clustered on one area of a site – is the clustering used to best advantage for environmental performance?
- ▼ Do site plan procedures give preference to meaningful open space preservation?
- ▼ Do site plan procedures give preference to meaningful density and use mix?
- ▼ Does the planning process call for shared impervious surfaces such as parking, loading docks and access ways?

Part 3: Connections

- ▼ Do planning procedures emphasize connections? Are there elements in the plan that might hinder access?
- ▼ Is transition to adjacent parcels addressed to achieve multiple goals?

Part 4: Composition and Use Mix

- ▼ Is the Use Mix tied to tripmaking of existing and future residents, workers and visitors?

PLAN REVIEW

Part 1: Staging – Staging refers to any language that directs the sequence and/or steps in the planning process. The relative position of a planning element has implications for overall site design. Integrating water flows, multimodalism, street design and connections first can help reduce the cost of practices needed, materials, and even lot yield. These questions

can help identify, improve or establish new requirements to help integrate new requirements for the stormwater permit.

* *

Does your process require early consultation with the Caltrans, Fire District and local emergency response team?

Issue: Fire districts often have authority over not only codes, but reviews. As noted in the "Streets and Mobility" section, there can be tension between wide street requirements (for response) and narrow streets, multi-use streets and overall reduced impervious surface coverage. Moreover, since 1999, Caltrans has increased the pace of new designs to include multiple modes of transportation.

Language: Language on consultation is usually not a code requirement per se, but can be instituted in other ways. Check the processes for both public outreach and internal consultations.

Recommendations: Convene a panel of Emergency Responders on the permit and Road Design – Ventura may want to move consultation with fire departments early in the process. Such meetings should not focus solely on street width, but on a myriad of emergency response situations and a variety of players. For example, a police department may support narrow streets to slow traffic, thereby raising safety issues with wide streets. This meeting and check list can also address:

1. Hazard mitigation for brush fires.
2. Flooding (including flood potential from build out).
3. Multiple routes for access.
4. Street design and traffic calming.
5. Alternative curb and street management (hydrants, stabilization) for narrow streets.
6. Future purchases of smaller vehicles, and/or a partnership with the State and Caltrans to design and mass market fully functional smaller trucks.

Conduct walking tours of pedestrian/compact areas to assess transportation/watershed factors – Conduct local walking tours with Caltrans and others to see if multi-modal plans were executed in a way that supports increased pedestrian/bike travel, safety and convenience. If not, identify the particular provisions and/or decisions that affected distances walked, priority of vehicle movement, poor intersection design, line of sight distance or mismatch with the eventual land use program. Pay particular attention to zoning codes, road standards and decisions made at the end of the plan review that over-ride previous planning designs.

* *

Does the process require or support identification and use of natural drainage as a first step in planning the overall site design?

Issue: The approach to planning site design has traditionally focused first on maximizing the number and arrangement of parcels, with drainage as a final engineering step. This worked well when runoff was diverted off-site to a receiving waterbody. However, with new requirements to manage stormwater on-site, leaving drainage to the end of the process can rule out cost-effective design strategies and likely mandate large detention and retention facilities.

Example language

The North Fillmore Specific Area plan is designed around natural drainage. Oxnard has instituted GREAT, Groundwater Recovery Enhancement and Treatment.

Recommendations: Require assessment of natural drainage as first step in site/plan design – Placing drainage as the first step in master planning will likely become a requirement with the new stormwater permit. Instituting such a requirement can be accomplished in several documents:

1. General Plan.
2. Subdivision code.

3. New/modified procedures for Master and Specific Area Planning.
4. Required engineering sheet or plat with certification.

While the permit allows for sub-basin planning, Ventura County and its cities may also want to explore options that allow any requirements on effective impervious area to be easily met. A network of swales, channels, and hard and soft infrastructure that is shared among parcels could be used as an incentive for developers, who no longer would need to meet disconnection needs in a vacuum.

For planning areas, include disposal of accumulated pollutants in BMPs in maintenance plans – Oxnard's GREAT program and Water System Master Plan highlight the evolving requirements on water re-use. Given the new stormwater requirements, water re-use via parking lot runoff will be smaller in scale than, for example, reuse from waste water of agricultural systems, but more numerous and distributed. Because of pollutants contained in parking lot runoff, there is likely to be accumulation and possible migration of pollutants of concern (e.g., metals). This type of process is likely to be best handled in a BMP maintenance manual. For example, soils with accumulated, persistent metals may need to be replaced on a set schedule.

List and prioritize specific and other plans adjacent to (or connected to) impaired receiving waterways – Specific area plans adjacent to receiving waterbodies should also be reviewed. Runoff from these sites has less distance to travel, which limits natural processes to break down and filter contaminants. Given the pending permit, Ventura County and its cities should review plans and work with landowners and developers on additional buffer areas and other BMPs. For those planning areas that straddle impaired waterways, restoration and removing hardened channels might add complexity, but lower overall BMP costs.

Map areas inappropriate for infiltrative BMPs and develop Master "In Lieu of Fee" Plan – Many areas in Ventura County have high water tables. The forthcoming permit acknowledges these are areas unsuitable for infiltration. Ventura County and its cities would be well served to develop maps showing high water tables and contaminated soils to establish in lieu of or alternative BMPs ahead of time through a county-wide or small area planning process.

* *

Does the planning process support proactive quantification of benefits?

Issue: The stormwater permit and the recently passed climate bill both accelerate the need to quantify environmental impacts of land development patterns at a larger, proactive scale. There are two approaches: (1) quantifying a climate-friendly pattern through CEQA or a CEQA-like process, and assess impact fees based on deviation from that plan, and/or (2) through a similar process, conduct district-wide assessments and allow developers to "buy into" such a program when their development projects meet the design and operational aspects of the plan.

Example language

The City of Chula Vista's Climate Action plan includes a smart growth component. The City, using INDEX software, developed a plan that envisions both development pattern and individual building performance. The strategy can be accessed at www.chulavistaca.gov/MajorProjects/CopeGlobWarm/default.asp.

