Physical Infrastructure Connectivity

Chapter 4: Physical Infrastructure Connectivity Goals and Policies

The Physical Infrastructure Connectivity chapter addresses aspects of physical infrastructure including:

- transportation;
- water resources, including conservation, supply, demand and quality;
- wastewater;
- energy, including alternative energy sources;
- waste removal and recycling;
- brownfield clean up and redevelopment potential;
- communications;
- public facilities and grounds;
- trails;
- flood control/drainage;
- county-wide infrastructure concurrency.

Elements in this chapter provide goals and policies related to the efficient use of existing and planned infrastructure needed to support current populations and accommodate future growth. Each of the topics in the chapter either cover a part of the County's critical infrastructure, connect people and goods or both. All are components of the outlined regional vision noted in Chapter 1.

The Background and Current Conditions Volume (Appendix A) summarizes all of the background data and analysis supporting these goals and policies.

This Comprehensive Plan introduces the concept of an Integrated Facilities Planning System (IFPS) that includes an Integrated Monitoring System based on Level of Service and other standards. The intent of the IFPS is to provide a more efficient and measurable planning process that allows for a comprehensive evaluation of infrastructure needs tied to the Capital Improvements Program (CIP). The IFPS is further described in Section 4.7.

This chapter meets the requirements set forth in Arizona Revised Statutes for the following required elements: Circulation (Transportation); Water Resources; Energy; and the portion of Environmental Planning requirement for air and water quality.

4.1 Transportation Element

The Transportation Element addresses existing and proposed freeways/roadways, bicycle and pedestrian routes/facilities, airports, rail, and any other modes of transportation appropriate for Pima County. It also correlates with the land use and economic development goals and policies. A well-functioning transportation system in Pima County is essential to ensure the efficient movement of people and goods, maintain the quality of life, and facilitate economic growth. The Transportation Element recognizes the need to develop policies and practices that create a sustainable and cost-effective transportation system. The basis of this element is developing a transportation system that meets the mobility and accessibility needs of current and future residents and visitors in ways consistent with the character of the community as expressed throughout the Comprehensive Plan.

Goal 1: Provide a cost-effective, comprehensive and multi-modal transportation system while providing mobility for all users and goods, and all modes of travel including automobile, transit, bicycling, and walking which will reduce carbon emissions

Policy 1: Manage traffic congestion and demand through capacity improvements, land use decisions, transit service, and other comprehensive strategies.

Policy 2: Support transit service and programs, especially for those who are transit dependent, where ridership meets minimum thresholds.

Policy 3: Support multimodal transportation and transit oriented development to improve mobility and reduce traffic congestion.

Policy 4: Incorporate “complete streets” designs on arterials and collectors, where appropriate, to improve access for all roadway users, including bicyclists and pedestrians.

Policy 5: Encourage bicycling and pedestrian safety through education, engineering, enforcement and evaluation.

Policy 6: Pursue a zoning code text amendment to eliminate or reduce the additional 30-foot building setback for Major Streets and Routes.

Goal 1 Implementation Measures:

a. Update the Major Streets and Scenic Routes Plan, based on established and future land use patterns, including existing zoned land, to further define future right-of-way needs and support future growth.
b. Work with stakeholders to periodically update all design manuals to ensure efficient use of resources, regionally appropriate alignment with current national standards and consideration of best practices.
c. Work collaboratively with the Tohono O'Odham Nation, the Pascua Yaqui Tribe, National Park Service, Federal Highway Administration, Central Federal Lands and other state and federal agencies to access funding sources that benefit the entire region.
d. Accelerate the identification and acquisition of rights-of-way for future transportation infrastructure, where feasible.
e. Actively participate in the state planning efforts to explore the potential of an intercity passenger rail line connecting Southern Arizona with the Phoenix metro area.
f. Engage business leaders and employers to identify transit needs for a growing workforce.
g. Increase the number of and distribution of electric vehicle recharging stations.
h. Create incentives for solar construction on existing and new parking structures.
i. Pursue a text code amendment to eliminate or reduce the zoning code requirement for a 30-foot building setback for Major Streets and Routes.

Goal 2: Maintain the county roadway system in a state of good repair

Policy 1: Prioritize roadway maintenance as a core service of Pima County.

Policy 2: Consider improvements that are based on ongoing evaluation of roadway conditions through the County's Pavement Surface Evaluation and Rating system.

Policy 3: Evaluate existing legal mechanisms for roadway maintenance. Develop a sustainable and equitable participation program for roadway maintenance, resurfacing and improvements to improve major and local roadway conditions.

Policy 4: Support and seek alternative funding sources for roadway maintenance efforts.

Goal 2 Implementation Measure:

a. Work with local, state, and national legislators to develop a stable funding source for transportation improvements and maintenance.
b. Collaborate with development industry stakeholders to explore options for road maintenance funding, identifying trade-offs and incentives, including private sector involvement.

Goal 3: Improve traffic safety and reduce accidents on county roads

Policy 1: Prioritize roadway safety projects based on ongoing evaluation of crash statistics through the County's Safety Management System.

Policy 2: Manage roadway access points to improve safety and accessibility for all users.

Policy 3: Support efforts to educate drivers and users of all modes of transportation on traffic safety.

Policy 4: Advocate for legislative and other agency efforts to increase and improve funding for local government traffic safety programs.

Policy 5: Support additional efforts to enforce traffic laws to improve traffic safety and reduce accidents.

Policy 6: Support the reduction of wildlife/vehicle collisions.

Goal 3 Implementation Measures:

a. Work with regional partners to prepare a regional access management plan.
b. Work with Pima County Sheriff Department to plan, develop and implement a strategic traffic safety and speed management plan.
c. Work with regional partners to develop and implement a region-wide traffic signing and pavement marking management plan.
d. Work cooperatively with the region's school districts and charter school providers to coordinate normal and special event traffic demand in an effective and reasonable fashion.
e. Work collaboratively with transportation agency partners to evaluate the appropriateness of incorporating scale-dependent wildlife crossing features as part of County roadway improvement projects.
f. On a region-wide level, continue to work with other agency partners to evaluate opportunities to integrate wildlife crossing features into regional and roadway projects and corridors.

Goal 4: Promote economic development with strategic transportation investments

Policy 1: Support the growth of aerospace, defense, and logistics industries in and around all regional and military airport facilities.

Policy 2: Support transportation investments that assist current employers as well as bringing new and permanent jobs to Pima County.

Policy 3: Support efforts to expand rail infrastructure and intermodal connections throughout the region.

Policy 4: Support the growth of renewable energy industries and new and permanent jobs to Pima County through the development and implementation of low carbon emission transportation options and incentives.

Goal 4 Implementation Measures:

a. Conduct planning and seek regional support and funding for the Sonoran Corridor/Auxiliary Interstate Highway connecting 1-10 to 1-19.
b. Petition the State Transportation Board to accept the Sonoran Corridor as a state highway under the operational management and control of ADOT.
c. Support Tucson International Airport Master Plan and the development of a second main runway.
d. Work with the Tucson Airport Authority, ADOT, Town of Marana, and Pinal County to provide the infrastructure needed to best position Ryan Airfield, Marana Regional Airport, and Pinal Airpark (for Pinal Airpark, the lead in planning and infrastructure would be the airport itself) as sub-regional employers.
e. Work collaboratively Port of Tucson and other community partners to position the Port as a key transportation and logistics center.
f. Continue to work with PAG in the implementation of the most recent long-range transportation plan, the 2040 Regional Transportation Plan Update (RTP), prepared by PAG.
g. Support any rail enhancements needed for the successful operation of the Port of Tucson.

4.2 Water Resources Element

The state mandated water resources element requires that counties perform a basic known water supply and demand comparative analysis to show whether there is an impact of proposed new development on the overall water supply. In 2008, Pima County amended the Water Resources Element to more adequately measure and mitigate impacts of proposed development on water supply. Pima County is not a water provider and no new hydrogeologic studies are required to do this analysis. Consequently, quite a number of assumptions are required. The water quality portion of this element satisfies part of the state mandated Environmental Planning Element.

Analysis of Land Use Changes

As noted elsewhere in this plan, few land use changes were proposed in Pima Prospers from the 2001 Pima County Comprehensive Plan, as amended in the interim years. Pima County is not a water provider. This section denotes the changes anticipated only during the 20 year plan horizon, and the estimated total new development is summarized by affected planning area. Only planning areas where new land use changes were approved by the Board of Supervisors are listed. Changes planned but not expected for at least 20 years are not included.

Planning Area	Number of Changes	Total Acreage	Estimated Dwellings	Estimated Non-Residential (Square Feet)	Water Providers
Catalina Foothills	1	42.3	-84	190,000	Tucson Water
Southeast	5	633.5	2381	1,392,000	Spanish Trail Water, Tucson Water, State Land CAP, Other
Southwest	3	47.74	-34	200,000	Other
Tortolita	2	52.5	-101	365,000	Metro Water, Marana, Other
Tucson Mtns	1	30.99	14	0	Other
Totals	12	806.99	2177	2,147,000	

Assuming 2.48 people per dwelling unit, not counting vacancy rate, the estimated number of dwelling units account for 5,399 people. Per 2013 Arizona Department of Water Resources figures for the Tucson Active Management Area, the expected use is 90 gallons per capita per day. This means consumption at 2013 rates would be 485,910 gallons per day. 893 gallons equal 1 acre foot per year so the math indicates the population increase would equal 544 acre feet per year.

For non-residential, it is difficult to determine gallons per capita per day because the types of uses are both unknown and vary, and therefore do the number of employees and visitors. However, assuming

the 2013 Tucson Active Management Area amount of 40 gallons per capita per day for large non-residential uses, it is clear that at least the rate of consumption is less than half per capita as compared to residential uses. The bulk of the square footage of non-residential in the table above is expected to be for industrial use within the Airport – I-10 Economic Development Corridor, and clearly serves an economic development purpose.

The estimated annual water use from these projects when they come online over the next 20 years is well within the total amount of water needed to serve the metropolitan area. Individual projects will need to provide further site specific detail at the time of rezoning, including the source of water. The number of residential units is accounted for with the Pima Association of Government's population projection totals for 2035.

In addition to these changes, the land use maps in Pima Prospers include a number of changes compared to the 2001 plan that more accurately depict existing developed land use and correct land uses that are unrealistic due to a lack of services and/or Federal ownership, most notably in the greater Ajo area. While all new development will cause water to be consumed, estimates of the population growth caused by the very few land use changes approved that are likely to occur over the next 20 years are well within overall regional growth expectations. Each rezoning case expected by these changes will be subject to a more refined water analysis at the time of application.

Pima County 2011-2015 Action Plan for Water Sustainability and Water Resource Policy

The City of Tucson and Pima County completed a multi-phase water/wastewater infrastructure study in 2010. Phase 1, completed in February 2009, consisted of an infrastructure inventory. Phase 2 established a framework for sustainable water resources planning through the implementation of 19 goals and 56 recommendations. A five-year Action Plan for Water Sustainability (2011-2015) guides completion of the recommendations and each year the City and County transmit an annual report card tracking progress towards meeting those goals.

In 2007, the Board of Supervisors adopted a policy (F54.9) on County water rights acquisition, protection and management. The policy requires that Pima County water resources be used to the benefit of Pima County's citizens. It establishes a collaborative effort of numerous Pima County Departments to identify County initiatives for improved management and utilization of County owned water rights. The County Water Management Committee has provided guidance in managing its water resources by building a database of water sources, rights and infrastructure while encouraging improved departmental maintenance, procedure and administration. Strategic planning for County reclaimed water, long term storage credits and groundwater and surface water rights will maximize resource value and efficient utilization.

The Pima County 2011-2015 Action Plan for Water Sustainability and the Water Rights Policy have numerous common goals and are complementary plans that reinforce sustainable planning.

Goal 1: Achieve water sustainability through comprehensive integrated planning that coordinates water supply, demand management, climate variability, economic growth and respect for the environment

Policy 1: Comply with all applicable goals and recommendations in the 2011-2015 Action Plan for Water Sustainability, approved by the Board of Supervisors and the City of Tucson Mayor and Council.

Policy 2: Maximize County water resource assets including groundwater rights, surface rights and production and use of reclaimed water to sustain and protect the County's natural environment consistent with Board of Supervisors Policy F 54.9 "Water Rights Acquisition, Protection and Management."

Policy 3: Make beneficial use of the Conservation Effluent Pool (CEP) for environmental restoration.

Policy 4: County water resources, and associated rights and credits, are valuable public assets to be preserved for public benefit. Reclaimed water is a local renewable water resource vital to sustainable water resource planning and a key component of future supply. It is the policy of Pima County to maximize available County water assets, including the production and use of reclaimed water. The beneficial use of County reclaimed water is undertaken recognizing the following priorities to achieve highest and best use, maximizing efficiency:

a) Direct re-use;
b) Environmental restoration; and
c) Aquifer replenishment.

Policy 5: Increase reliance upon renewable water supplies.

Policy 6: Promote the efficient utilization of existing infrastructure and the prudent construction of additional infrastructure needed for a safe, reliable and renewable water supply.

Policy 7: Protect groundwater-dependent ecosystems including springs, perennial and intermittent streams and shallow groundwater areas.

Policy 8: Continue to conduct Water Supply Impact Reviews of proposed comprehensive plan amendments and rezonings larger than 4 acres using the following 5 critical issues on existing water infrastructure and potential environmental constraints:

a) Water service and renewable water supply options to site;
b) Current and projected depth of groundwater and groundwater trend data at the site or wells;
c) Proximity of site or wells (if known) to areas of known or potential ground subsidence;
d) Proximity of site and wells (if known) to known groundwater-dependent ecosystems; and

e) Location within a hydro geologic basin, including depth to bedrock.

Policy 9: Minimize effect of development upon water supply for existing and future residents of Pima County through water conservation measures when appropriate to offset the impacts as conditions of rezonings.

Goal 1 Implementation Measures:

a. Implement and update as needed the 2011-2015 Action Plan for Water Sustainability.
b. Continue transmittal of Year End Progress Reports of the Action Plan recommendations.
c. Develop strategies for the utilization of Pima County water resources consistent with the Water Rights Policy.
d. Prepare a Watershed Management Plan which identifies the watersheds impacting Pima County, their drainage characteristics, regulatory and infrastructure needs.
e. Continue to conduct Water Supply Impact Reviews on proposed comprehensive plan amendment requests larger than four acres.
f. Continue to include the Preliminary Integrated Water Management Plans (PIWMP) as part of the site analysis and conduct Water Resource Assessments on all rezoning or specific plan requests that require a site analysis. Update the site analysis checklist as needed.
g. Develop incentives to encourage beneficial use of stormwater and other water conservation measures.
h. Develop a practicable method to assess both the increased water demand associated with new development and the offset measures that are proposed in Integrated Water Management Plans in order to compare them.

