CITY OF HUGHSON
PLANNING COMMISSION MEETING
City Hall Council Chambers
7018 Pine Street, Hughson, CA

AGENDA
TUESDAY, MARCH 18, 2014 – 6:00 P.M.

CALL TO ORDER: Chair Julie Ann Strain

ROLL CALL: Chair Julie Ann Strain
Vice Chair Karen Minyard
Commissioner Sanjay Patel
Commissioner Mark Fontana
Commissioner Ken Sartain

FLAG SALUTE: Chair Julie Ann Strain

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1. PUBLIC BUSINESS FROM THE FLOOR (No Action Can Be Taken):

Members of the Audience may address the Planning Commission on any item of interest to the public pertaining to the City and may step to the podium, State their name and City of Residence for the record (requirement of Name and City of Residence is optional) and make their presentation. Please limit presentations to five minutes. Since the Planning Commission cannot take action on matters not on the Agenda, unless the action is authorized by Section 54954.2 of the Government Code, items of concern which are not urgent in nature can be resolved more expeditiously by completing and submitting to the City Clerk a "Citizen Request Form" which may be obtained from the City Clerk.

2. PRESENTATIONS: **NONE.**

3. NEW BUSINESS:

3.1: Approval of the Minutes of the regularly scheduled meeting of November 19, 2013 and January 21, 2014.

3.2: Consider the Adoption of Resolution No. PC 2014-01, A Resolution of the Hughson Planning Commission adopting the 2013 Annual General Plan Progress Report, as well as the Annual Progress Report on Implementation of the Housing Element.

3.3: Consider the Adoption of Resolution No. PC 2014-02, A Resolution of the Planning Commission of the City of Hughson Recommending Adoption of the Mitigated Negative Declaration for the Seventh Street Park Project.

3.4: Consider Recommending Adoption of the Low Impact Development (LID) Manual to the City Council.

4. PUBLIC HEARING TO CONSIDER THE FOLLOWING: NONE.

5. INFORMATIONAL ITEMS:

5.1: Part II: How to Stop Digging the Legacy City Hole Deeper, Journal of Applied Research article.

6. CORRESPONDENCE: NONE.

7. COMMENTS:

7.1: Staff Reports and Comments: (Information Only – No Action)

Community Development Director:

City Clerk:

City Attorney:

7.2: Commissioner Comments: (Information Only – No Action)

ADJOURNMENT:

WAIVER WARNING

If you challenge a decision/direction of the Planning Commission in court, you may be limited to raising only those issues you or someone else raised at a public hearing(s) described in this Agenda, or in written correspondence delivered to the City of Hughson at or prior to, the public hearing(s).

UPCOMING EVENTS:

March 22	▪ 4th Annual Taste of Hughson, St. Anthony's Catholic Church, 4:30-9:00pm
March 24	▪ City Council Meeting, City Council Chambers, 7:00pm
April 14	▪ City Council Meeting, City Council Chambers, 7:00pm
April 15	▪ Planning Commission Meeting, City Council Chambers, 6:00pm
April 26-27	▪ City-Wide Yard Sale Event
April 28	▪ City Council Meeting, City Council Chambers, 7:00pm

RULES FOR ADDRESSING PLANNING COMMISSION

Members of the audience who wish to address the Planning Commission are requested to complete one of the forms located on the table at the entrance of the Council Chambers and submit it to the City Clerk. **Filling out the card is voluntary.**

AMERICANS WITH DISABILITIES ACT/CALIFORNIA BROWN ACT NOTIFICATION FOR THE CITY OF HUGHSON

This Agenda shall be made available upon request in alternative formats to persons with a disability; as required by the Americans with Disabilities Act of 1990 (42 U.S.C. Section 12132) and the Ralph M. Brown Act (California Government Code Section 54954.2).

Disabled or Special needs Accommodation: In compliance with the Americans with Disabilities Act, persons requesting a disability related modification or accommodation in order to participate in the meeting and/or if you need assistance to attend or participate in a Planning Commission meeting, please contact the City Clerk's office at (209) 883-4054. Notification at least 48-hours prior to the meeting will assist the City Clerk in assuring that reasonable accommodations are made to provide accessibility to the meeting.