Recommendations: Adopt modeling software that combines water/climate/planning – Ventura and its cities can, through procedures and required analysis, fast track new methods of quantifying environmental benefits. The new climate bill requires a reduction in greenhouse gas emissions, which sets the stage for quantifying the benefits of smart growth. However, for climate and stormwater, quantifying certain measures will be easier than others. Smart growth approaches are generally more difficult to define, measure and capture in compliance models. However, there are a growing number

of cities developing methods (Grand Rapids, San Jose). Models like Smart Growth INDEX are also emerging to scope out options. Ventura can elevate the role of smart growth by instituting procedures for quantification that more fully measure the benefits of the investments made in smart growth planning.

* *

Do guidelines on street design encompass connections, multiple modes and consideration of the district outside the project boundaries?

Issue: There has been evolution in site planning to consider connections within plans. However, many plans, even those with trails and mobility alternatives, fall short because the street and mobility plan is internally focused and designed to address aesthetics.

Example language

Look for language in plans and code that address connections among projects, in particular between retail/commercial uses and between residential and business uses. The existence of language is helpful, though does not guarantee performance. Pedestrian trip-making is highly sensitive to distance, safety and quality of uses and the walk environment.

Recommendations: Develop or Revise Circulation Plans for "Green Streets" – As with natural drainage, street design should be considered early in the planning process. Some of the salient street-system considerations include:

1. Multiple connections with surrounding areas.
2. Directness of route for pedestrian systems. Include not only sidewalks and pedestrian paths, but also connections into commercial areas, multiple entries and if needed. Meandering pathways are not off limits, but should be viewed from the point of pedestrian convenience (which includes atheistic considerations).
3. Consideration of bike paths and bike parking. Bike parking and amenities should be located for the convenience of bike commuters. Many plans call for bike trails, but omit analysis of meaningful connections to outside routes to enhance mobility.
4. Require master circulation plans to include pedestrian and bike connections extending outside the property boundaries related to trails, sidewalks, transit stops/exits and other connections.
5. Uses to be accessed via pedestrian and bike trips. This is perhaps one of the more complicated aspects of increasing the performance of compact development since retailers and service providers tend to value a large number of factors when considering potential location. Some of these factors may even run counter to supporting a pedestrian environment (for example, location next to freeway interchanges or opposition to large picture windows for safety reasons).

* *

Part 2: Site Arrangement – The arrangement of open space, streets, use mix, and density on a site can have powerful implications for environmental and transportation performance.

* *

If development is clustered on one area of a site – is the clustering used to best advantage for environmental performance?

Issue: Clustering is an increasingly popular site design technique in environmental literature. Clustering developed areas, while leaving the remainder of the parcel as open space, is both an environmental and user amenity. However, clustering the development in the right place on the site is as important, if not more so.

Example language

Many area plans (and more recent planned residential codes) call for the clustering of buildings on a site. A "campus"-style arrangement is also popular, where buildings are clustered and

surrounded by open space or lawn. However, the location of the clustering is just as important. Look for language on locating buildings on a site relative to other aims (e.g., away from streams or wetlands, or clustering to connect with adjacent development projects).

Recommendations: Adopt policies on "clustering" to improve environmental and watershed performance – Improve General and Specific Plan language on the location of clustering, to include:

1. Clustering on land that offers the lowest potential for stormwater management. Conversely, plan the clustering by first identifying and setting aside wetlands, depressional areas, buffers, native vegetation and important trees/forest.
2. Clustering buildings to take the most advantage of the existing or planned transportation network. This clustering may also have economic development potential, for example, clustering buildings to the corner closest to downtown areas or other service centers amplifies the development intensity potential.
3. Clustering along corridors to bring buildings forward to the street
4. Clustering for campus-type development to balance security, connectivity, non-auto access, open space and amenities.
5. Clustering to take advantage of solar access, light and/or shadows.

* *

Do site plan procedures give preference to meaningful open space preservation?

Issue: Not all open space is created equal. Site designers may view a stream buffer as the best site to locate development for views. However, the forthcoming permit could have requirements (e.g., hydromodification) that put new performance measures on watershed management, and as a consequence, site design. In addition, codes often emphasize quantify over quality of open space. This could result in a large development footprint, even as the open space performs less than optimal services for climate, stormwater and habitat.

Example language

Code language typically directs the quantification of open space with less emphasis on the ecological services provided. Some code language also specifies that any land devoted to stormwater management cannot be included in meeting minimum open space requirements.

Recommendations: Develop a "Green Infrastructure" scorecard to assess the environmental performance of open space identified in Specific and Master Plans – Under the new permit, one of the first considerations for any planning exercise will be a greater focus on the receiving waterway(s) and the stressors and pollutants generated within (or flowing through) the planning area. This will drive BMP selection, as well as mitigation through design. As such, the ecological value of existing or restored open space (or green infrastructure) in meeting specific development stressors will be important. Ventura County and its cities can review recently adopted or pending specific plans to ensure the development plan matches forthcoming permit requirements where projects will disturb 5,000 square feet or more of soil.

Note that much of the open space in Ventura county is devoted to viewsheds of mountains and terrain, placing development in the valleys. This is not necessarily a problem though careful planning for drainage and retrofit could become important for lower lying areas.

The forthcoming permit is likely to list preservation of existing natural drainage as a preference in managing stormwater. Ventura County and its cities may want to spell out the procedures to be used when applicants suggest development of these natural pathways. In some instances, conversion with attendant mitigation will be satisfactory due to site constraints. However, in others the alteration of natural pathways may not be amenable to even the most robust mitigation plan.

* *

Do site plan procedures give preference to meaningful density and use mix?

Issue: Density does not automatically result in economic, transportation and environmental benefits. The location, tapering, design and relationship among uses is important and interlinked. Moreover, decisions on the amount of development and density can be decided through a "tug of war" in the planning and approval process, which can deliver the impacts without the benefits. Moreover, density can be located in the wrong place and result in negative impacts when not tied to other planning strategies to reduce impacts.