Water Supply and Demand Management

The Bureau of Reclamation and the Arizona Department of Water Resources (ADWR) studies recommend using all water supplies as efficiently as possible and the expansion of reclaimed water use for non-potable purposes to ease potable demand. Reclaimed water has and will continue to be a key water supply in the state's management plans and goal of safe yield, or hydrological balance. Yet both reports agree that no one strategy will solve future imbalance; augmentation of supply will be required despite conservation and reuse efforts.

Tucson Water recently released a Recycled Water Master Plan. New recycled water programs are predicated on the conclusion that the reclaimed water system is not expected to gain significant additional demand and new uses are needed to achieve full utilization and maximize water resource

benefit. Full utilization is a compelling goal as Tucson Water expects shortages to the City's Central Arizona Project (CAP) allocation due to drought and climate change and is shifting strategy "to decrease reliance on CAP supplies." Plans for supplementing the City's CAP allocation include recycled water, Central Arizona Groundwater Replenishment District (GRD) replenishment, Arizona Water Banking Authority (AWBA) credits, long term storage credits and incidental recharge.

Tucson Water is considering to use unutilized recycled water for groundwater replenishment, through recharge, and then recover the water for advanced treatment before delivery as a supplement to potable water supplies a process called "indirect potable reuse", one used by other communities in the Southwest. Indirect potable reuse is the primary strategy of Tucson Water's Recycled Water Master Plan to establish additional renewable water supplies, increase system reliability and retain a valuable water resource within the county.

In 2013, concerned about the ongoing drought and the continuing decline of water levels in Lake Mead and Lake Powell, the Department of the Interior and the Basin States set out to develop a drought response and sustainability plan for the Colorado River basin. The Lower Basin states have proposed to retain an additional 1.5 to 3 million acre-feet in Lake Mead over the next five years to reduce the risk of that reservoir dropping below the critical elevation of 1,000 feet. CAP is partnering with other states and the U.S. Bureau of Reclamation to fund pilot Colorado River water conservation projects demonstrating cooperative, voluntary compensated demand reduction in the agricultural, municipal and industrial sector. The Colorado River System Conservation Program is a critical first step in conserving water within the Colorado River System to protect reservoir levels.

Goal 2: Acknowledge new water supplies may be needed to ensure a secure water future

Policy 1: Collaborate with water providers to support the development of new water supplies.

Policy 2: Collaborate with water providers to support sustainable water management in County-identified regional growth areas outside of the Tucson metropolitan area.

Policy 3: Consider use and underground storage of high-quality reclaimed water as viable future water supply strategies.

Goal 2 Implementation Measures:

a. Achieve full utilization of the County's reclaimed water as part of a strategy that best incorporates direct reuse, aquifer replenishment and accrual of long term storage credits.
b. Support increased use of reclaimed water by water providers with reclaimed water entitlements.

c. Support increased use of CAP water and a blend of recharge of CAP water and groundwater including wheeling agreements between water providers.
d. Stay apprised of the Colorado River water supply and its impacts to local water providers.

Goal 3: Support efficient water demand management practices and strategies that protect both local and basin-wide water supplies

Policy 1: Integrate efficient water demand management practices and strategies in land use decisions.

Policy 2: Direct new development to areas that are served by water providers with a renewable and potable supply or the ability to create the same, and away from areas that are served by water sources that impact groundwater-dependent ecosystems.

Policy 3: Encourage new construction to implement efficient water practices and use renewable water resources where feasible and available.

Policy 4: Encourage the use of renewable water sources including reclaimed water, CAP water and water harvesting.

Policy 5: Encourage efficient investment and coordination among regional public and private water and sewer providers for potable and renewable supply, treatment and conveyance infrastructure.

Policy 6: Promote and incentivize, where appropriate, long-term water conservation strategies such as:

a) Low water use fixtures and appliances in building codes;
b) Low water use drought tolerant landscapes or xeriscapes;
c) Drip irrigation;
d) Increase use of reclaimed water and rainwater harvesting; and
e) Low Impact Development (LID) principles such as preserving and recreating natural landscape features and minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product where, applicable and feasible.

Policy 7: Continue to require that all solar energy generating fields utilize solar technologies that minimize consumption of water.

Policy 8: Continue to require a PIWMP for any rezoning that requires a site analysis. The PIWMP submittal requirements are as follows:

a) If the site is served by a water system with a potable and renewable water supply, or the ability to create the same, the PIWMP shall consist only of the required Water Conservation Measures found in the site analysis requirements.

b) If the site is served by a water system that does not have a potable and renewable water supply, in addition to the Water Conservation Measures, the PIWMP shall contain:
   1. A description of where the proposed rezoning will occur geographically based upon its proximity to existing and planned renewable supply and potable water supply infrastructure and defined water service area boundaries;
   2. Water demand projections for the development, based upon both the existing and proposed zoning. For vacant land, existing water demand shall be calculated based upon maximum residential or commercial development under existing zoning. All water demand projections shall be generated using the current ADWR Demand Calculator, unless water demand information from similar development can be provided.
   3. A plan showing the location of all wells, existing and proposed, that may be used to supply water to the development, including ADWR well registry numbers for existing wells; and
   4. The location of the development and the area from which groundwater will be withdrawn relative to all groundwater-dependent ecosystems including: springs, perennial streams, intermittent streams and shallow groundwater areas as mapped on the Sonoran Desert Conservation Plan GIS database.

c) If the site is located within a groundwater-dependent ecosystem, or relies on groundwater from wells that are within one mile of a groundwater-dependent ecosystem, the PIWMP shall also include a demonstration that the development will not have an impact on the groundwater-dependent ecosystem. The demonstration can include a combination of groundwater drawdown analysis and additional conservation measures that will reduce the water demand of the proposed rezoning to be at or below the existing demand calculated in b.2. The demonstration may include:
   1. An analysis of water level trends in the area from which groundwater will be withdrawn for the service to the development and depth to groundwater at the nearest existing well location https://gisweb.azwater.gov/waterresourcedata/WellRegistry.aspx;
   2. Existing site-specific geologic and hydrogeologic studies available for the area from which groundwater will be withdrawn to serve the project;
   3. A hydrologic impact analysis to show how groundwater withdrawn for the development may impact ecological assets including employing pump tests and monitoring, and use avoidance strategies, including well site selection and screening of wells;

4. A draw-down analysis for impact of water demand of the development on any proposed or existing wells within the 10-foot draw-down contour after five years of pumping at full build-out;
5. A feasibility study examining the cost and means to deliver renewable and potable water to the development after full build out, OR the applicant may provide a statement declaring no feasibility study has been conducted. Statement will not bar rezoning approval, but will be weighed in the staff's recommendation;
6. Provide additional quantifiable conservation measures, which will become conditions of rezoning; and
7. Offsets for increased demand by recharge, legal and verifiable water rights, or retirement or purchase of water rights from within the same or up-gradient shallow groundwater area.

Policy 9: Continue to conduct a Water Resource Impact Assessment on any rezoning that requires a site analysis, which includes an evaluation of the Water Supply Impact Review, plus information provided by the applicant in the Preliminary Integrated Water Management Plan. The following recommendations and conditions may be applied at the time of rezoning to offset or mitigate the findings of the Assessment:

a) All rezoning proposals shall include a condition requiring implementation of Water Conservation Measures identified in the PIWMP through a Final Integrated Water Management Plan which will be required at tentative plat or development plan. These measures will become a condition of rezoning and may include a requirement for restrictions to be identified in CC&Rs.
b) For rezoning proposals that are served by potable and renewable supply, a recommendation of approval.
c) Rezoning proposals without physical access to renewable and potable water supply and that are greater than one mile from a groundwater-dependent ecosystem and whose wells draw water from an area greater than one mile from groundwater-dependent ecosystem shall not be recommended for approval by staff until either a renewable and potable water supply becomes available in the area or unless additional Water Conservation Measures or offsets are proposed to reduce the demand to the demand associated with the existing zoning. Written proof that from the water provider that the wells are outside of the groundwater-dependent ecosystem shall be a condition of rezoning.
d) Rezoning proposals without physical access to renewable and potable water supply and that are within a subsidence area or whose wells draw water from a subsidence area shall not be recommended for approval by staff until either a renewable and potable water supply becomes available in the area or unless additional Water Conservation Measures or offsets are proposed to reduce the demand to the demand associated with the existing zoning. Written proof that from the water provider that the wells are outside of the subsidence area shall be a condition of rezoning.

e) Rezoning proposals without physical access to renewable and potable water supply and that are within on mile of a groundwater-dependent ecosystem, that have wells that are within one mile of a groundwater-dependent ecosystem, or that have wells within an isolated basin shall be recommended for denial by staff unless it can be shown that the increased demand does not have an impact on the groundwater-dependent ecosystem or isolated basin OR additional Water Conservation Measures or offsets are proposed to reduce the demand to the demand associated with the existing zoning.

Goal 3 Implementation Measures:

a. Work collaboratively with water providers to establish goals for regional water use, decrease the use of wells found in groundwater-dependent ecosystems, and increase the use reclaimed water.
b. Support programs that conserve water within the Colorado River Basin system and protect Lake Mead operation.
c. Work with stakeholders to update existing codes and regulations as necessary to include long-term water conservation strategies.
d. Coordinate across departments to prepare and adopt voluntary LID guidelines.
e. Update Water Conservation Measures (Table B of the rezoning site analysis requirements) to comprehensively address water conservation for proposed development (low water use toilets, water harvesting, etc.).
f. Provide guidance on the use and effectiveness of additional conservation measures for site with water supply in groundwater-dependent ecosystems.
g. Support educational programs on water conservation.
h. Develop guidelines for water-efficient solar systems or options to offset water use.
i. Revise and update water conservation and management tools with input from stakeholders to achieve policy goals.

Goal 4: Ensure a sufficient water supply for economic development

Policy 1: Work with water providers and private sector stakeholders to identify areas with economic development potential that are lacking public water service and identify options for cost effective water service.

Policy 2: Emphasize water conservation and water efficiency when recruiting new businesses or expanding existing businesses.

Goal 4 Implementation Measures:

a. Work cooperatively with water providers, other jurisdictions, Sun Corridor Inc. and Tucson Regional Water Coalition (TRWC) to prioritize water supply for new

economic development which both provide basic employment (jobs with a multiplier effect) and use water efficiently.

b. Educate potential new businesses on water conservation strategies and approaches.

Goal 5: Effectively protect groundwater quality

Policy 1: Continue to assess soil and groundwater quality in the vicinity of all County-owned sites of concern, including landfills, and promptly implement clean-up activities where soil or groundwater has been affected.

Policy 2: Continue to operate existing remediation systems and monitoring programs until all contamination has been fully cleaned up.

Policy 3: Implement new programs to protect groundwater quality for County facilities that have the potential to impact groundwater.

Policy 4: Encourage coordination among County departments that use or generate hazardous materials and waste to institute groundwater pollution prevention policies and practices.

Policy 5: Support practices that reduce the generation of waste that could impact groundwater quality and implement spill management plans.

Policy 6: Encourage land use decisions that maintain the function and quality of watercourses and areas designated in the Sonoran Desert Conservation Plan as riparian and aquatic habitat.

Policy 7: Continue to protect groundwater dependent ecosystems.

Goal 5 Implementation Measures:

a. Using a sustainability model, balancing existing and future water needs of residents, businesses and the natural environment; develop baseline data and measure future impacts to open space lands and riparian habitats within the unincorporated area of the County to protect these groundwater-dependent ecosystems.
b. Provide needed resources to address any soil and groundwater remediation needed at County-owned sites of concern, including landfills.
c. Implement the County's Municipal Separate Storm Sewer System Program.

4.3 Energy Element

University of Arizona Solar Zone, Pima County, Arizona

With an average of 296 days of sunshine per year Pima County has one of the best solar resources in the world. With its proximity to major markets coupled with large expanses of flat rooftops and relatively flat, open landscape, Pima County is well positioned for developing a thriving renewable energy industry that is prepared to satisfy the demands of the low carbon economy of the future. Per dollar invested, renewable energy and efficiency generate more jobs than any other energy-related industry sector and they rely primarily on the local workforce, insuring the jobs stay local. Wide scale deployment of renewal energy over the next 10-15 years would generate tens of thousands of construction-phase jobs, $10 billion in earnings and economic activity, and more than 4,000 permanent jobs and $750 million annually in earnings and additional economic activity, across the state. Robust investment in the development of a clean, renewable energy supply will build a foundation for economic stability and growth, generating thousands of new high-paying jobs, boosting economic activity, conserving scarce water supplies, improving public health and enhancing energy security.

This element meets the state requirement of the Energy Element.

Goal 1: Support the increased use of cost-effective clean alternative energy systems

Policy 1: Encourage overall reduction in energy consumption through application of technology, installation of low energy fixtures, public education, and consumer awareness.

Policy 2: Promote the generation, transmission, storage and use of a range of renewable energy sources such as solar, biofuels and wind power to meet current and future energy demands and decrease reliance on fossil fuels.

Policy 3: Encourage new development and redevelopment projects to generate their energy needs through on-site renewable sources to support the energy efficient methods and practices provided in the County Net Zero Energy Program Standard.

Policy 4: Continue to implement and expand the Renewable Energy Incentive District (REID).

Policy 5: Identify and consider incentives for new development and redevelopment that exceeds the energy efficiency requirements in the building code.

Policy 6: Promote and increase utilization of clean alternative/solar energy systems County-wide by:

a) Creating educational programs to promote clean alternative/solar energy systems;
b) Providing information on all existing incentives for establishing solar energy systems and for participating in utility-scale community solar projects;
c) Providing design information on maximizing the use of solar energy systems and methods in new construction, remodels, and retrofits; and
d) Coordinating with local power utilities that are developing utility-scale renewable resources or participating in purchase agreements from renewable energy producers.

Policy 5: Encourage residential and nonresidential development to maximize the use of solar energy systems on individual sites and throughout the development, and incorporate the consideration of access to incident solar energy.

Policy 6: Encourage the use of passive solar to reduce overall energy demand.

Policy 7: Mitigate urban heat island effect by reducing paved areas, increasing shade and applying other methods, where practical.