AFFIDAVIT OF POSTING

DATE: March 14, 2014 **TIME:** 5:00pm

NAME: Dominique Spinale **TITLE:** Deputy City Clerk

Notice Regarding Non-English Speakers:

Pursuant to California Constitution Article III, Section IV, establishing English as the official language for the State of California, and in accordance with California Code of Civil Procedures Section 185, which requires proceedings before any State Court to be in English, notice is hereby given that all proceedings before the City of Hughson Planning Commission shall be in English and anyone wishing to address the Council is required to have a translator present who will take an oath to make an accurate translation from any language not English into the English language.

General Information: The Hughson Planning Commission meets in the Council Chambers on the *third Tuesday* of each month at 6:00 p.m., unless otherwise noticed.

PC Agendas: The Planning Commission Agenda is now available for public review at the City's website at www.hughson.org and City Clerk's Office, 7018 Pine Street, Hughson, California on the Friday, prior to the scheduled meeting. Copies and/or subscriptions can be purchased for a nominal fee through the City Clerk's Office.

Questions: Contact the Deputy City Clerk at (209) 883-4054

CITY OF HUGHSON
PLANNING COMMISSION MEETING
City Hall Council Chambers
7018 Pine Street, Hughson, CA

MINUTES
TUESDAY, NOVEMBER 19, 2013 – 6:00 P.M.

CALL TO ORDER: Chair Julie Ann Strain

ROLL CALL:

Present: Chair Julie Ann Strain
Vice Chair Karen Minyard
Commissioner Sanjay Patel
Commissioner Mark Fontana

Absent: Commissioner Ken Sartain

Staff Present: Thom Clark, Community Development Director
Dominique Spinale, Deputy City Clerk
Rod Atterberry, City Attorney

FLAG SALUTE: Chair Julie Ann Strain

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1. PUBLIC BUSINESS FROM THE FLOOR (No Action Can Be Taken):

No Public Comments.

2. PRESENTATIONS:

2.1: Brief Introduction of Ken Sartain, appointed to the Planning Commission on October 28.

This item was continued to the next meeting, as Commissioner Sartain was absent.

3. PUBLIC HEARING TO CONSIDER THE FOLLOWING:

3.1: Consider a Recommendation to the City Council to Adopt the Final City of Hughson Climate Action Plan (CAP).

Director Clark presented a PowerPoint presentation on this item and answered questions of the Commissioners.

Chair Strain opened the Public Hearing at 6:38pm and no comments were made. The Public Hearing was closed at 6:38pm.

PATEL/MINYARD 4-1 (SARTAIN-Absent) motion passes to approve a Recommendation to the City Council to Adopt the Final City of Hughson Climate Action Plan (CAP).

4. NEW BUSINESS:

4.1: Approval of the Minutes of the Regular scheduled meeting of October 15, 2013.

MINYARD/PATEL 4-1-1 (FONTANA – Abstain / SARTAIN- Absent) motion passes to approve the Minutes.

4.2: Review and Discuss the Strong Towns Blogs.

Director Clark and the Commission discussed the Strong Towns Blogs and no action was taken on this item.

4.3: Review and Discuss Proposed Overlay Zone at Santa Fe and Hatch PowerPoint Presentation.

Director Clark provided a PowerPoint presentation on the proposed overlay zone at Santa Fe and Hatch. The Commission discussed this item with Staff. No action was taken on this item.

5. INFORMATIONAL ITEMS:

5.1: Review and Discuss the Compiled Goals, Actions, & Policies for the City of Hughson General Plan.

This item was informational only. No action was taken.

6. CORRESPONDENCE: None.

7. COMMENTS:

7.1: Staff Reports and Comments: (Information Only – No Action)

Community Development Director: **Director Clark advised that he has accepted a**

position with the City of Oakdale. He told the Commission that it was an honor and privilege to serve the Commission.