Example language

Look for language that frames density through planning objectives. Conventional zoning typically states this backwards by specifying bulk requirements and limits first. Rather, language can:

1. Be tied to a transit objective such as 50 units per acre.
2. Be tied to a jobs/housing balance, for example where a major employment center is to be co-located with housing.
3. Be tied to a mixed use/walkability plan where the density is needed for walkability.
4. Be tied to a corridor planning effort where density is located in nodes, or located in a manner to protect viewsheds.

Note that density can also be specified through density limitations, for example housing on septic density to limit contamination of groundwater. Density and permitting can also be contingent on traffic counts or traffic Level of Service. This can be justified as long as vehicle movement or single intersections are not the sole focus.

Recommendations: Develop "density and compatibility" tools for Specific, Master and redevelopment plans – The new climate and stormwater provisions will reshape conversations on density, planning, traffic and neighborhood character. The carbon footprint of limiting density has, to date, not been a common analytic component, but soon will be. Thus, the conversation is likely to turn to "meaningful" density, its location and the tools to lessen impacts.

Ventura County and its cities can use tools such as:

1. Density averaging.
2. Graduated Density (used in Simi Valley's Kadota-Fig Neighborhood).
3. Density tapering.
4. Design techniques for density.

* *

Does the planning process call for shared impervious surfaces such as parking, loading docks and access ways?

Issue: Most codes assign site features on a parcel by parcel basis. Given conservative estimates, the development footprint is exaggerated because there are few options to share the built landscape. The best approach to overcome this exaggerated footprint is through advanced planning, so that buildings are arranged to take advantage of access, loading, parking, refuse collection, landscaping, and in the future, stormwater BMPs.

Example language

Simi Valley has issued three design guidelines: Commercial Industrial, Residential and Landscape. The guidelines are referenced in the municipal code. The language in the guides includes compact design elements, though the new climate/stormwater rules will introduce even higher standards. For example, the Commercial/Industrial Guidelines state:

"Pedestrian linkages to nearby neighborhoods and other commercial properties should be provided when feasible." An update would likely replace this language to state how those required linkages be designed. Likewise, the Landscape Design Guidelines (2002) will need to be completely updated to integrate stormwater management and water conservation,

with the opportunity to bring in other aspects of landscaping, such as tree cover.

Recommendations: Review and strengthen Specific Plan language on shared site amenities – Review existing design guidelines to see whether the development footprint is managed to share and minimize impervious features such as shared parking, structured parking, on-street parking, shared landscape and stormwater management, and use mix.

* *

Part 3: Connections – Connections within and outside of planning areas can determine how well the site performs for transportation and mobility. Multiple connections also foster greater environmental and transportation outcomes for visitors to the site from surrounding areas.

* *

Do planning procedures emphasize connections? Are there elements in the plan that might hinder access?

Issue: Over the years, several trends have converged to limit access: Access management plans to reduce conflict points; retail trends that favor one entrance; gated and walled development projects that have one entrance by design. Fewer entry points can result in longer distances. The result can be more impervious cover needed to funnel traffic to single points of entry.

Example language

Ventura's Specific Plan Procedures outline the review and approval process. Of note, a design review committee can make recommendations for approval, disapproval or modifications to the specific plan "relating to structure, landscape or sign standards, materials or design." "Design" should be clarified to include connectivity.

Recommendations: Combine these factors with the recommendations on walk tours and circulation – In general, Ventura county planning documents have increased emphasis on connectivity; achieving this connectivity lies in both planning documents and codes. As noted above, non-auto connections must not only look to the number of connections, but also directness of route, landscaping, aesthetics and safety. For automobiles, access management is important, and can be addressed by advanced planning of access roads and internal connectivity.

Conduct walking tours of major residential projects to assess the number and quality of destinations, in particular those related to common tripmaking needs.

* *

Is transition to adjacent parcels addressed to achieve multiple goals?

Issue: Impacts on surrounding parcels and neighborhoods can be one of the most controversial aspects of new development and redevelopment.

Example language

Many of the real and perceived impacts of higher density development can be reduced by careful design and quality materials. For example, heights tapering can be an effective strategy to lessen impacts (visual and activity).

The zoning code and specific area plans typically only deal with the zoning for the project area. However, impacts can radiate out to proximate areas or streets. Lessening these impacts can arise from negotiations with developers, developer agreements, or conditions attached to site plan approval. Enforcement of such agreements varies since most are negotiated site by site.

Recommendations: Combine these factors with the "Density and Compatibility" tools – Within planning documents, Ventura County and its cities can establish not only a specific area plan, but a second ring that represents an extension of the planning area. In this outer ring, the underlying zoning would not change; however, planning strategies to address impacts can be coordinated, including drainage,

parks, and parking restrictions. Responsibility for code enforcement, financial support, inspections and the like would be included in this extension area. This could bring certainly to long term maintenance and enforcement, which can fade once the project is finished.

For heights tapering, many cities develop formulae to address the stepping down of heights. For example, the stepping down of heights would follow a 3:1 or other ratio towards neighborhoods to be protected.

* *

Part 4: Composition and Use Mix

* *

Is the Use Mix tied to tripmaking of existing and future residents, workers and visitors?

Issue: The first generation of use mix broke away from single use districts. However, the mix was often left to chance based on filling occupancies. For compact design to work, the district must address the tripmaking conducted every day to satisfy some or all trips in the vicinity. Certainly the market will come into play as to which businesses and residents locate to individual sites. However, design, recruiting and incentives can help.

Example language

Look for language on the use mix that relates a retail plan to everyday uses.

Recommendations: Combine these factors with the recommendation on adoption of smart growth models. Scrutinize existing master and specific areas plans to see how the proposed uses relate to one another (with attention to the links among uses).

If your County or City has initial meetings with developers, concentrate on traffic generators (such grocery stores, convenience stores and pharmacies) and see if there are design options to make the best use of certain key locations, the directness of route for pedestrians, the design and safety.