Policy 8: Encourage the replacement of traditional fossil fuel-fired equipment such as emergency generators and peak power-sharing generators with energy efficient systems.

Policy 9: Encourage, promote and support biogas utilization.

Policy 10: Continue to work collaboratively with all potential partners to explore new clean, renewable and cost efficient forms of energy as they emerge.

Goal 1 Implementation Measures:

a. Create a review system that rewards developments that incorporate energy efficient systems or go beyond basic code requirements.
b. Develop incentives for using solar energy and for providing alternative fueling stations.
c. Identify zoning and other code barriers that inhibit the use of the latest energy technologies.
d. Modify standards to encourage alternative materials, more shade and smaller footprints for parking lot construction.

e. Implement and periodically update the Biogas Utilization Master Plan recommendations.
f. Work collaboratively with utility companies, other jurisdictions, the University of Arizona and other potential partners to reduce energy consumption and increase the use of clean energy systems and decrease reliance on fossil fuels in the region.
g. Incorporate a solar-ready policy.
h. Protect access to solar energy for pre-existing solar energy improvements from new development.

Goal 2: Ensure that infrastructure, facilities and services planning is sensitive in character and location with historic resources and environment

Policy 1: Coordinate with utility companies and other public service providers when planning infrastructure, facilities and services to facilitate that infrastructure and facility construction is sensitive in design and location to environmental and historic resources.

Goal 2 Implementation Measure:

a. Coordinate with utility companies and infrastructure providers to facilitate design integrity with its surroundings.

Water, Energy Production and Economic Development

Energy production through burning fossil fuels traditionally requires a significant amount of water. In our desert environment this often sets up a situation where trade-offs must often be made between the use of water, generating sufficient power to meet demand, and economic development. The need to address such trade-offs can be mitigated by using alternative sources of energy production that have low water demands. Information in Pima County's 2015 Solar Energy Report shows that renewable energy alternatives can conserve water while delivering cost savings to consumers, and promote job creation, while reducing carbon emissions.

For carbon footprint reduction, see 4.7 Public Buildings and Public Facilities Element.

Goal 3: Minimize tradeoffs for human populations, energy production, habitat and economic development

Policy 1: Balance energy production and economic development with available water and environmental resources.

Policy 2: Align energy and utility corridors with existing infrastructure, where feasible and appropriate, while minimizing natural environment disturbance.

Policy 3: Conserve water resources through alternative energy sources.

Goal 3 Implementation Measure:

a. Work with energy providers and regulators to minimize environmental and economic impacts.
b. Assess water use measurement in evaluating electricity generation options such as coal burning electricity or alternatives.

Secure, Reliable, Affordable, Clean Energy to Support Economic Development

Pima County is well positioned to offer opportunities to the emerging renewable energy industry. Combined with the location of a major university, the establishment of the Arizona Research Institute for Solar Energy, the identification of the region as one of the best areas in the nation for solar energy production, and the draw for corporations to relocate here as a way to attract quality employees, the County is poised to benefit in multiple ways from the renewable energy revolution.

The 200-acre Solar Zone at the University of Arizona Tech Park (UA Tech Park) is a public-private partnership (UA and Tucson Electric Power) centerpiece that could make the region a leader in solar energy production and innovation. Currently the largest multi-technology solar generating facility in the world where the latest solar technologies are being tested for energy generation, storage, and water efficiency, the Solar Zone is managed by TEP, and is currently working to integrate 300 MW of solar-generated energy into the regional grid.

Goal 4: Encourage the development of new supplies of energy, particularly renewable energy, in a redundant system to support economic development

Policy 1: Strengthen partnerships with utility companies, The University of Arizona and other jurisdictions to lead efforts in establishing energy and renewable energy system production and innovation in the region to meet the energy needs of new and emerging industry.

Policy 2: Support public-private utility partnerships to develop renewable energy micro-grids for the distribution of redundant, reliable and affordable energy.

4.4 Wastewater Treatment Element

The Pima County Regional Wastewater Reclamation Department (RWRD) provides design, management and maintenance of the sanitary sewer system including conveyance and treatment systems. The extension of sewer lines is the most significant public works infrastructure tool the County has to guide growth and development into suitable areas.

The Pima County RWRD delivers service to the vast majority of the unincorporated County served by the sewer system. The Towns of Marana and Sahuarita have Designated Management Areas, or are the Designated Management Agency for their service areas, some of which apply to unincorporated Pima County. Sanitation is provided to portions of unincorporated Pima County outside of the Sewer Service System by individual septic tanks.

Goal 1: Efficiently manage and operate the County's wastewater system

Policy 1: Enhance opportunities for aquifer recharging at the water reclamation facilities to:
- a) Increase our existing water supply; and
- b) Diversify our regional water resources.

Policy 2: Support future sewer system expansions into regional growth areas.

Policy 3: Encourage growth in areas with or in close proximity to existing infrastructure.

Policy 4: Utilize existing rights-of-way for the placement and realignment of public sewer systems while preserving environmentally sensitive areas through a coordinated approach.

Policy 5: Continue to support development of regional economic opportunities and new development through well planned, infill sewer system capacity expansions.

Policy 6: Continue to improve operational efficiencies to reduce costs.

Policy 7: Periodically review policies that recover costs associated with new development to ensure that growth pays for itself.

Policy 8: Continue to monitor emerging technologies in wastewater and consider new technologies that improve cost and operational efficiencies within the public sewer system.

Policy 9: Incorporate emerging technologies and alternative design and construction practices into guidelines and standards that facilitate new development.

Policy 10: Include land use planning in the evaluations and planning for sewer system expansions.

Goal 1 Implementation Measures:

a. Integrate land use planning changes into sewer system planning.
b. Establish strategies to support growth close to existing sewer infrastructure and feasible extension of infrastructure to Focused Development Investment Areas.

c. Continue to explore opportunities for aquifer recharge via water reclamation facilities.
d. Assure that sewer conveyance system extensions are undertaken with priority to Focused Development Investment areas.

4.5 Environmental: Air Quality and Solid Waste Element

This element meets the state requirement for the portion of the Environmental Planning Element addressing Air Quality. Other aspects of the required element (Water Quality and Natural Resources) are addressed elsewhere in the plan and are so identified.

Air Quality

Pima County Department of Environmental Quality (PDEQ) monitors ambient (outdoor) air pollutants throughout eastern Pima County. There are six criteria pollutants that are monitored in accordance with the National Ambient Air Quality Standards (NAAQS) set by the Environmental Protection Agency (EPA) to comply with the Federal Clean Air Act.

PDEQ issues air quality operating permits to facilities known as Stationary Sources which may be any building, structure or installation subject to regulation which emits or may emit air pollution. These facilities must comply with the conditions in their operating permits to limit air pollution. Other sources of air pollution include Fugitive Dust, Asbestos and Open Burning, which are also regulated by PDEQ.

The EPA has initiated an evaluation of the current ozone standard to determine if it sufficiently protects public health and the environment. If the standard is changed in the future, Pima County may be in nonattainment. Were that to happen, the County would need to develop an air quality control plan to reduce emissions to return the area to compliance.

Goal 1: Continue to monitor and reduce ambient (outdoor) air pollutants throughout eastern Pima County

Policy 1: Update and amend as needed County ordinances related to monitoring and reducing air pollutants.

Policy 2: Continue to enforce and monitor all applicable permits and standards to reduce air pollutants in Pima County including fugitive dust, asbestos and open burning.

Policy 3: Work collaboratively with the Pima County Health Department to identify strategies to reduce adverse health impacts related to air quality such as recent increases in Valley Fever and other respiratory diseases.

Policy 4: Encourage land use patterns and transportation alternatives (walk, bike, and ride) that support the reduction of automobile emissions.

Goal 1 Implementation Measure:

a. Continue to implement existing dust, asbestos and open burning regulations and periodically update County ordinance related to reducing air pollutants.

Waste Removal, Recycling and Solid Waste

Goal 2: Waste removal, recycling and solid waste are efficiently and safely managed to protect public and environmental health

Policy 1: Continue to identify safe and efficient strategies and promote educational programs for waste removal, reduction, repurposing and recycling.

Policy 2: Ensure that hazardous and non-hazardous wastes are managed in an environmentally sound manner.

Policy 3: Encourage resource recovery from waste materials through suitable incentives and efforts.

Policy 4: Provide remedial responses and/or provide oversight to the uncontrolled releases of hazardous and petroleum substances into the environment.

Policy 5: Continue to work collaboratively with all service providers in the provision of solid waste and recycling services.

Policy 6: Consider revenue and/or amenity generating opportunities for the utilization of closed landfills for other appropriate land uses such as parks and open space.

Policy 7: Secure financial resources to comply with regulatory requirements in landfill closure activities.

Policy 8: Work collaboratively with community partners to reduce the amount of food waste entering landfills through public-private waste reduction programs.

Goal 2 Implementation Measures:

a. Continue to enforce the Waste Hauler Program which requires inspection of septic tank cleaners, liquid waste haulers and pumper trucks on an annual basis.
b. Continue to safely and efficiently implement the Waste Tire Program.
c. Assure that all jurisdictions in the region cooperate to establish and financially support a Regional Household Hazardous Waste program.
d. Develop and update periodically a public education program to educate the public about all County waste removal programs and the benefits of recycling.

4.6 Communications Element

Communication Networks

The Pima County Wireless Integrated Network (PCWIN) system enables 30 fire and law enforcement agencies from Tucson to Ajo, from Sahuarita to Mount Lemmon, and from the Rincon Valley to Avra Valley, communicate with each other by radio in real time on a single system, regardless of their jurisdiction boundaries. This program includes the following Pima County departments:

- Sheriff's Department;
- Office of Emergency Management and Homeland Security;
- Facilities Management Department;
- Information Technology Department;
- Finance and Risk Management Department;
- Procurement Department;
- Department of Transportation;
- Regional Flood Control District;
- Regional Wastewater Reclamation Department;
- Capital Improvement Project Office; and
- Real Property.

Goal 1: Improve countywide response time for fire services, law enforcement, agencies, critical facilities and County departments through the Wireless Integrated Network and other emerging communication technologies

Policy 1: Continue to implement the Pima County Wireless Integrated Network Plan.
Policy 2: Explore opportunities to improve the Pima County Wireless Integrated Network.
Policy 3: Co-locate fiber optic lines with other utilities as possible.

Goal 1 Implementation Measures:

a. Work collaboratively with service providers to identify funding sources to include the latest communication technologies needed to provide critical services.
b. Incorporate fiber network extension capabilities into major transportation corridor upgrade planning.

New or Updated Communication Facilities

Fast, efficient, affordable and reliable communications networks, learning and collaborative technologies, and people-centric services – public, private, and hybrid – are fundamental to the County's economic development and to its enhanced human infrastructure connectivity.

Networks, technologies and services such as wireless and broadband communication networks are essential to the County's and its citizens' ability to meet social and environmental challenges and to seize forthcoming opportunities. They are where and how many of the County's social, cultural, governance, and economic activities get done today, which will increasingly take place in the virtual realm.

The people's ability to use these networks, technologies and services – as residents in communities, businesses, and cultural and educational organizations, and as economic and social actors – is increasingly important to everyday life.

Goal 2: Encourage and work to ensure universal access on a countywide basis to fast, efficient, affordable and reliable wireless and broadband communication networks, learning and collaboration technologies, and people-centric services that support economic and cultural development

Policy 1: Support and participate in the countywide development of facilities that provide fast, efficient, affordable, equitable and reliable access to regional and community programs and services via wireless and broadband communication networks and learning and collaboration technologies.

Policy 2: Proactively explore and exploit opportunities to:

a) Extend wireless and broadband communication networks;
b) Learning and collaboration technologies; and
c) People-centric services throughout the county's communities and rural areas.

Policy 3: Promote and support the thoughtful use of new communication technologies such as:

a) Wireless and broadband networks (including fiber networks);
b) Learning and collaboration technologies; and
c) People-centric services.

Policy 4: Continue to incorporate aesthetic design considerations into cellular towers.

Goal 3: Explore the use of emerging, advanced communication networks and collaboration technologies

Policy 1: Explore the use of emerging, advanced communication networks and collaboration technologies to:

a) Enhance the County's human-infrastructure connectivity; and
b) Increase the capacity of the County and its people to anticipate, plan for and collaboratively meet social and environmental challenges and seize forthcoming opportunities.

Goal 2-3 Implementation Measures:

a. Continuously evaluate the communication, learning and collaboration, and people-centric service needs of the County's residents, communities, businesses, cultural and educational institutions as a regular part of the comprehensive planning process.
b. Procure, provide, and encourage the development of the latest emerging networks, technologies and services to meet the County's needs.
c. Address changes in codes or ordinances as appropriate.

4.7 Public Buildings and Facilities Element

Like all local governments, Pima County owns or in some instances, leases, a vast inventory of both special use public facilities, and general office buildings, as well as physical plant, surface and subsurface infrastructure all of which must be maintained and periodically improved.

Integrated Facilities Planning System

This Comprehensive Plan introduces the concept of an Integrated Facilities Planning System (IFPS) that includes an Integrated Monitoring System based on Level of Service standards, health impact assessments, and other techniques pertinent to the specific service rendered or facility constructed. The intent of the IFPS is to provide a more efficient and measurable planning process that allows for a comprehensive evaluation of infrastructure needs tied to the Capital Improvements Program (CIP). The intent in most cases is to create an interdisciplinary and collaborative method to plan and evaluate current county services, facilities and future improvements.

The IFPS and associated Monitoring System will be introduced to Pima County stakeholders. Stakeholders will have opportunity for input before the system becomes operational.

The use of the IFPS in coordination with the CIP and other programs, as established by the County Board of Supervisors, will be the key implementation components of this Comprehensive Plan. The IFPS will rely on multi-department collaboration to ensure efficiencies, minimize cost, and better serve the community.

Pima County's Sustainability Program, managed by an interdisciplinary Steering Committee under the auspices of the Office of Sustainability and Conservation, has effectively developed, updated and monitored an internal Sustainability Action Plan to make more efficient use of county facilities, reducing waste, energy, water and other resources. Lessons from the operation of the Sustainability Program can be employed in the establishment of the IFPS.