City Clerk:

City Attorney:

7.2: Commissioner Comments: (Information Only – No Action)

Each of the Commissioners took turns congratulating and thanking Director Clark for his work with the City of Hughson. They wished him the best of luck in his future endeavors.

ADJOURNMENT: **The meeting adjourned at 7:46pm.**

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JULIE STRAIN, Chair

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DOMINIQUE SPINALE, Deputy City Clerk

CITY OF HUGHSON
PLANNING COMMISSION MEETING
City Hall Council Chambers
7018 Pine Street, Hughson, CA

MINUTES
TUESDAY, JANUARY 21, 2014 – 6:00 P.M.

CALL TO ORDER: Vice Chair Karen Minyard

ROLL CALL:

Present: Vice Chair Karen Minyard
Commissioner Sanjay Patel
Commissioner Mark Fontana
Commissioner Ken Sartain

Absent: Chair Julie Ann Strain

Staff Present: Jim Duval, Interim Community Development Director
Dominique Spinale, Deputy City Clerk

FLAG SALUTE: Chair Julie Ann Strain

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1. PUBLIC BUSINESS FROM THE FLOOR (No Action Can Be Taken):

No Public Comments.

2. PRESENTATIONS:

2.1: Brief Introduction of Ken Sartain, appointed to the Planning Commission on October 28.

Vice Chair Karen Minyard welcomed Commissioner Sartain to the Planning Commission. Commissioner Sartain introduced himself and provided some of his career background to the Commission. Each of the Commissioners introduced themselves and welcomed him to the Commission.

3. NEW BUSINESS:

3.1: Approve the opening of a public comment period for the LID Manual to begin on January 22, 2014, ending February 20, 2014.

Director Duval presented the Staff Report on this item.

SARTAIN/FONTANA 4-1 (STRAIN- Absent) motion passes to approve the opening of a public comment period for the LID Manual.

4. PUBLIC HEARING TO CONSIDER THE FOLLOWING: NONE.

5. INFORMATIONAL ITEMS: NONE.

6. CORRESPONDENCE: NONE.

7. COMMENTS:

7.1: Staff Reports and Comments: (Information Only – No Action)

Community Development Director: **Director Duval updated the Commission on the Dollar General project and a potential project at 2224 Santa Fe, formerly known as the Husky Burger.**

City Clerk:

City Attorney:

7.2: Commissioner Comments: (Information Only – No Action)

ADJOURNMENT:

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KAREN MINYARD, Vice Chair

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DOMINIQUE SPINALE, Deputy City Clerk

PLANNING COMMISSION AGENDA
ITEM NO. 3.2
SECTION 3: NEW BUSINESS

Meeting Date:	**March 18, 2014**
Presented By:	**Jim Duval, Interim Community Development Director**
Subject:	**2013 Annual General Plan Progress Report**
Enclosures:	**Yes**
Desired Action:	**Consideration and Adoption of Resolution No. PC 2014-01, A Resolution of the Hughson Planning Commission adopting the 2013 Annual General Plan Progress Report, as well as the Annual Progress Report on Implementation of the Housing Element.**

Staff Recommendation:

Staff recommends the adoption of Resolution No. PC 2014-01, A Resolution of the Hughson Planning Commission Adopting the 2013 Annual General Plan Progress Report as well as the Annual Progress Report on Implementation of the Housing Element.

Background and Overview:

Pursuant to Government Code Section 65400, the Planning Commission must provide an annual report by April 1 of each year to the City Council, the Office of Planning and Research, and the Department of Housing and Community Development on the progress made toward implementing the General Plan goals and policies during the prior year's reporting period.

Discussion:

Enclosed is the aforementioned annual report for your review and approval.