Convene local real estate brokers and discuss new design imperatives – Convene local real estate brokers and discuss what design changes might be forthcoming with the climate and stormwater requirements. Design changes for compact design, density and walkability will likely run counter to conventional strip shopping design. Consider having retailers who have been successful with transit oriented development projects come in to talk about the challenges and solutions, in particular how these projects will work when the main transit mode is bus, complemented by increased pedestrian and bike travel.

* *

SUMMARY OF RECOMMENDATIONS

Short Term – Revise existing code language.

- Conduct walking tours of pedestrian/compact areas to assess transportation/watershed factors.
- Require assessment of natural drainage as first step in site/plan design.
- Review and strengthen Specific Plan language on shared site amenities.

Medium Term – Begin larger-scale discussions and initiative planning and research to support changes.

- Convene a panel of emergency responders on the permit and road design.
- For planning areas, include disposal of accumulated pollutants in BMPs in maintenance plans.
- List and prioritize Specific and other Plans adjacent to (or connected to) impaired receiving waterways.
- Adopt modeling software that combines water/climate/planning.
- Adopt policies on "clustering" to improve environmental and watershed performance.
- Develop "density and compatibility" tools for Specific, Master and Redevelopment plans.
- Convene local real estate brokers and discuss new design imperatives.

Long Term – Incorporate larger programs that integrate planning, stormwater, transportation and energy.

- Map areas inappropriate for infiltrative BMPs and develop Master "In Lieu of Fee" plan.
- Develop or Revise Circulation Plans for "Green Streets."
- Develop a "Green Infrastructure" scorecard to assess the environmental performance of open space identified in Specific and Master Plans.

Chapter 11. Stormwater Management in Codes

TECHNICAL REVIEW SHEET: URBAN STORMWATER RUNOFF MANAGEMENT

I. Introduction

Ventura County and each of its cities addresses stormwater (referred to in some codes as "storm water") in code. The code language is intended to bridge permit language issued by the Regional Water Quality Control Board and the local municipal codes. Most codes include basic minimum language reflecting permit requirements related to runoff. In several cases, the runoff requirements are contained in the Public Health section of municipal code, while other codes have individual Chapters or sections on stormwater management.

II. Who to bring and where to look: relevant code sections and key contacts for the review

Code sections

▼ Camarillo

Title 9 – Public Health and Safety

Chapter 9.32 Storm Water Quality Management

▼ Fillmore

Article 3 – Property Development Standards (references to drainage)

▼ Moorpark

Moorpark Municipal Code

Title 17 - Zoning

Chapter 22 Water – Article XII: Storm Water Quality Management

▼ Oxnard

Oxnard Code of Ordinances

Chapter 22 – Water (includes water conservation)

Chapter 22 - Article XII. Storm Water Quality Management

▼ Santa Paula

Chapter 54 – Stormwater Quality Management

▼ Simi Valley

Title 6 – Sanitation and Health –

Chapter 12 Storm Water Quality Management

▼ Thousand Oaks

Municipal Code

Title 9 – Planning and Zoning

Chapter 8 – Stormwater Management

▼ Ventura

Division 8 – Public Health and Safety

Chapter 8.600 Stormwater Quality Management

Article 4. Requirements for the Control of Urban Runoff

▼ Ventura County

Ventura County

Non-Coastal Zoning Ordinance

Article 8: Parking, Access, Landscaping and Transportation Demand Management

Coastal Zoning Ordinance

Who to include in the review

- ▼ Public Works
- ▼ Representative from CASQA (if possible)
- ▼ Building Inspector
- ▼ Zoning Code Administrator
- ▼ Housing Administration
- ▼ Economic Development or Redevelopment Agency Chair (Chamber of Commerce)
- ▼ Environmental Groups
- ▼ Developer Groups (BIA)
- ▼ Watershed Organizations
- ▼ Water/Sewer Agencies
- ▼ Ventura County Watershed Protection District

III. Starting the review: language to look for in code

This review assumes any future stormwater management program and permit will include:

1. LID and LID techniques instituted to control stormwater volume and runoff quality.
2. A hydromodification study to direct a hydromodification plan and subsequent code changes.
3. TMDLs (or a reference) included in the permit to tie the Basin Plan closer to other activities.
4. Best Management Practices (BMPs) as the focal point of planning, implementation and reporting.
5. Watershed planning and implementation activities included in the permit.
6. Timelines for implementing various elements of the permit, including plan and ordinance changes.

This review presents citations (with page numbers) from the April 29, 2008 Draft Tentative permit. [www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/ventura_ms4/08_0429/draft_Tentative_Ventura_County_MS4_Permit.pdf]

Note – The final permit requirements may differ significantly. The reference to former drafts is intended to provide linkages to emerging stormwater management concepts likely to be elements in future permits.

The review is presented in four parts:

- Part 1 – Current code language subject to change
- Part 2 – Large Area Planning
- Part 3 – Small Area Planning
- Part 4 – Process

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Part 1 – Current code language subject to change

Ventura County and its cities currently include code language on stormwater quality, with references to the existing stormwater permit. The table on the next two pages provides a comparison of existing stormwater quality language, expected permit provisions and possible code ramifications.

Basic Structure of Existing Stormwater Management Code	Potential Additions and Modifications for Any New Permit	Possible Code Ramifications
Purpose and intent	In addition to existing language on water quality, the control of stormwater volume and flow are likely to emerge. In addition, the growing preference for natural and non-structural approaches to watershed management is the new norm and should be integrated into code.	P & I statements back up, legally, ensuing code language. As such, new requirements must trace back to the General Plan's goals for the environment and Public Health/Safety.
Definitions	A new permit will include new terminology, such as low impact development and effective impervious area, which will need to be adopted in code.	The final permit will include a list of definitions that can be adopted into local code. Ventura County/cities can also adopt or expand definitions that provide equal or increased protection. Cities can also adopt the planning options (e.g., RPAMP) to be used as BMPs into definitions.
Reduction of pollutants in stormwater	The permit is likely to require statements on reduction in volume and release rates of stormwater.	Subdivision codes often repeat provisions contained in the Stormwater Management code, in part because the street system is the also the conveyance system.
Development	The new permit will likely have new triggers for various development projects, which cities need to articulate in codes.	Previous draft permits included different triggers for development/redevelopment (5,000 sq ft) and single-family homes (10,000 sq ft).
Construction	Oversight of the installation of certain post-construction BMPs will occur during the construction phase.	Update construction inspection sheets to include installation of all BMPs, some of which will be new (e.g., non-structural BMPs).
Best management practices and requirements	Draft permit order of preference: 1. Low Impact Development Strategies 2. Integrated Water Resources Management Strategies	Make sure to include any planning or non-structural practices in the discussion of LID.