Goal 1: Explore the possibility of establishing a County-wide Integrated Facilities Planning System

Policy 1: The IFPS will:

a) Integrate land use decisions with transportation systems, flood control, infrastructure, library district, parks and recreation, safety, and other County services and facilities planning;

b) Prioritize, schedule and identify funding for ongoing maintenance of County public facilities and infrastructure;

c) Utilize the inter-departmental effort resulting in the Pima County Infrastructure Study as the framework to periodically assess the needs and deficiencies of each established planning area;

d) Provide shared access among departments to databases to reduce duplication of efforts;

e) Minimize costs, maximize resources and ease the process of grant writing and funding identification by working collaboratively;

f) Rely on public/private partnerships for the provision of services, where applicable;

g) Provide higher quality public facilities and services;

h) Assist in monitoring Comprehensive Plan progress; and

i) Consider climate preparedness and extreme weather event emergency support needs such as heating and cooling stations in County public facilities and infrastructure planning.

Carbon Footprint Reduction

In 2007, the Board of Supervisors adopted the Pima County Sustainability Initiatives, Resolution No. 2007-84. This far-reaching resolution promotes creating and maintaining a sustainable community that supports individual well-being and opportunity, sound resource conservation and stewardship, and a strong and diverse economy for all of its residents.

The Pima County Board of Supervisors unanimously adopted the Sustainable Action Plan for County Operations (SAPCO) in August 2008 to implement the Sustainability Initiatives and in April 2012, the Board of Supervisors expanded the SAPCO by adopting the Health and Wellness Chapter.

Since 2008, SAPCO has been successfully implemented through the collaboration of County Departments and the dedication and volunteer efforts of more than 200 County employees. SAPCO addresses:

- Carbon footprint reduction;
- Renewable energy and energy efficiency;
- Green building and site design;
- Alternative fuel vehicles;

- Water conservation and management;
- Land conservation and management;
- Waste reduction;
- Green purchasing; and
- Health and wellness.

Since the Board of Supervisors adopted the Pima County Sustainability Initiatives Resolution in May 2007, County employees have achieved measurable improvements in the sustainability and efficiency of County government operations. With the aggressive implementation of all of the County's sustainability initiatives mentioned above, the County forecasts that it will actually generate less greenhouse gas in the year 2020 than in the year 2007, considerably reducing its carbon footprint.

Goal 2: Encourage, promote and support methods, principles and practices that result in carbon footprint reduction

Policy 1: Continue to take a systematic approach to integrating the goals of sustainability into all facets of the way Pima County government operates by incorporating:

a) Carbon footprint reduction;
b) Renewable energy and energy efficiency;
c) Green building;
d) Alternative fuel vehicles;
e) Water conservation and management;
f) Land conservation and management;
g) Waste reduction;
h) Green purchasing;
i) Health and wellness; and
j) Site design.

Policy 2: Encourage new County development in the unincorporated areas of the County to reduce its carbon footprint by incorporating, where feasible and applicable:

a) Renewable energy and energy efficiency;
b) Green building methods and materials;
c) Low Impact Development (LID) strategies of site design in suburban areas;
d) Access to multimodal transportation to decrease reliance in automobile; and
e) Pedestrian, bicycle and trail connectivity to increase health and wellness.

Goals 1 and 2 Implementation Measures:

a. Identify a systematic and effective approach to implement the IFPS.
b. Continue to implement and update as needed the SAPCO.
c. Comply with all applicable carbon footprint reduction, renewable energy, green building, water conservation, land conservation, waste reduction, green and healthy community principles adopted as part of the Pima County Comprehensive Plan.

Public Facilities and Healthy Communities

A strong sense of community has been associated with improved well-being, increased feelings of safety and security, participation in community affairs and civic responsibility. A variety of strategies can incorporate healthy community principles with the provision of public facilities. These may include the incorporation of arts and culture, the grouping of public facilities that provide compatible functions, the integration of government facilities into mixed-use projects, and the provisions of services to rural areas through existing or new multipurpose community centers.

Goal 3: Align County public facilities mission with healthy community principles

Policy 1: Encourage new County facilities and the expansion of older facilities to be built to:

a) Complement the scale, massing, character and identity of adjacent neighborhoods to create an authentic sense of place;
b) Incorporate courtyards, plazas, pocket parks, landscape amenities including shade trees, and public art to increase community interaction and create safety by design;
c) Group public facilities that provide complementary public services and have compatible functions to become a one-stop center to have multiple, cross-departmental benefits from such structures;
d) Incorporate horizontal and vertical mixed-use when designing new or expanding existing facilities to provide support services and retail to meet the needs of the community;
e) Be located in areas accessible by multiple forms of transportation (walking, biking, and transit);
f) Integrate pedestrian oriented features and bicycle facilities (parking, showers, etc.) to discourage automobile dependence and support healthy lifestyles;
g) Provide opportunities for farmers markets, healthy foods and community gardens, multipurpose community events;

h) Provide flexibility in the design of facilities to accommodate changing needs (meeting spaces, art studio space, temporary work space for small businesses and ventures, job and skill training, health programs, etc.); and
i) Be consistent with the Maeveen Marie Behan Conservation Lands System (CLS) as applicable.

Goal 3 Implementation Measure:

a. Prepare and adopt design guidelines based on healthy community principles for County public facilities.

4.8 Trails Element

The proposed regional trail system, as identified in the Pima Regional Trail System Master Plan, is a blueprint for the development of a high quality, interconnected, multi-modal regional trail system in Eastern Pima County. The network will expand on the existing and planned river park system, and is intended to include natural tributary washes and upland segments, and road and utility rights-of-way that together will form an interconnected system linking urbanized areas with surrounding public preserves. Successful implementation of the Pima Regional Trail System Master Plan will require a collaborative effort between Pima County, local jurisdictions and land managing agencies.

Pima County is developing The Loop around metro Tucson with links to Marana, Oro Valley, Sahuarita, Green Valley and South Tucson. Pima County residents and visitors can enjoy more than 100 miles of shared-use paths that have already been completed.

The Loop, Pima County, Arizona

Goal 1: Continue to support the development of a high quality, integrated and multi-use countywide trail system

Policy 1: Continue to prioritize land acquisition to support the development of a high quality, integrated and multi-use countywide trail system.

Policy 2: Support and promote our natural resource-based trail system as a regional attraction promoting healthy lifestyles, economic development, and connectivity to a variety of destinations.

Policy 3: Implement the vision, goals and action plan identified in the Pima Regional Trail System Master Plan by:

a) Providing a trails network throughout the region;
b) Siting trails to ensure use does not conflict with natural and cultural resources;
c) Expanding the system to connect recreation lands;
d) Extending trails into urbanized areas where they are lacking;
e) Creating connectivity between homes, schools, jobs and commerce;
f) Increasing opportunities for interpretive experiences;
g) Following all applicable standards and design considerations for trails; single-track trails; paths; river parks; greenways; enhanced bicycle/pedestrian corridors; trails parks; trail heads, entry nodes, boundary access points; crossings; signs; pedestrian districts; and pedestrian activity areas;
h) Accommodating all non-motorized users;
i) Co-locating trails with other community facilities; and
j) Including a Central Arizona Project (CAP) Loop Trail.

Policy 4: Continue to require dedication of trails identified in the Pima Regional Trail System Master Plan as a condition for rezoning approval.

Policy 5: Encourage separation of trail corridors from wildlife corridors unless the trail corridor can be sited in a manner that poses no adverse impacts to native and migratory fauna.

Policy 6: Protect trail corridors that link individual public and private lands, connect public and private lands to existing or planned river parks, create local trail linkages to parks, schools and activity centers or between neighborhoods or subdivisions, or provide public access to established public lands trails.

Policy 7: Dedicate regulatory flood-prone areas, which are dedicated drainage easements to the Flood Control District and which have been identified as candidate trails, to allow additional uses such as recreational and equestrian activities.

Policy 8: Promote vehicular access to trail heads at public preserve boundaries based on a determination by the Natural Resources, Parks and Recreation Department.

Policy 9: Dedicate public road rights-of-way and associated parking and multi-use trail staging areas as a condition of rezoning or specific plan approval in those cases where road access to public land trailheads is deemed critical by the Natural Resources, Parks and Recreation Department.

Policy 10: Continue to require, per Code, that Residential Recreation Areas comply with the following:

a) Ensure that these areas are available for the use and enjoyment of subdivision residents;
b) Protect and enhance community health and quality of life;
c) Require that new recreation areas meet the minimum standards for safety and efficacy; and

d) Encourage residential multi-modal opportunities, public safety and appropriate connectivity among parks, neighborhoods and commercial areas.

Goal 1 Implementation Measures:

a. Implement the Pima County Trail System Master Plan.
b. Work collaboratively with citizens to complete and expand The Loop.
c. Develop pre-siting guidelines to identify any potential conflicts with natural and cultural resources.

Trail System, Pima County, Arizona

Trail System, Transportation Modes, Healthy Communities and Economic Development

Trail Connectivity to Vibrant Activity Centers

The County recognizes the connection between physical activity and healthy bodies and minds. Trails contribute to healthy lifestyles, provide access and serve as alternate transportation modes. They provide connectivity from neighborhoods to diverse land uses, recreation areas and open space. Trails provide an opportunity to exercise, breathe clean air, and reduce mental stress. They also provide opportunities for residents and visitors to learn about the lush Sonoran desert. When appropriately branded, such trails attract visitors to the area and serve as economic development tools.

Goal 2: Integrate trail system, transportation modes, economic development and land use patterns with healthy community principles

Policy 1: Support and promote The Loop as a regional attraction promoting healthy lifestyles, economic development and connectivity to a variety of destinations.

Policy 2: Support and promote our natural resource-based trail system (the trails in Pima Regional Trail System Master Plan, including the Arizona National Scenic Trail, the Juan Bautista de Anza National Historic Trail, and the CAP Trail) as a regional attraction promoting healthy lifestyles, economic development, and connectivity to a variety of destinations.

Policy 3: Encourage the utilization of the urban trail system as an alternate transportation mode to decrease reliance on automobiles, reduce air pollution, increase overall health and serve economic development functions.

Goal 2 Implementation Measures

a. Periodically update the Pima Regional Trails System Master Plan.
b. Identify funds and design a program for the provision of recreational and cultural programs and activities appropriate for parks and recreation facilities along the Juan Bautista de Anza National Historic Trail and the Loop.

Multi-use trails activating the streets

4.9 Flood Control and Drainage Element

Arizona Revised Statutes Sections 48-3601 through 48-3650 direct each Flood Control District Board of Directors to adopt and enforce floodplain regulations consistent with criteria adopted by the Director of Arizona Department of Water Resources. The floodplain regulations adopted by the District are intended to carry out the requirement of the national flood insurance program. The purpose of floodplain regulations is to comply with the directive of ARS 48-3609 and 44 CFR Chapter 1 pertaining to the National Flood Insurance Program, to promote and protect the health, peace, safety, comfort, convenience and general welfare of the residents within the jurisdictional area of Pima County; to minimize public and private losses due to flood conditions in specific areas; and to enable Pima County and its residents to participate in the National Flood Insurance Program, receive Federal Disaster Assistance, obtain flood insurance and reduce the cost of flood insurance.

The Pima County Regional Flood Control District strives to use forward-looking floodplain management practices to minimize flood and erosion damages for all county residents, property and infrastructure. Regionally, the District is involved in a variety of flood monitoring, flood control and natural resource management activities. It also performs floodplain management activities within unincorporated portions of Pima County. While the District is a regional authority, undertaking flood mitigation efforts throughout Pima County, it does not regulate floodplains within incorporated areas or on Tribal Nations.

County efforts to comply with and exceed National Flood Insurance Program requirements have been so successful that residents are currently eligible for up to a 25 percent discount on flood insurance. By pursuing the goals below, the County plans to improve performance under the Federal Emergency Management Agency (FEMA) National Flood Insurance Program Community Rating System, thereby reducing rates even further, and more importantly, doing the best we can to protect public safety.

To accomplish this, the District, in addition to being the official depository and interpreter of FEMA Flood Insurance Rate Maps, also maps floodplains and riparian habitat which FEMA is not aware of based upon better local knowledge of conditions and risks. For the purposes of this plan, these risks are reflected by "Resource Areas" as shown on the 13 Regional Hydrology maps included at the end of this Chapter. These maps depict known flood related risks and flood control resources and define the areas for which the resources area provisions apply. The mapped resource areas consist of FEMA and locally mapped floodplains as well as Pima County Regulated Riparian Habitat (PCRRH). For accurate interpretation of the boundaries and characteristics of these areas including the applicable regulations, the District shall remain the final authority and may modify the boundaries of and add to these areas as new information becomes available.

Goal 1: Minimize flood and erosion damages for all County residents, property and infrastructure

Policy 1: Continue to monitor, control and manage natural resources to minimize flood and erosion damages by implementing the Floodplain Management Ordinance and addressing the impact of development on flooding, erosion and riparian habitat.

Policy 2: Update and implement the FEMA-approved Pima County Multi-Hazard Mitigation Plan.

Policy 3: Preserve washes with a base flood peak discharge equal to or greater than 100 cfs as well as existing riparian habitat including Pima County Regulated Riparian Habitat in their natural condition.

Policy 4: Administer flood control planning and design on an area-wide basis in conformance with the Watershed Management Plan/Critical and Balanced Basin Map.

Policy 5: Require that drainage improvements are consistent with the overall character of the area and do not create nor worsen existing drainage problems.

Policy 6: Design road crossings of washes to cross the floodplain with minor encroachment.

Policy 7: Continue to require private and public utility projects to conform to all applicable requirements of Title 16 of the Pima County Code including Section 16.30 regarding Riparian Habitat Mitigation Plans (RHMPs).

Goal 1 Implementation Measures:

a. Require, when appropriate, avoidance of development in Resource Areas as identified in the Regional Hydrology maps including FEMA and locally mapped floodplains, and PCRRH. Encourage use of Flood Control District Modified Development Standards or the Zoning Code Transfer of Development Rights to maintain similar yields while maintaining these areas as open space in order to increase public safety, and reduce infrastructure investment, maintenance and insurance costs.

b. Preserve riparian areas by using the Flood Control District Modified Development Standards located in chapter 18 of the zoning code or other strategies for transferring densities to areas of the property outside of floodplains and riparian areas.
c. As new floodplain mapping is completed, either by the District or by a developer, update the Resource Areas on the Regional Hydrology Maps to reflect this new information.
d. Work with construction industry stakeholders to review current riparian habitat protection ordinance to identify barriers and obstacles to development and adjust ordinance as necessary to accommodate.

Storm Water Runoff

Pima County manages storm water to ensure public safety through three regulatory mechanisms:

- The Pima County Regional Flood Control District, through the Floodplain Management Ordinance, addresses the impact of development on flooding, erosion and riparian habitat.
- The Department of Environmental Quality administers programs to address storm water quality.
- The Pima County Building and Zoning codes contain provisions establishing minimum standards for site grading, site drainage and design.