CITY OF HUGHSON
PLANNING COMMISSION
RESOLUTION NO. PC 2014-01

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HUGHSON ADOPTINGTHE 2013 GENERAL PLAN PROGRESS REPORT AS WELL AS THE 2013 ANNUAL PROGRESS REPORT ON IMPLEMENTATION OF THE HOUSING ELEMENT

WHEREAS, the Hughson is required by Government Code Section 65400 to provide an Annual Progress Report on the General Plan for the preceding year; and

WHEREAS, the Progress Report must be transmitted to the City Council, the Office of Planning and Research, and the Department of Housing and Community Development; and

WHEREAS, the Annual Progress Report must include all of the following: a) the status of the General Plan and progress in its implementation, b.) the progress in meeting its share of the regional housing needs and local efforts to remove governmental constraints to the maintenance, improvement, and development of housing, the degree to which its approved general plan complies with the guidelines developed and adopted pursuant to Section 65040.2 as well as the date of the last revision to the general plan; and

WHEREAS, the Planning Commission must also investigate and make recommendations to the City Council regarding reasonable and practical means for implementing the general plan or element of the general plan, so that it will serve as on effective guide for the orderly growth and development, preservation and conservation of open-space land and natural resources, and the efficient

expenditure of public funds relating to the subjects addressed in the general plan; and

WHEREAS, the Hughson Planning Commission has reviewed and approved the 2013 Annual Progress Report on the Hughson General Plan, as well as the Annual Progress Report on Implementation of the Housing Element and found them to be accurate and in compliance with the General Plan; and

NOW THEREFORE BE IT RESOLVED that the Hughson Planning Commission does hereby adopt the 2013 Annual Progress Report on the Hughson General Plan, as well as the Annual Progress Report on Implementation of the Housing Element;

PASSED AND ADOPTED by the Hughson Planning Commission at a regular meeting thereof held on March 18, 2014, by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

_____

JULIE STRAIN, Chair

ATTEST:

_____

JIM DUVAL, Secretary

ANNUAL PROGRESS REPORT ON THE CITY OF HUGHSON GENERAL PLAN – 2013

INTRODUCTION

The City of Hughson's Planning Commission is required by Government Code Section 65400 to present an annual report to its legislative body (City Council), the Office of Planning and Research (OPR), and the Department of Housing and Community Development (H&CD) by April 1 of each year.

The purpose for the Annual Progress Report is to assess how the General Plan is being implemented in accordance with adopted goals, policies and implementation measures; identify any necessary adjustments or modifications to the General Plan as a means to improve local implementation; provide a clear correlation between land use decisions that have been made during the 12-month reporting period and the goals, policies and implementation measures contained in the General Plan; and to provide information regarding local agency progress in meeting its share of regional housing needs.

The Annual Report must include all of the following: a) the status of the plan and progress in its implementation, b.) the progress in meeting its share of the regional housing needs and local efforts to remove governmental constraints to the maintenance, improvement, and development of housing, the degree to which its approved general plan complies with the guidelines developed and adopted pursuant to Section 65040.2 as well as, (c) the date of the last revision to the general plan.

Additionally, the Planning Commission must investigate and make recommendations to the City Council regarding reasonable and practical means for implementing the general plan or element of the general plan, so that it will serve as on effective guide for the orderly growth and development, preservation and conservation of open-space land and natural resources, and the efficient expenditure of public funds relating to the subjects addressed in the general plan.

GENERAL PLAN

Hughson's General Plan was adopted on December 12, 2005. The General Plan contains the seven State-required elements, which are land use, circulation, housing, conservation, open space, noise and safety. The Housing Element was adopted separately in 2004. The State allows the combining of elements or the addition of new elements as long as the required seven elements are present in some fashion. Hughson's General Plan combines the required conservation and open space elements and adds a public services and facilities element. The Hughson General Plan therefore contains the following elements:

1. Land Use; 2. Circulation; 3. Conservation and Open Space; 4. Public Services and Facilities; 5. Safety; 6. Noise and; 7. Housing.

Local governments are required to keep their General Plans current and internally consistent. There is no specific requirement that a local government update its General Plan on a particular timeline, with the exception of the Housing Element, which is required to be updated every five years. Hughson's Housing Element was updated and certified by the State Housing and Community Development Department in 2009.