Best management practices and requirements	3. Multi-benefit Landscape Feature BMPs 4. Modular/Proprietary Treatment Control BMPs	Make sure to include any planning or non-structural practices in the discussion of LID.
Compliance with general permits	Any old language referring to previous permits (e.g., 1991) will need updating.	
Elimination of illicit discharges	Permits and codes prohibit non-stormwater discharges, unless expressly exempted. Illicit discharges traditionally refer to wastewater connections directly to streams, though some states (Ohio) include septic tank contamination.	
Watercourse protection	Watercourse protection addresses the responsibility of landowners who have watercourses flowing adjacent to or within property. This language may need to be expanded to storm drain system protection.	Design of the hydromodification study/plan should keep eventual ordinances in mind related to watercourse and storm drain system protection, which may expand to properties outside of current regulatory applicability.
Scope of inspections	New permits will require inspections to new post-construction BMPs. Because failure of post-construction BMPs can often be traced to faulty installation, inspection at installation is critical.	Inspection language for post-construction BMPs will include right and entry to inspect, testing, monitoring, record-keeping, notice of non-performance and substitution.
Enforcement and remedies for violation	Each city should include a "Recovery of Cost" provision not only for processing violations, but maintenance of BMPs (if warranted).	Enforcement of post-construction BMPs will hinge on clear lines of responsibility, since developers are likely to dedicate BMPs upon project completion.
Appeals and Severability		It is advisable to adopt a severability clause so a challenge to one part of the new rule does not stop progress on the entire stormwater program.
Other	Landscape Ordinance – The permit requires a Landscape Ordinance based on Integrated Pest Management (IPM).	This review calls for a comprehensive Landscape Design manual that includes LID, water conservation and maintenance. That same manual should incorporate IPM.

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Ventura County Technical Guidance Manual for Storm Water Quality Control Measures

Issue: The permit calls for update of the Ventura County Technical Guidance Manual for Storm Water Quality Control Measures to incorporate new requirements and associated BMPs (page 61).

Example language

The draft permit calls for updates to the Technical Guidance Manual, including:

1. Hydromodification Control criteria described in this Order, including numerical criteria.
2. Selection of appropriate BMPs for stormwater pollutants of concern.
3. BMP maintenance and cost considerations.
4. Criteria to facilitate integrated water resources planning and management in the selection of BMPs, including water conservation, groundwater recharge, public recreation, multipurpose parks, open space preservation, and redevelopment retrofits.
5. LID principles and specifications.

Recommendations: Create specialized "menu combinations" of BMPs based on the land development context and pollutants of concern – The variety of built and natural landscapes in Ventura demand a varied approach to BMP selection. The integrated water resource planning section in the updated manual can address small area plans. The integrated plan can help:

1. Identify "hot spot" areas with unconnected drainage, flooding or high inputs of pollutants.
2. Identify where redevelopment/retrofits are key to reducing pollutant loads and volume.
3. Identify where economic stimulus is needed (e.g., areas with historically low investment, areas where property turnover is likely to be low).
4. Tie land development overlays to BMPs – to address pollutants of concern.

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General Plan Language

Issue: The permit includes directives on incorporating stormwater measures into the General Plan. Because code changes will be necessary, Ventura County and its cities will need to coordinate directions in the General Plan with eventual codes changes.

Example language

Each Permittee shall amend, revise or update its General Plan to include watershed and stormwater quality and quantity management considerations and policies when any of the following General Plan elements are updated or amended:

1. Land Use
2. Housing
3. Conservation
4. Open Space

Recommendations: For the next General Plan cycle, develop broad themes of joint water/land development objectives:

1. Land Use – For the General Plan, capture Low Impact Development in the Land Use element; include language that directs a smaller impervious footprint, less overall impervious cover, and retrofitting of existing impervious cover.
2. Housing – San Jose listed high-density housing as a "BMP" based on the smaller footprint and the location in the watershed (i.e., closer to existing job centers). Adopting language that the location and form of housing (especially affordable and workforce housing) as a watershed strategy can help support infill.
3. Conservation – Land conservation strategies to a large degree acknowledge watershed functions. Containment of runoff and its impacts can be addressed upstream through land conservation, which also communicates a flood prevention role. Check language on prioritization of land conservation priorities;

where possible, include runoff management as a renewed priority to help guide acquisition of parcels needed.

4. Open Space – No matter the location, open space will take on a higher "public utility" role. As such, monetizing ecological services will become more important, which can be included in General Plans, economic development plans and maps.
5. Parks – In urban areas with impaired waterways, open space that can accept, store and treat runoff will be critical. Language in the General Plan related to park retrofits, and acquisition of low-lying or advantageous parcels will be key.

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CEQA Review

Issue: The permit directs permittees to incorporate new measures into CEQA processes. This is occurring at the same time climate rules are changing within CEQA review (page 62).

Example language

General:

Each Permittee shall incorporate into its CEQA process no later than (six months from Order adoption date), those additional procedures necessary for considering potential stormwater quality impacts and providing for appropriate mitigation when preparing and reviewing CEQA documents. The actions related to land use planning include:

1. Potential impact of project post-construction activity on stormwater runoff.
2. Potential for discharge of stormwater to impair the beneficial uses of the receiving waters.
3. Potential for the discharge of stormwater to cause significant harm to the biological integrity of the waterways and water bodies.
4. Potential for significant changes in the flow velocity or volume of stormwater runoff to cause harm to or impair the beneficial uses of natural drainage systems.