Goal 2: Manage storm water to protect lives and property, to reduce flood risk and to assure no adverse impact to adjacent or downstream properties

Policy 1: Continue to require new development to comply with all applicable requirements of the Floodplain Management Ordinance addressing the impact of development on flooding, erosion and riparian habitat.

Policy 2: Continue to require all new development to comply with all applicable provisions establishing minimum standards for site grading, site drainage and design included in the Pima County Building and Zoning codes.

Goal 2 Implementation Measures:

a. Work with stakeholders to update, as needed, the Pima County Floodplain Management Ordinance.
b. Ensure new developments provide maximum encroachment limits and require that the flood-prone areas within those limits are located within separate parcels or easements that are set aside as open space.

c. Work with stakeholders to update as needed the building and zoning code to include the latest green standards for grading and site drainage and design.
d. Create and adopt a Watershed Management Plan which identifies the watersheds impacting Pima County, their drainage characteristics, regulatory and infrastructure needs.

Drainage Integration

By utilizing watercourses, riparian and upland habitat, and recreation, better drainage design can be achieved. New guidelines under development address water harvesting and habitat mitigation and offer further opportunity for integration, particularly for drought response.

Goal 3: Integrate watercourses, riparian and upland habitat, land use, recreation and drainage to achieve healthy development patterns

Policy 1: Work to resolve potential regulatory and interpreted conflicts between the Zoning Code and the Floodplain Management Ordinance.

Policy 2: Continue to require development to conform to adopted Pima County code provisions that integrate watercourse, riparian and upland habitat, land use, recreation and drainage.

Policy 3: Encourage the incorporation of green streets standards that integrate watercourse, riparian and upland habitat, recreation, alternate modes of transportation, shade and landscape amenities, drought tolerant plants and drainage as a form of water harvesting in new development and allow for the natural filtration of flood and rainwater, where applicable.

Policy 4: Consider, where appropriate and cost effective, the use of LID principles in neighborhood scale subdivision or commercial development.

Goal 3 Implementation Measures:

a. Prepare appropriate green street guidelines and standards for urban, suburban and rural areas.
b. Prepare voluntary LID guidelines for neighborhood scale subdivision or commercial development, transportation projects, parks projects, resource conservation projects and public buildings.
c. Emphasize the importance of site planning to identify Resource Areas to be avoided, encourage compact development footprints, and establish thoughtful placement of water harvesting in order to provide multiple benefits.

d. Continue to utilize “Drainage Standards for Detention and Retention” for all new commercial, including Pima County projects, and subdivision development.

4.10 Countywide Infrastructure Concurrency Element

The Pima County Concurrency Management System provides the basis for monitoring infrastructure impacts of land development and helps determine if infrastructure improvements are keeping pace with the prevailing rate of land development.

Goal 1: Update and expand the existing Concurrency Management System which guides development to areas with in-place or planned infrastructure

Policy 1: Update the established Concurrency Management System to:

a) Establish standards for determining the adequacy of infrastructure and services owned and operated by the County;
b) Serve as a tool for infrastructure capacity monitoring and upgrades; and
c) Inform the Integrated Facilities Planning System and the Capital Improvements Program.

Policy 2: Ensure that the Concurrency Management System review for rezonings (including requests for waiver of the platting requirements of zoning plans), specific plans and requests for time extensions or modification for existing rezoning and specific plans includes:

a) Wastewater treatment and conveyance/reclamation facility capacity;
b) Flood control infrastructure and drainage capacity;
c) Water supply infrastructure and capacity;
d) Transportation infrastructure and capacity;
e) Park and recreation infrastructure service delivery capacity (to include multi-use trail system);
f) School capacity impact analysis; and
g) Cost of development;

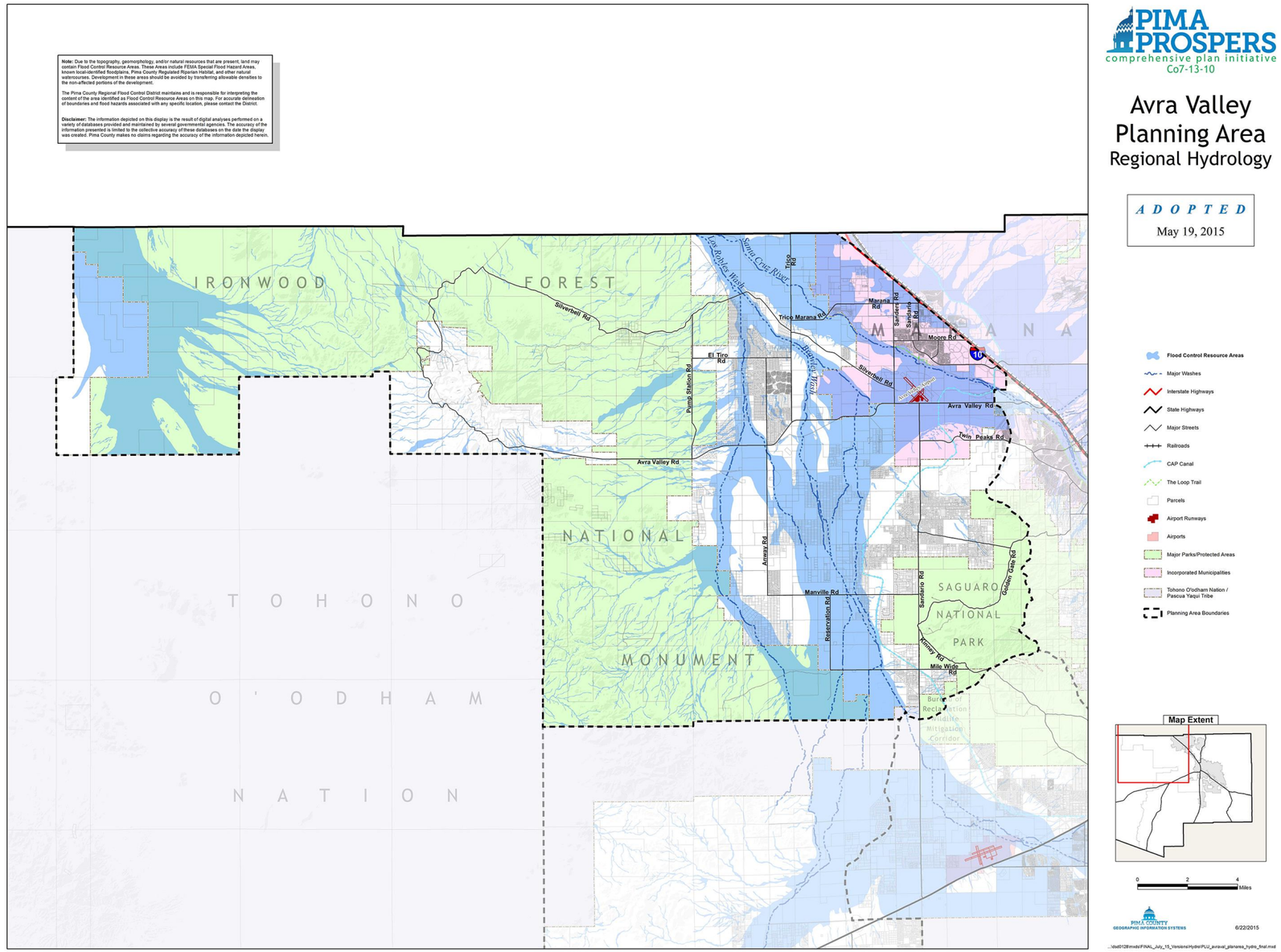
Policy 3: Require infrastructure improvements to be provided concurrently with development.

Goal 1 Implementation Measures:

a. Update and continue to implement the County Concurrency Management System cooperatively with planning, resource and infrastructure management departments.
b. Consider updates to the Concurrency Management System addressing applicability to time extensions, waver of platting requirements of zoning plans and types of modifications of rezoning conditions.

c. Work with stakeholders to update the Water Policy and Site Analysis Checklist Appendix A to provide clear guidance as to when, where, and how water supply impacts are to be mitigated, and to define when supply concurrency has been met.