The following represents the progress the City has made toward implementing the goals and guiding policies of the General Plan during the reporting period. The list is organized to correspond with the elements of the Hughson General Plan.

1. LAND USE

Amendments

There were no amendments to the Land Use Element in 2013.

Progress

A. On January 28, 2013 the City Council adopted Ordinance 2013-01 adding Chapter 16.50 Farmland Preservation Program.

B. On March 27, 2013 the Planning Commission approved Design Review for Hughson Investment Group located at 6748 E. Whitmore Avenue, Marketplace Shopping Center.

C. On May 21, 2013 the Planning Commission recommended approval of Vesting Tentative Map No. 2013-01. Two residential parcels.

2. CIRCULATION

Amendments

There were no amendments to the Circulation Element in 2013.

Progress

A. On April 8, 2013, the City Council awarded the 4th Street Sidewalk Infill Project to add sidewalks and necessary paving and other appurtenances.

B. On April 16, 2013 the Planning Commission and on May 13, 2013 the City Council adopted the Design Manual for Living Streets. The major goal of the manual is to make streets safer for pedestrians and bicyclists.

C. On May 21, 2013 the City Council adopted Ordinance amendment to the Municipal Code Title 16.28.020 and added Section 16.32.140 relating to street design.

D. On August 26, 2013 the City of Hughson entered into a cost-sharing agreement with Stanislaus County for road maintenance on Charles Road, north of Hatch Road.

E. On August 26, 2013 the City Council received the Pavement Condition Report.

3. CONSERVATION AND OPEN SPACE

Amendments

There were no amendments to the Conservation and Open Space Element in 2013.

Progress

A. On January 28, 2013 the City Council adopted Ordinance 2013-01 adding Chapter 16.50 Farmland Preservation Program.

B. On October 28, 2013 the City Council adopted the Urban Forest plan and Resource Guide.

C. On November 19, 2013 the Planning Commission and on December 9, 2013 the City Council adopted the Climate Action Plan to provide strategic measures and actions for the: reduction of water, natural gas and electricity consumption; reduction of solid waste sent to landfills; assistance in making land use decisions, conservation of farmland, encouragement in walking and bicycling, reduction of vehicle miles – thereby reducing greenhouse gas emissions.

4. PUBLIC SERVICES AND FACILITIES

Amendments

There were no amendments to the Public Services and Facilities Element in 2013.

Progress

A. On May 28, 2013 the City Council adopted resolution authorizing application submittal to Safe Drinking Water State Revolving Loan Fund program for funds to assist in the Well No. 7 replacement project.

B. On October 28, 2013 the City Council authorized a lease with United Samaritan Foundation and Stanislaus County to provide various social service programs including Temporary Assistance for Needy Families (TANF), Medi-Cal and Food Stamps.

5. SAFETY

Amendments

There were no amendments to the Safety Element in 2013.

Progress

A. On April 8, 2013, the City Council awarded the 4th Street Sidewalk Infill Project to add sidewalks and necessary paving and other appurtenances.

B. On December 9, 2013 the City Council adopted 2013 California Building Code, as well as the appendices of the CalGreen Standards, Tiers One and two.

6. NOISE

Amendments

There were no amendments to the Noise Element in 2013.

Progress

There is nothing to report regarding progress on the Noise Element in 2013.

7. HOUSING

Amendments

There were no amendments to the Housing Element in 2013.

Progress

A. Pursuant to State law, the Stanislaus County Council of Governments is responsible for the development of the Regional Housing Needs Allocation (RHNA) throughout Stanislaus County. Hughson's RHNA for the years 2007 through 2015 is projected to be 282 housing units. Building permits issued for homes in the period from January 2007 and through January 2013 number 147. It is unlikely the city will see the construction of an additional 135 housing units in the next two years.