Recommendations: Several aspects of CEQA review will come into play with the Environmental Impact Report, especially the so-called "Back of the Book" analyses that are vital for successful watershed planning: (1) Alternatives, (2) Cumulative Impact, and (3) Growth Inducing Impacts. These analyses will inform whether Low Impact Development is part of restoring watersheds, or a manifestation of "green sprawl."

Implement a Watershed-wide EIR and pre-map a compact/redevelopment preferred alternative. While the scale is large, pre-planning basins (or even sub-basins) based on a smart growth alternative can reveal impacts missing from conventional assessment. For example, suppose a development is placed in a greenfields rather than the preferred redevelopment location/arrangement. The EIR would show that there are actually two levels of impact: (1) continued runoff from the previously disturbed, vacant site, and (2) the impacts associated with new development.

An EIR of this type would also reveal the impervious cover induced outside the project boundary, such as road extensions and/or induced commercial growth.

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Basin Plan

Issue: The Basin Plan specifies the uses of water, emphasizing planning and restoration for impaired waters. There are relationships to land use and infrastructure planning, which will become more important if municipal action levels remain in a final permit.

Example language

General:

Per the Basin Plan, the most recent draft permit reads: "This Regional Water Board adopted a revised Water Quality Control Plan (Basin Plan) for the Los Angeles Region on June 13, 1994. The Basin Plan, which is incorporated into this Order by reference, specifies the beneficial uses of Ventura County water bodies and their

tributary streams, and contains both narrative and numerical water quality objectives for these receiving waters."

Recommendations: Scope out neighborhoods where pollutant/volume loading is high yet where developer-driven BMP installment potential is low – Where impairment is related to stormwater runoff, the Basin Plan and permit intersect at BMP selection. While future LID installations will reduce volume and loading, Ventura County and its cities will need to scope out neighborhoods where runoff loading is highest, but the potential for redevelopment and LID are lowest (due either to lack of investment potential or small lot sizes falling under permit thresholds). Consider using a mitigation investment fund for addressing these critical areas first (see below).

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Part 3 – Small Area Planning

Hydromodification Control

Issue: Hydromodification addresses the changes to watershed functions based on land changes (mostly land development). While pollution in runoff has gained attention, the impacts of altered flow paths affects source water, flooding, habitat, and stream integrity. The Hydromodification Control Plan (HCP) will be used to study and map factors related to (1) the volume of water flowing under current and desired conditions, and (2) the rate of flow under current and desired conditions.

Example language

General:

The Hydromodification Control Plan will consist of several measures, including:

1. Approved models.
2. Hydromodification performance standards.
3. List of authorized BMPs and design criteria.
4. Use of natural drainage areas.
5. Map of areas subject to hydromodification control.
6. Monitoring and effectiveness assessments.
7. Record keeping.

Recommendations: Begin to develop hydromodification control strategies related to land development, redevelopment and retrofit – Hydromodification and its control via land use retrofit is a fairly new field. However, practices will likely fall under several categories, including:

1. Street Retrofits – Curbs, gutters and streets collect and convey stormwater, and as such are among the main contributors to hydromodification. Excess hydromodification occurs at street outflows into receiving waterways, culverts and areas with steep topography.
2. Public Property – Reducing stormwater volume is one aspect of controlling for hydromodification, as is controlling the rate of release for retained stormwater on a property. LID techniques that store and/or infiltrate stormwater, reuse stormwater and provide energy dissipation as water flows from a property will all become standard BMPs. Public buildings provide some of the more visible pilot projects.
3. Private Property (other than redevelopment/new development subject to the permit) – In built out areas, a hydromodification control study will likely investigate drainage basins where the impacts of hydromodification are highest or growing. Residential areas will provide both challenges and opportunities. In some areas, remodeling projects will not likely trigger permit requirements (less than 10,000 sq ft). As such, Ventura County and its cities may want to introduce LID techniques as a condition of construction permits. Downspout disconnection programs are increasingly popular, but require customization to prevent foundation or off-site flooding.

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Alternative Post Construction – Redevelopment and Infill

Issue: The permit allows two main planning alternatives to serve as post-construction programming (page 58).

Example language

"(1) Sub-regional stormwater mitigation program – A Permittee or a coalition of Permittees may apply a regional or sub-regional stormwater mitigation program to substitute in part or wholly for on-site post-construction requirements." This would serve for new development, redevelopment and infill areas.

(2) Redevelopment Project Area Management Plans (RPAMPS) – The RPAMP, on approval, may substitute in part or wholly for on-site post-construction and hydromodification requirements. Redevelopment Project Areas include the following:

- City Center areas
- Historic District areas
- Brownfield areas
- Infill Development areas
- Urban Transit Villages
- Any other redevelopment area so designated by the Regional Water Board."

Recommendations: Elevate the role of sub-area planning as a watershed tool in General Plans and Codes – As noted in this code review, sub-area planning is perhaps the strongest method of reducing the overall development footprint and impervious area. This is true for new development, redevelopment and infill (as well as combinations of the three).

Plan and code changes include:

1. Within the Land Use Section of the General Plan, explicitly recognize sub-area planning as a best management practice.
2. Within zoning codes, amend sections and code related to the redevelopment areas above (e.g., the Camarillo Old Town or COT zone). Make reference to watershed planning via these areas including the benefits of (a) the reuse of already disturbed areas; (b) the intensity that can be achieved in these planning areas, which results in less impervious cover per unit; and (c) the ability to retrofit areas that currently have no stormwater controls.

Explore use of existing planning tools to delineate sub-regional mitigation programs or RPAMPS and include in integrated water resources management plans – While sub-watershed contours provide the best boundaries, see if existing non-watershed tools can be used, including (a) specific area planning, (b) master plans, (c) pending developer agreements, (d) subdivision regulations, (e) overlay zoning, and (f) enterprise or funding zones. NOTE – Permit language on use of a mitigation fund is conditioned on several elements, including the formation of an integrated water resources management plan. Using mitigation funds to support smart growth plans will require characterizing that plan within an integrated water resources management plan.