Exhibit 4.9.1: Avra Valley Planning Area Regional Hydrology



PIMA PROSPERS
comprehensive plan initiative
Co7-13-10

Avra Valley
Planning Area
Regional Hydrology

ADOPTED
May 19, 2015

Exhibit 4.9.2: Tucson Mountains Planning Area Regional Hydrology

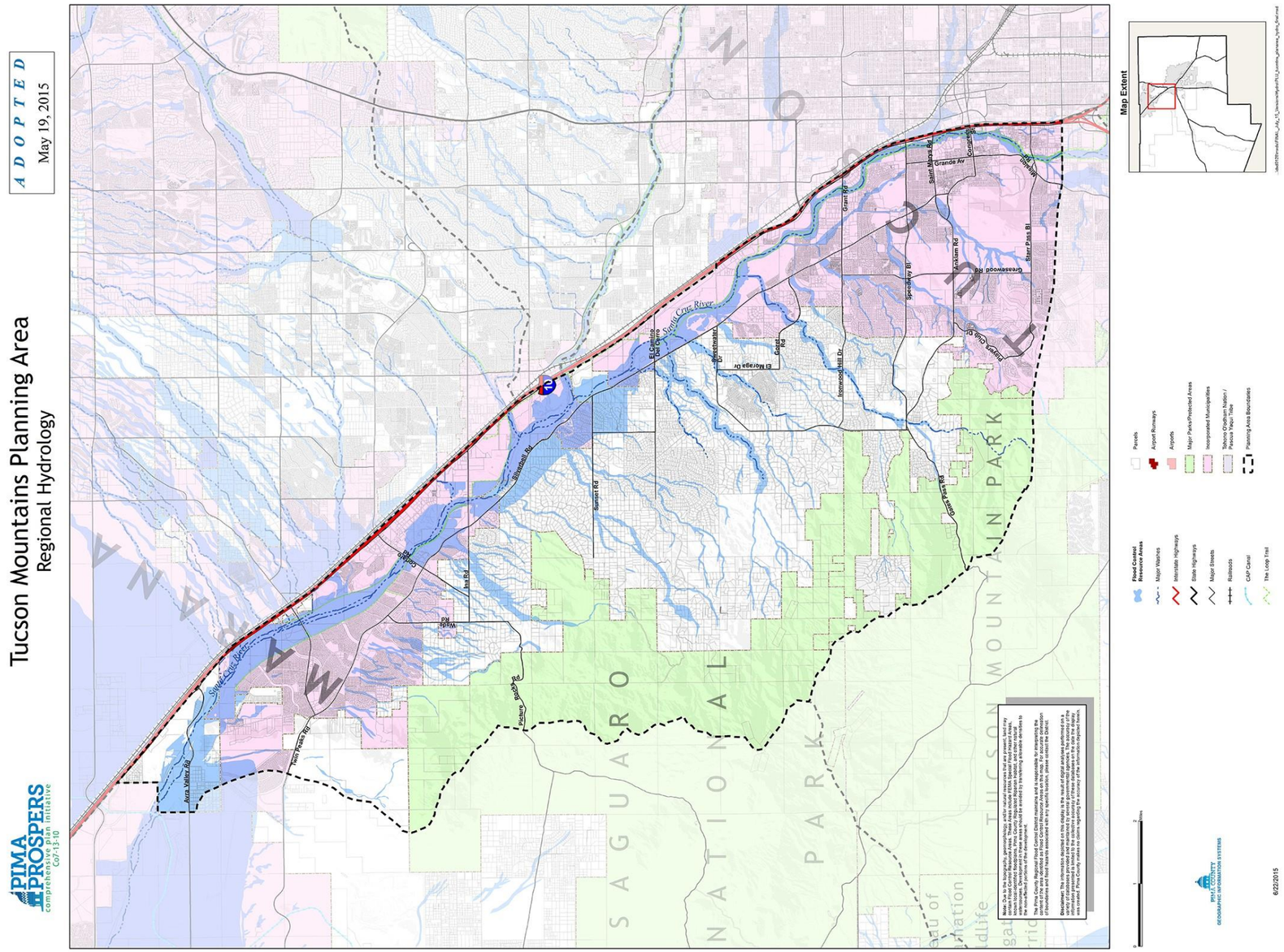


Exhibit 4.9.3: Southwest Planning Area Regional Hydrology

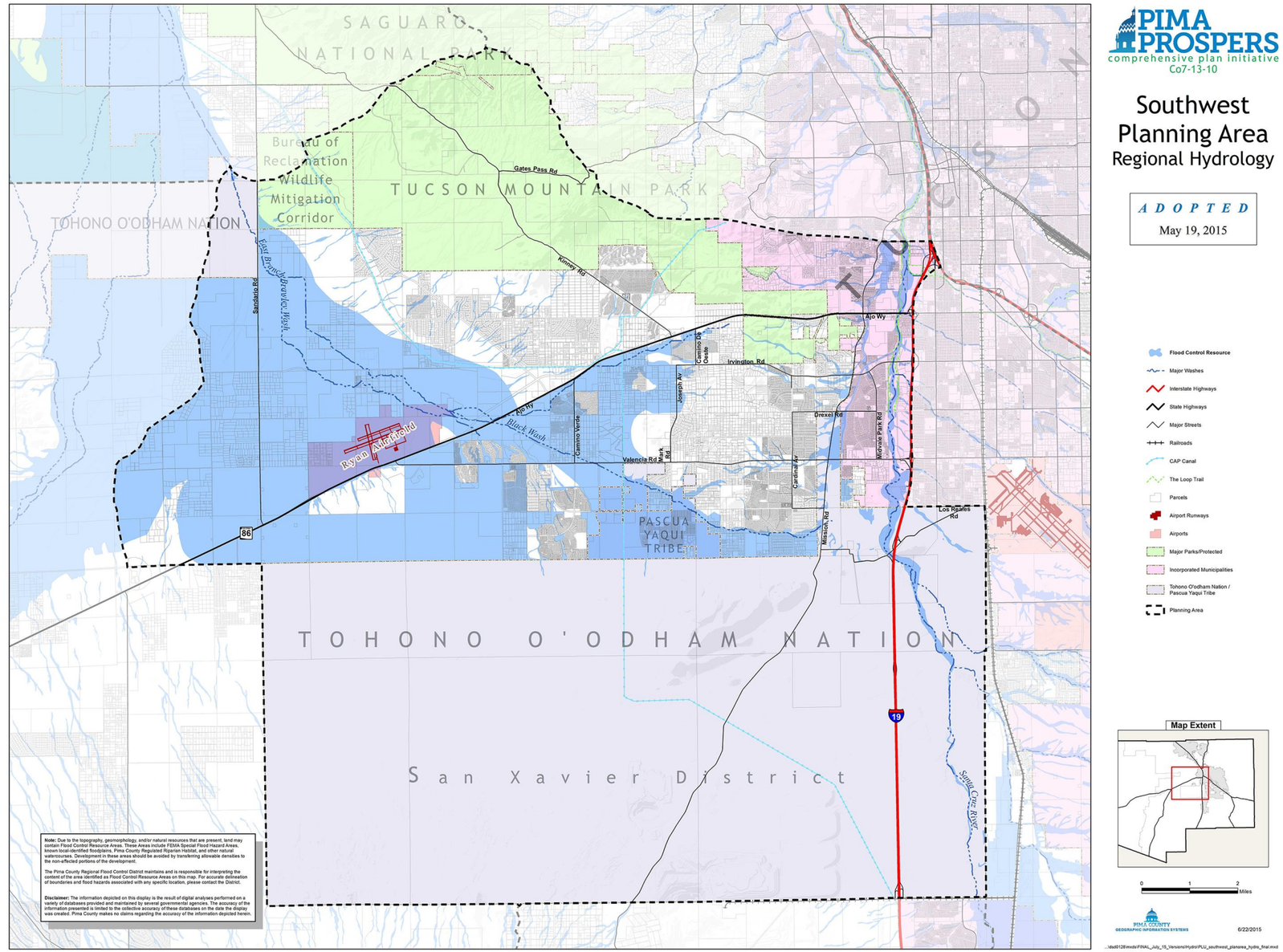


Exhibit 4.9.4: Altar Valley Planning Area Regional Hydrology

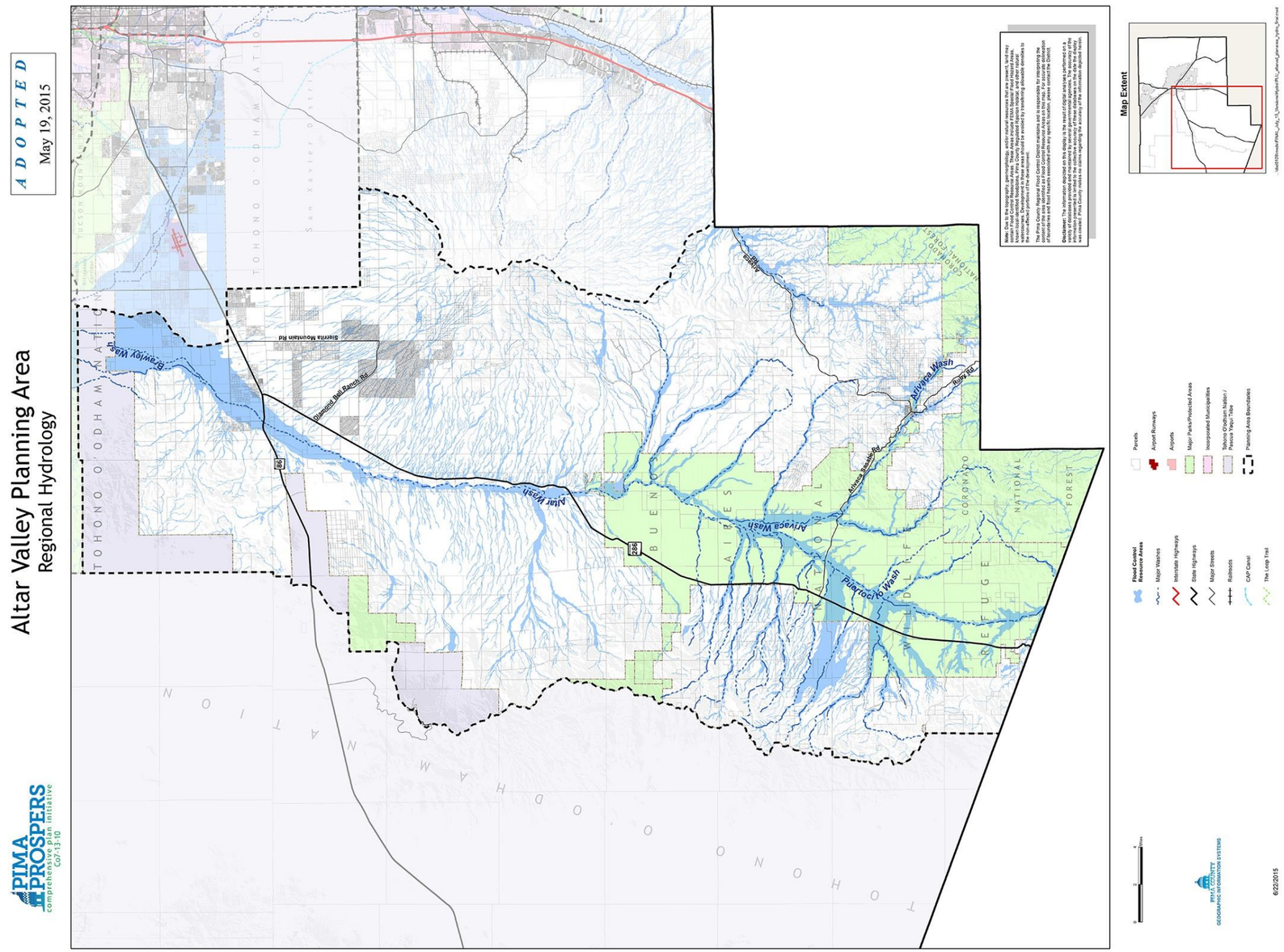


Exhibit 4.9.5: Upper Santa Cruz Planning Area Regional Hydrology

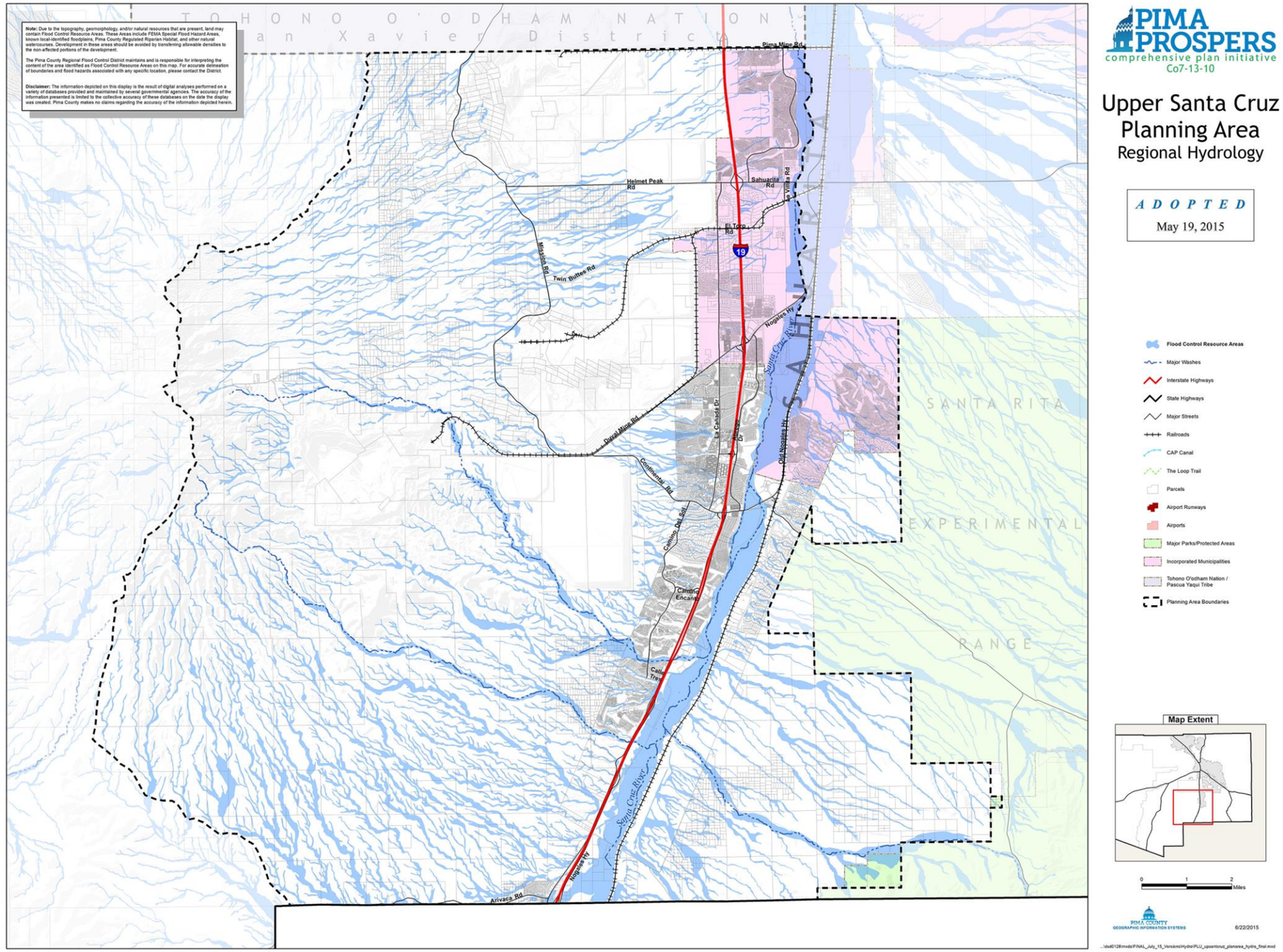


Exhibit 4.9.6: Mountain View Planning Area Regional Hydrology

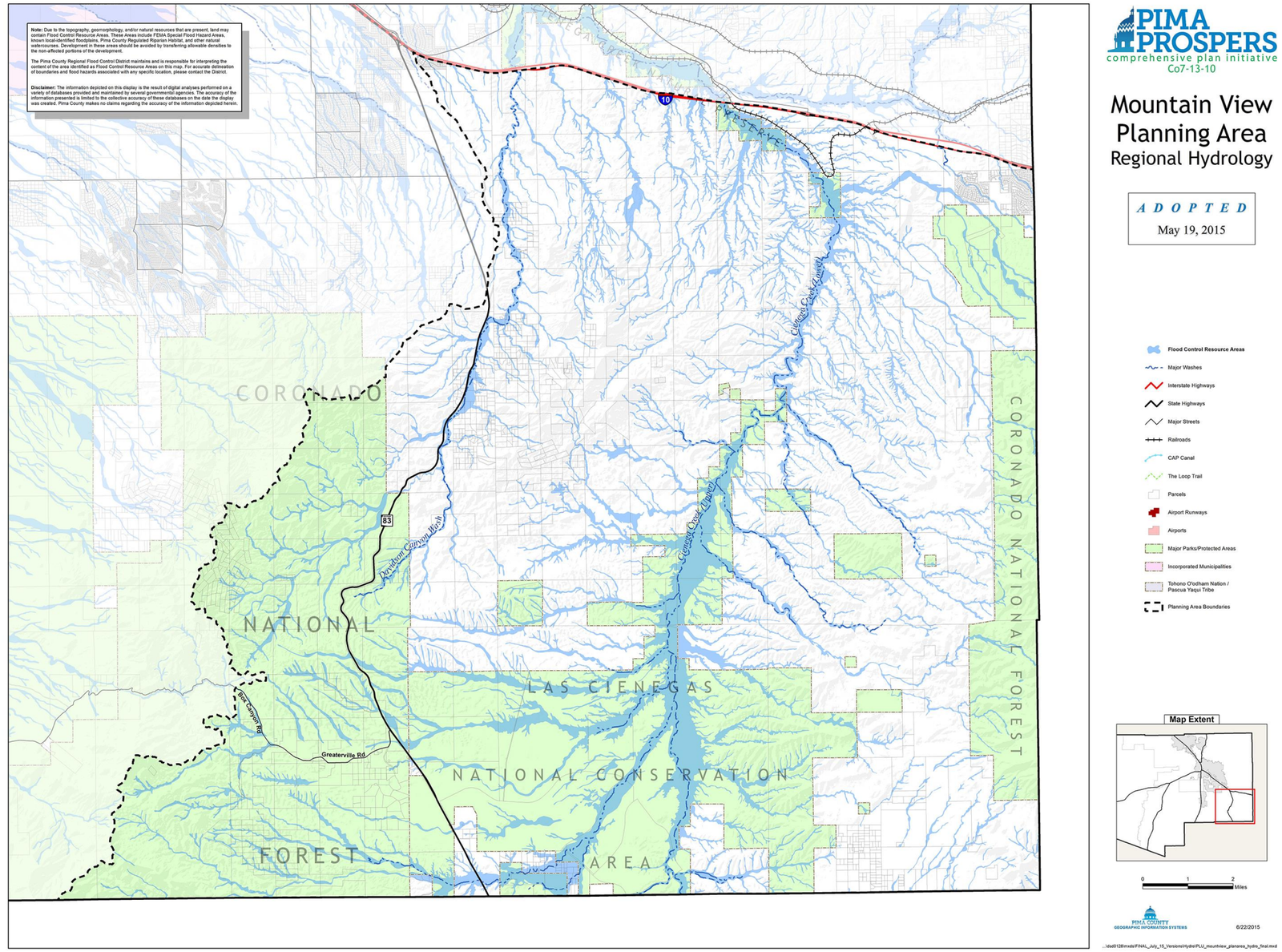


Exhibit 4.9.7: Southeast Planning Area Regional Hydrology

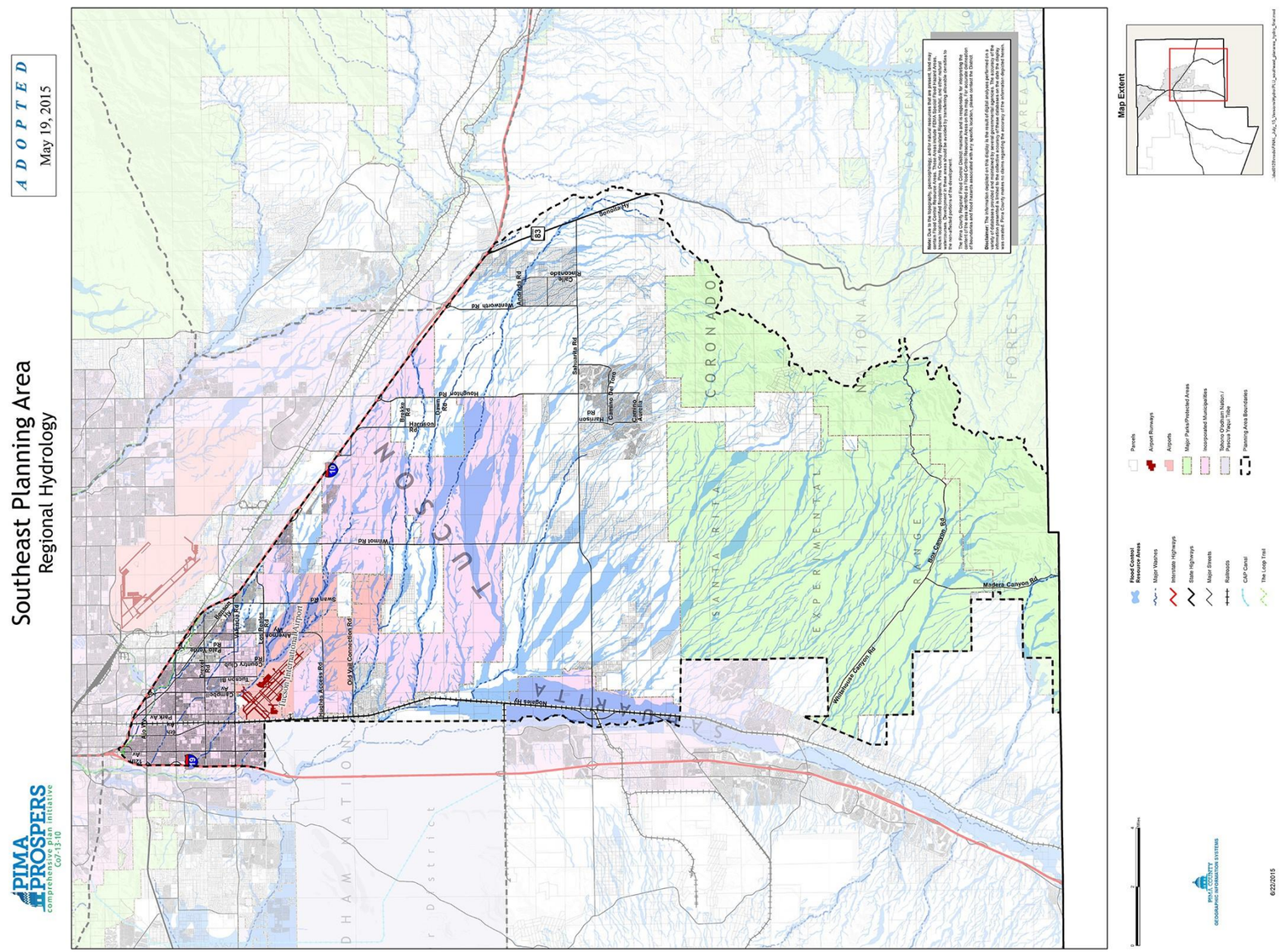

ADOPTED
May 19, 2015
Southeast Planning Area
Regional Hydrology
PIMA PROSPERS
comprehensive plan initiative
CO-F13-10
Map Extent
Parcels
Airport Runways
Airports
Major Parks/Protected Areas
Incorporated Municipalities
Tohono O'odham Nation / Pascua Yaqui Tribe
Planning Area Boundaries
Flood Control Districts
Major Washes
Interstate Highways
State Highways
Major Streets
Railroads
CAP Canal
The Loop Trail
PIMA COUNTY
GEOGRAPHIC INFORMATION SYSTEMS
6/22/2015
Note: As a 3-D topographic, hydrographic, and hydrologic reference that are present, but not limited Flood Control Regional Areas. These Areas include FEMA Special Flood Hazard Areas, Flood Control Districts, Major Washes, and Flood Control Regional Areas. Development in these areas may be subject to Flood Control Regulations, Floodplain Ordinances, and other applicable laws, ordinances, and regulations. Development in these areas should be avoided by transitioning alluvial deposits to upstream areas.
The Pima County Regional Flood Control District maintains and is responsible for interpreting the Flood Control Regulations, Floodplain Ordinances, and other applicable laws, ordinances, and regulations of floodplains and flood hazards associated with any specific location, please contact the District.
Disclaimer: The information depicted on this display is the result of digital analysis performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information depicted herein is dependent on the accuracy of the information contained in the databases from which it was created. Pima County makes no claims regarding the accuracy of the information depicted herein.
CORONADO
NATIONAL
FOREST
SANTA RITA
EXPERIMENTAL
RANGE
SANTA CRUZ
RIVER
SAHUARITA
Sahuarita Rd
Duval Mine Rd
Wilmot Rd
Swan Rd
Old Vail Connection Rd
Nogales Hwy
Madera Canyon Rd
Box Canyon Rd
Williamson Canyon Rd
Houghton Rd
Harrison Rd
Tucson Mountain Hospital
Rancho Sahuarita
Country Club Rd
Pima Mine Rd
Sunset Rd
Pima Ave
Valencia Rd
Ajo Way
Drexel Rd
Irvington Rd
Tucson Mountain Park
Tucson Mountain District
Roadway Access Rd
Sonoita Hwy
Duval Mine Rd
Esperanza Blvd
Camino Auritas
Camino De Oeste
Calle Rinconada
Rancho Sahuarita
Sahuarita Lake
Santa Cruz River
Tucson Mountain District
Pima County
Tucson Mountain Park
Tucson Mountain District
Tucson Mountain Park
Tucson Mountain District
Tucson Mountain Park
Tucson Mountain District