Improve design of pending capital improvements for permit compliance – In redevelopment areas, see where planned or possible improvements can be made for sub-basin stormwater benefits (quality, volume control, hydromodification). Use as a pilot project to calibrate a sub-basin approach to inform (a) modeling applications needed, (b) assignment of BMPs to individual developers where partial management is undertaken by a public capital project, (c) use of a public stormwater project as economic development, and (d) long-term maintenance of a joint public/private management system.

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Part 4 – Process

Time line for aligning municipal codes

Issue: The permit will likely require a thorough review of Plans and codes with subsequent modification based on permit requirements.

Example language

No later than (365 days after Regional Water Board adoption of this Order) each Permittee shall modify stormwater management programs, protocols, practices, and municipal codes to make them consistent with the requirements herein (page 34).

Recommendations: Develop a first-year plan for alignment, with notice of changes requiring State or Water Board action – As noted in this review, some of the larger issues render codes inconsistent with likely permit language. This code review provides initial structure of a review and changes based on short, medium or long-term implementation.

In the short term, the candidates include:

1. General Plan (Land Use, Conservation, Housing and Open Space Chapters)
2. CEQA Process
3. Subdivision Code
4. Individual Use Codes – Bulk dimensions, use mix, parking codes, open space
5. Landscaping manuals and codes, with attention to maintenance
6. Stormwater Quality section of code
7. Some elements of street standards
8. Pending Master and Specific Area Plans
9. BMP programs and procedures, with attention to post-construction and use of shared BMPs
10. Construction Specification – reporting sheets
11. Capital Improvement Budgets – current and upcoming cycles
12. Legal authority to tie permit compliance with ordinance/code modifications

Medium to Long Term Changes will require consultation with regional and State representatives and include:

1. Street Geometric Standards
2. Rural Road Standards
3. Testing and Adoption Procedures for new paving material
4. Modeling used for smart growth, stormwater, parking and traffic generation
5. Guidelines on Funding, Allowable Costs and Use of Dedicated Taxes for Infrastructure
6. California Building Code provisions – infiltration, green roofs, use of engineered soils.
7. Land Acquisition – in conjunction with Land Trusts and the State.

* *

BMP Tracking, Maintenance and Enforcement

Issue: The permit will require a BMP program to track installation, performance, monitoring, inspections, reporting, substitution and maintenance (page 58).

Example language

The Implementation Section stipulates requirements for (1) maintenance and transfer agreements, (2) tracking, inspection and enforcement of BMPs, and (3) coordination among co-permittees and departments.

Recommendations: Explore software to track smart growth, structural and non-structural BMPs – Consider use of Smart Growth INDEX to account for redevelopment and density as a BMP. This can include metrics such as reuse of existing disturbed area and development avoided through compact formats.

Note: Some commentary on smart growth as a BMP calls for requiring permanent preservation of land claimed as saved through smart growth. Ventura County and its cities can, if warranted, develop a system to match land developed via smart growth/land preserved.

Create a multi-disciplinary BMP team – The final permit will likely call for coordination of post-construction BMP review and tracking. The review process will have several aspects: (1) pre-submittal meetings to include smart growth, climate and LID; (2) review of preliminary site plans; (3) departments to be involved, (4) studies needed; and (5) inspection and enforcement responsibilities.

* *

Establish a Mitigation Fund for Stormwater

Issue: The permit allows for formation of a mitigation fund. This fund can be used to meet multiple objectives at once while targeting top stormwater "hot spots."

Example language

A permittee or a coalition of permittees may create a management framework to fund regional or sub-regional solutions to storm-water pollution, where any of the following situations occur:

1. A waiver for impracticability is granted;
2. Funds become available;
3. Off-site mitigation is required because of loss of environmental habitat; or
4. An approved watershed management plan, or an integrated water resources management plan, or a regional storm water mitigation plan, or a wetlands recovery plan exists that incorporates an equivalent or improved strategy for stormwater pollution mitigation.

Recommendations: Create a Water Mitigation Enterprise Fund – Creation of such a fund could include:

1. Criteria for incoming funds, including "in lieu of fees," penalties, performance bonds and/or utility fees. See where "Supplemental Environmental Projects" (SEPs) can be tapped from U.S. EPA enforcement actions.
2. Criteria for fund disbursement, with weighting factors for the first round(s) of disbursement. Criteria will likely address TMDLs, flooding and stormwater hot spots in the first rounds. Also consider where the funds can be used for an economic development incentive to leverage funds. Ventura County and its cities may also be able to create a set-aside (e.g., 20%) for projects that are high priority for climate goals, providing further leverage.
3. If possible, pre-mapping for area where post-construction BMPs are likely to be impracticable (a recommendation in the Environmental and Site Design Technical Review Sheet). This would cover areas with contamination, high water tables or parcel level factors that make on-site stormwater impracticable. This will streamline both permitting and fund raising.

* *

Additional questions to ask and information to consider

BMP Order of Preference

The permit lists an order of preference for BMPs:

1. Low Impact Development Strategies
2. Integrated Water Resources Management Strategies
3. Multi-benefit Landscape Feature BMPs
4. Modular/Proprietary Treatment Control BMPs

While the permit defines "Low Impact Development" in the "Definition" section, the other two terms (integrated management and multi-benefit landscape BMPs) are not defined (proprietary BMPs are understood). The closest the permit comes to describing "Integrated Water Resources Management" is on page 61 about updates to the "Ventura County Technical Guidance Manual for Storm Water Quality Control Measures" to include "water conservation, groundwater recharge, public recreation, multipurpose parks, open space preservation, and redevelopment retrofits."