Exhibit 4.9.8: Central Planning Area Regional Hydrology

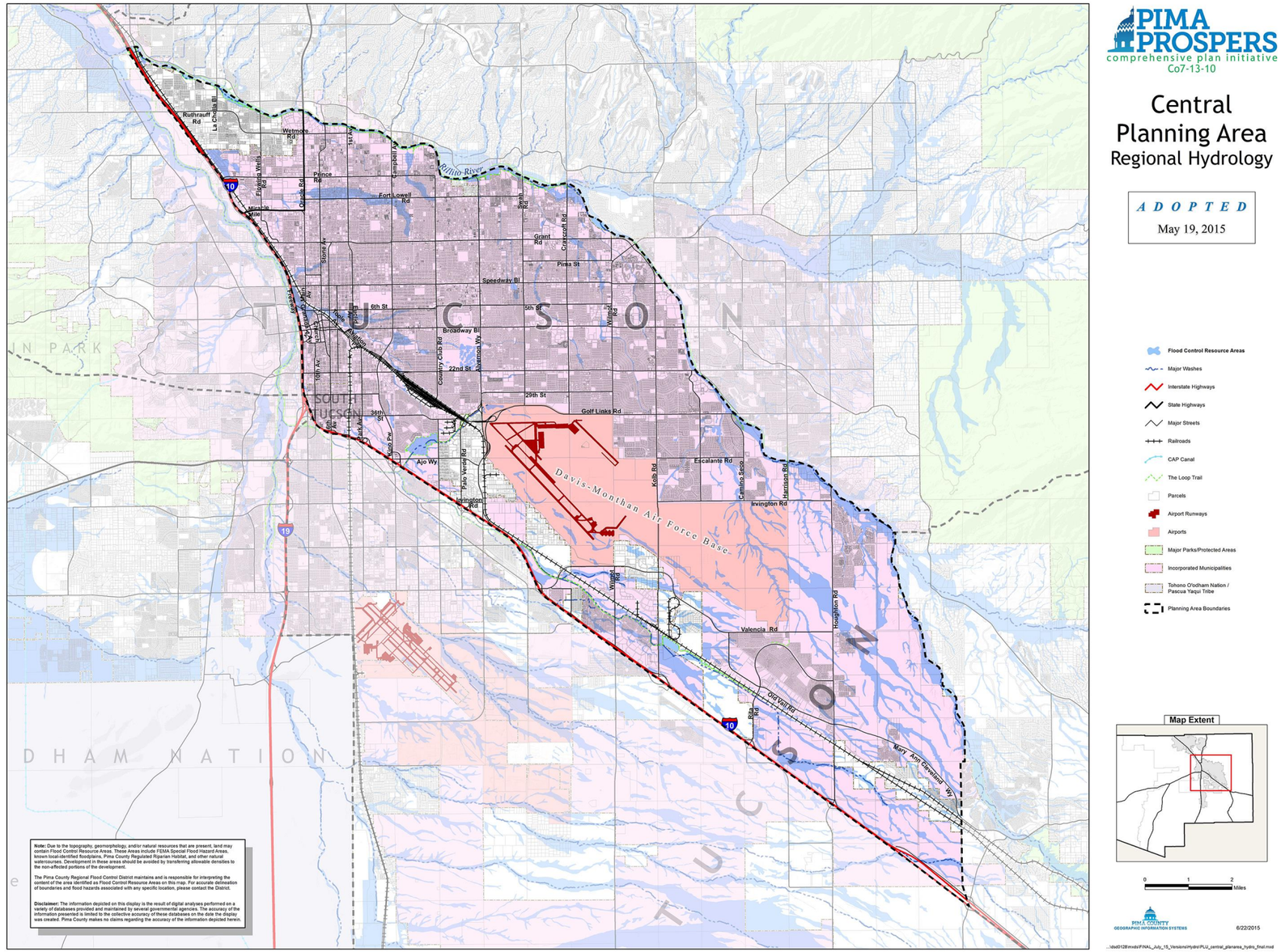


Exhibit 4.9.9: Catalina Foothills Planning Area Regional Hydrology

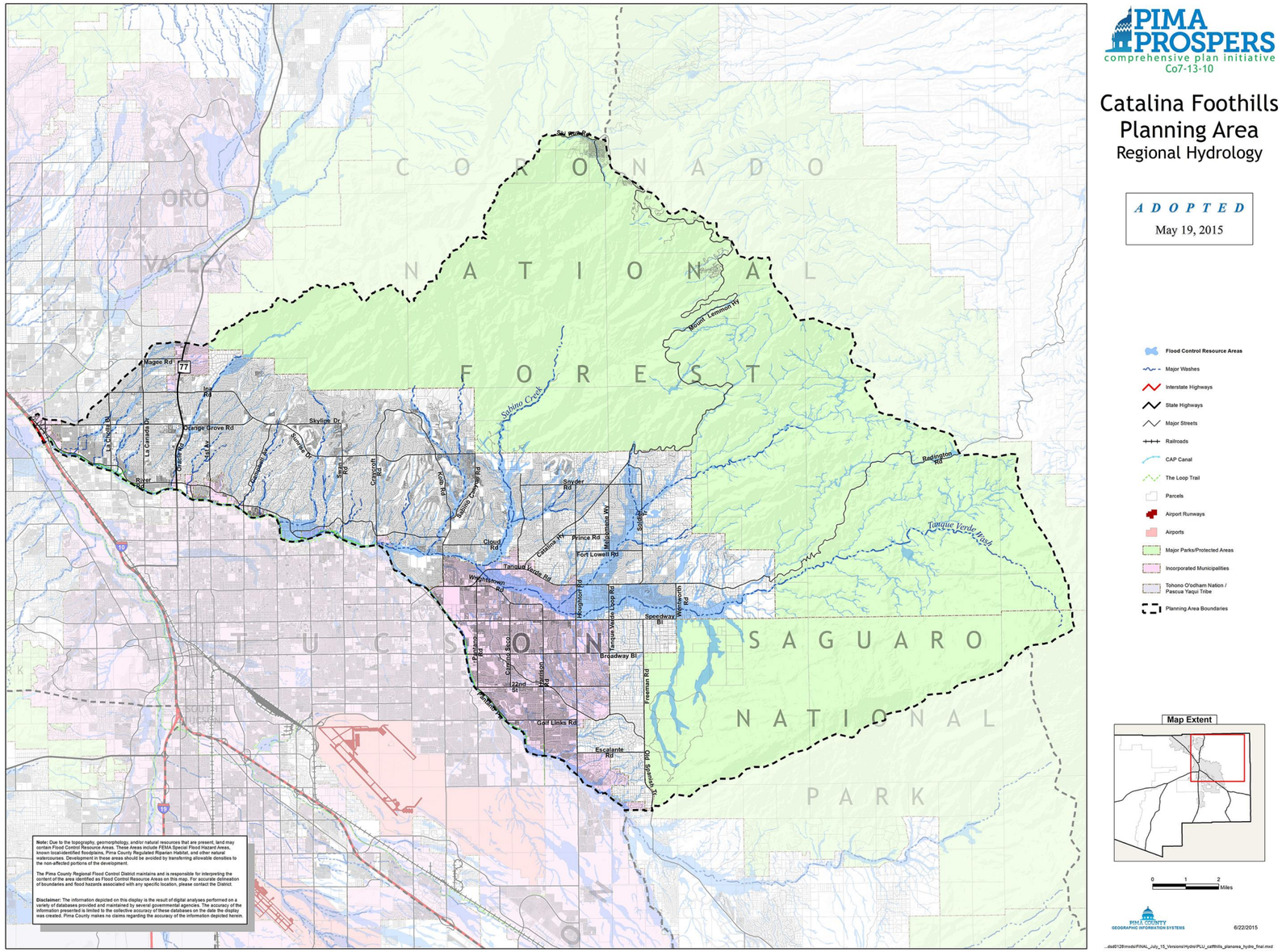


Exhibit 4.9.10: Rincon Valley Planning Area Regional Hydrology

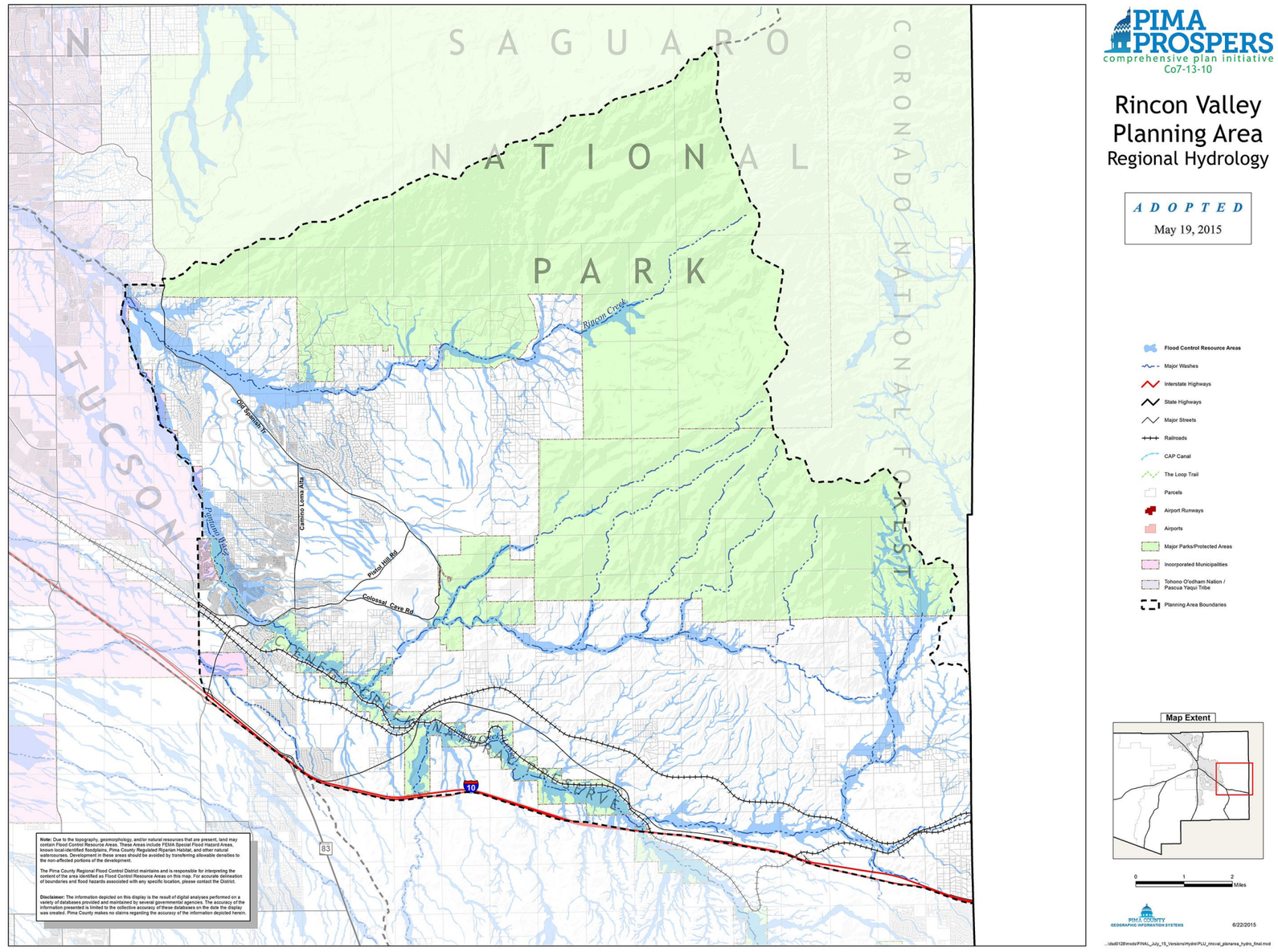


Exhibit 4.9.11: Tortolita Planning Area Regional Hydrology

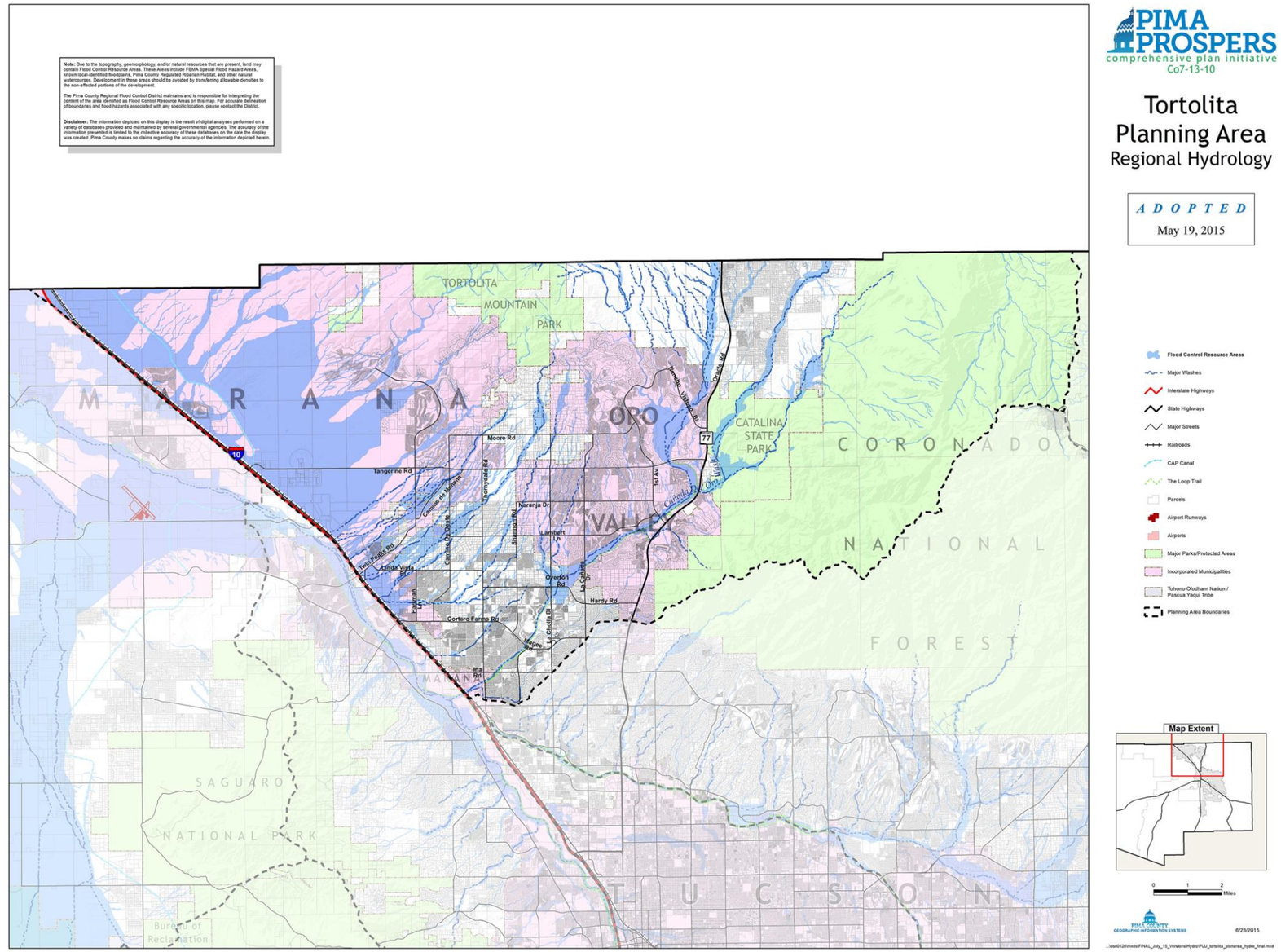


Exhibit 4.9.12: San Pedro Planning Area Regional Hydrology

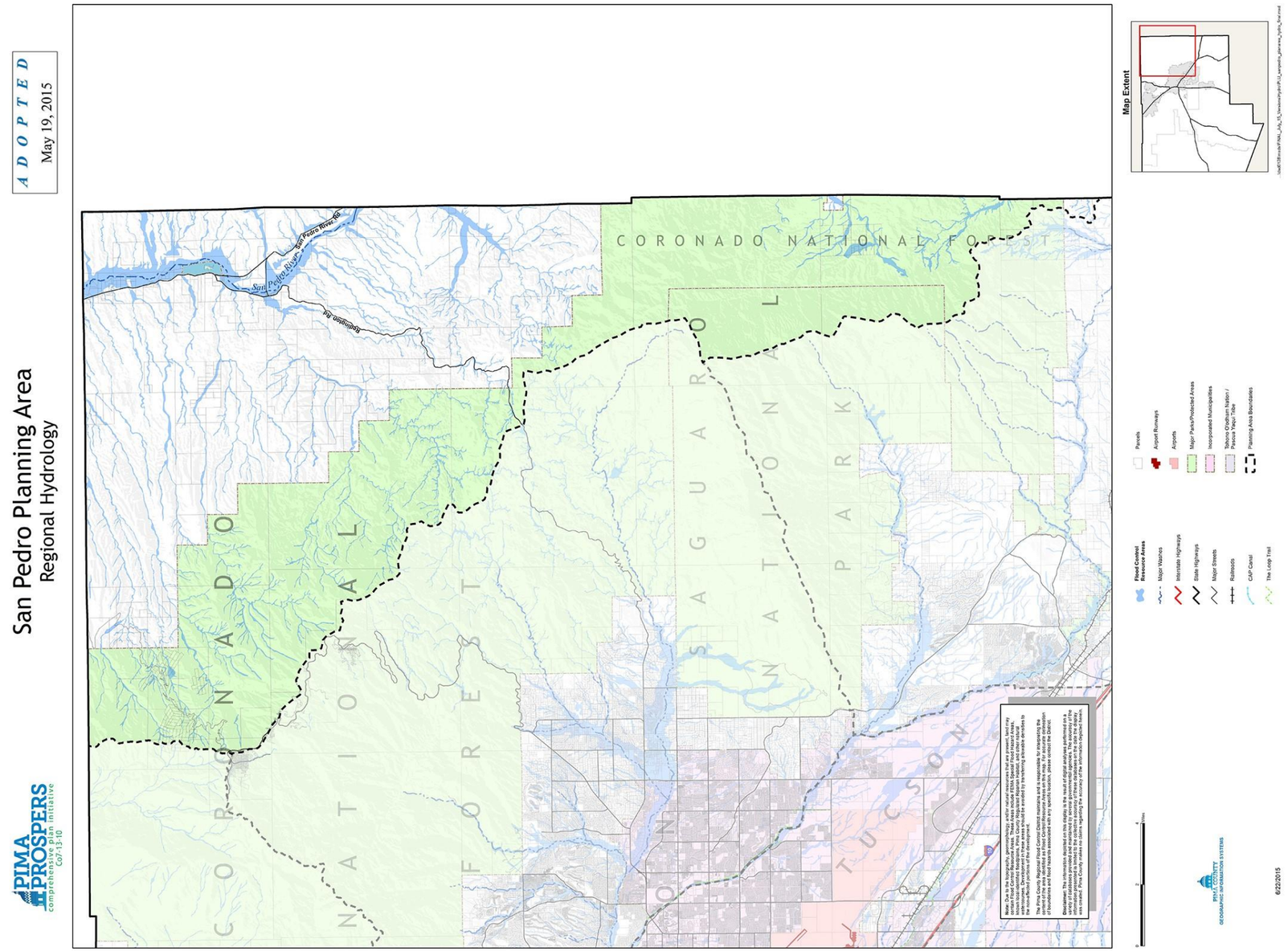
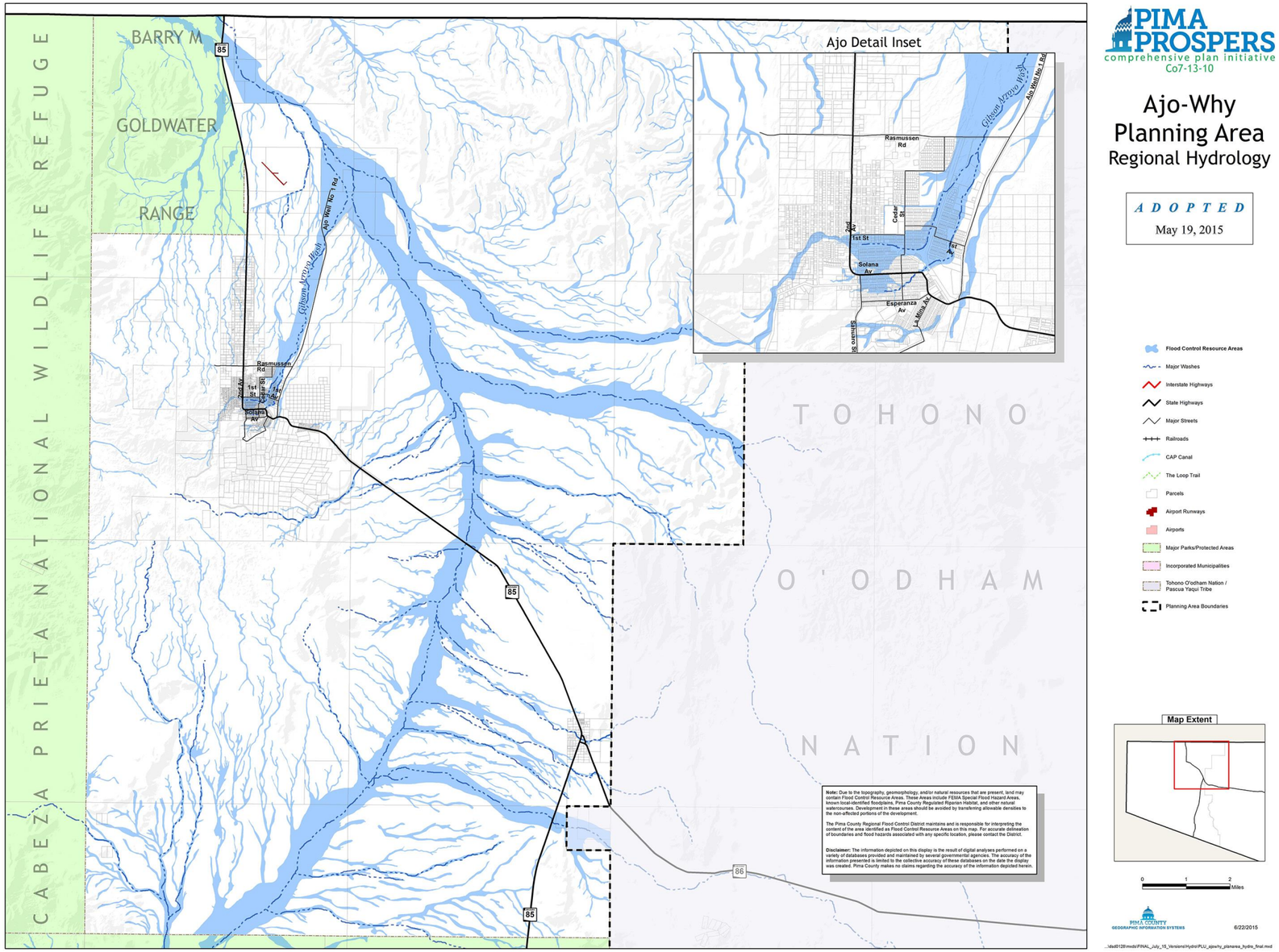



Exhibit 4.9.13: Ajo/Why Planning Area Regional Hydrology