The U.S. EPA and the Center for Watershed Planning both support larger planning efforts as the "first and most important BMP," which appear to fit as a second priority in the permit. LID techniques are often defined as site (or subdivision) level practices. Ventura County and its cities may want to ensure that planning at the larger watershed and sub-watershed scale is intended as the first step in Low Impact Development Strategies, so BMP selection is not reduced to site-level only strategies because "Planning as a BMP" was not clearly placed in the hierarchy of practices.

Planning as a BMP

Planning at several scales, from basin level to specific-area planning, can be the most powerful approach to conserving and restoring watershed functions. However, the results depend on plan implementation. Moreover, determining the potential and actual performance of plans

gains complexity as the scale grows larger. This begs the question of how to include and account for plans as BMPs. Actually, there are several questions:

1. If a County or City relies on software that tracks BMPs by mitigation, not prevention, is planning as a BMP possible? Likewise, how does BMP substitution work where one BMP is preventative and the other mitigates stormwater (see below)?
2. If a compact development plan changes due to a legal challenge or ballot initiative, is there a stormwater violation? Who pays?
3. When does a plan provide watershed performance to the "maximum extent practicable?"
4. What does it mean to inspect and monitor a planning BMP?

BMP Substitution

NPDES permits provide allowances for BMP substitution in cases of BMP failure. However, the rules stipulate that any new BMP be as (or more) protective than the initial BMP chosen. This could prove challenging since some non-structural BMPs are less amenable to quantification than well-tested, structural devices and practices. Moreover, many planning and green practices are preventative, increasing the pressure to precisely measure those practices by the time permit requirements take effect.

When inserted into the development decision process, developers are likely to seek out practices that optimize cost, time, and certainty, as well as permit directions on LID and order of BMP preferences. As such, least expensive LID practices with the most robust test record may prevail, even if they are not the best fit for the development/watershed context.

Quantification of non-structural BMPs may be best addressed at the State or Regional Water Resource Board level. Ventura County and its Cities can elevate the need to quantify a wider array of non-structural BMPS, including urban planning techniques and green infrastructure.

Costs of BMPs

The U.S. EPA recently released a report on the costs of BMPs, noting that LID approaches can lower costs. While this is true, the report cannot be used to assert that LID and stormwater control are always cheaper. The report does not include:

1. Full information on the performance standard to be met for case studies – For example, practices needed to manage a two-year storm would differ from those needed to manage a 10- or 100-year storm.
2. A full list of case studies matching the development portfolio of Ventura County – The list of projects in the U.S. EPA product fall roughly into two categories – urban street retrofits and suburban residential projects. One project labeled as urban is actually more sub-urban in format.

This does not undermine the value of the information, but should be used to fill information gaps and explore the ability to reduce costs further via LID and planning. Nationwide, there is a dearth of examples of LID techniques for:

1. Combinations of techniques for ultra-urban areas.
2. Sub-basin planning where a combination of on-site requirements and public works projects were assembled to meet performance standards.

This too should be a priority at the state and national level.

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SUMMARY OF RECOMMENDATIONS

Short Term

- Revise and update existing code requirements related to Stormwater Management.
- For the next General Plan cycle, develop broad themes of joint water/land development objectives.
- Elevate the role of sub-area planning as a watershed tool in General Plans and Codes.
- Explore use of existing planning tools to delineate sub-regional mitigation programs or RPAMPS and include in integrated water resources management plan.
- Improve design of pending capital improvements for permit compliance.
- Develop a first year plan for alignment, with notice of changes requiring State or Water Board action.
- Create a multi-disciplinary BMP team.
- Create a Water Mitigation Enterprise Fund.

Medium Term

- Create specialized "menu combinations" of BMPs based on the land development context and pollutants of concern.
- Scope out neighborhoods where pollutant/volume loading is high yet where developer-driven BMP installment potential is low.
- Begin to develop hydromodification control strategies related to land development, redevelopment and retrofit.

Long Term

- Implement a Watershed Wide EIR and pre-map a compact/redevelopment preferred alternative.
- Explore software to track smart growth, structural and non-structural BMPs.

Appendix D. List of Acronyms

AB32	Assembly Bill 32, Global Warming Solutions Act
ADT	Average Daily Traffic
ALTAC	Agricultural Land Trust Advisory Committee
BMP	Best Management Practice
CASQA	California Stormwater Quality Association
CBD	Central Business District
CCWMP	Calleguas Creek Watershed Management Plan
CEQA	California Environmental Quality Act
CIP	Capital Improvement Plan
CMP	Congestion Management Plan
CN	Commercial Neighborhood
CPD	Commercial Planned Development
CUP	Conditional Use Permit
CURB	City Urban Restriction Boundary
CWA	Clean Water Act
DPW	Department of Public Works
EIR	Environmental Impact Report
FAR	Floor Area Ratio
HCP	Hydromodification Control Plan
HDM	Highway Design Manual
IRWMP	Integrated Regional Watershed Management Plan
LAFCO	Local Area Formation Commission
LEED	Leadership in Energy and Environmental Design
LGC	Local Government Commission
LID	Low Impact Development
MAL	Municipal Action Level
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PD	Planned Development
PUC	Planned Unit Development
RPAMP	Redevelopment Project Area Master Plan
RPD	Residential Planned Development
SAC	Stakeholder Advisory Committee
RV	Recreation Vehicle
SCAG	Southern California Association of Governments
SCCWRP	Southern California Coastal Water Research Project
SCREMP	Santa Clara River Enhancement and Management Plan
SEP	Supplemental Environmental Project
SOAR	Save Open-space and Agricultural Resources
SQUIMP	Stormwater Quality Urban Impact Plan
SWRCB	State Water Resources Control Board
TDM	Transportation Demand Management
TDR	Transfer of Development Rights
TMDL	Total Maximum Daily Load
USDA	United States Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
VCOG	Ventura County Council of Governments
VCSWQMP	Ventura Countywide Storm Water Quality Management Program
VCTC	Ventura County Transportation Commission
VCWC	Ventura County Watersheds Coalition
VCWPD	Ventura County Watershed Protection District
VMT	Vehicle Miles Traveled

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