ANNUAL HOUSING ELEMENT PROGRESS REPORT
Housing Element Implementation
(CCR Title 24 Section § 6202)

Jurisdiction **City of Hughson**

Reporting Period **01/01/2013 to 12/31/2013**

Table A
2013 Annual Building Activity Report Summary – New Construction
Very Low-, Low-, Moderate, Above-Moderate-Income Units and Mixed-Income Multifamily Projects

Housing Development Information								Housing with Financial Assistance and/or Deed Restrictions		Housing without Financial Assistance or Deed Restrictions
1	2	3	4				5	6	7	8
Project Identifier (may be APN No., project name or address)	Unit Category	Tenure R=Renter O=Owner	Affordability by Household Incomes				Total Units per Project	Assistance Programs for Each Development	Deed Restricted Units	Note below the number of units determined to be affordable without financial or deed restrictions and attach an explanation how the jurisdiction determined the units were affordable. Refer to instructions.
			Very Low-Income	Low-Income	Moderate-Income	Above Moderate-Income		See Instructions	See Instructions	
Kiper Development	SFD	O				14	14			
(9) Total of **Above Moderate** from Table A2 ► ► ► ► ► ►						0	0			
(10) Total by income units (Field 5) Table A ► ► ►			0	0		14	14			

Table A2
2013 Annual Building Activity Report Summary - Units Rehabilitated, Preserved and Acquired pursuant to GC Section 65583.1(c)(1)

Please note: Units may only be credited to the table below when a jurisdiction has included a program it its housing element to rehabilitate, preserve or acquire units to accommodate a portion of its RHNA which meet the specific criteria as outlined in GC Section 65583.1(c)(1)

Activity Type	Affordability by Household Incomes				(4) The Description should adequately document how each unit complies with subsection (c)(7) of Government Code Section 65583.1
	Extremely Low-Income*	Very Low-Income	Low-Income	TOTAL UNITS	
(1) Rehabilitation Activity				0	
(2) Preservation of Units At-Risk				0	
(3) Acquisition of Units				0	
(5) Total Units by Income	0	0	0	0	

* Note: This field is voluntary

Table A2

2013 Annual building Activity Report Summary for Above Moderate-Income Units (not including those units reported in Table A)

	Single Family	2 - 4 Units	5+ Units	Second Unit	Mobile Homes	Total
No. of Units Permitted for **Moderate**						0
No. of Units Permitted for **Above Moderate**						0

Table B
Regional Housing Needs Allocation Progress
Permitted Units Issued by Affordability

Enter Calendar Year starting with the first year of the RHNA allocation period. See Example.			2007	2008	2009	2010	2011	2012	2013	2014	2015	Total Units to Date (all years)	Total Remaining RHNA by Income Level
Income Level		RHNA Allocation by Income Level	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9		
Extremely Low	Deed Restricted	**33**										0	32
	Non-deed restricted		1									1	
Very Low	Deed Restricted	**33**										0	33
	Non-deed restricted											0	
Low	Deed Restricted	**46**										0	46
	Non-deed restricted											0	
Moderate	Deed Restricted	**54**										0	13
	Non-deed restricted				3		22	16				41	
Above Moderate		**116**	27	16	5	11	12	20	14			105	11
Total RHNA by COG. Enter allocation number:		**282**											
Total Units ► ► ►			28	16	8	11	34	36	14			147	
Remaining Need for RHNA Period ► ► ► ► ►													**135**

Note: units serving extremely low-income households are included in the very low-income permitted unit totals.

Table C
Program Implementation Status

Program Description (By Housing Element Program Names)	Housing Programs Progress Report - Government Code Section 65583. Describe progress of all programs including local efforts to remove governmental constraints to the maintenance, improvement, and development of housing as identified in the housing element.

Name of Program	Objective	Timeframe	Status of Program Implementation
Program 1-1-1	The City staff will coordinate with California Department of Housing and Community Development (HCD) staff to apply for the funding that is made available through Proposition 1C. For example, in partnership with an interested non-profit developer, apply to the MHP program for the development of low-income housing. Finally, as affordable units are developed, apply for the Workforce Housing Rewards Program.	Apply for funding as it becomes available	Staff continues to search for interested developers to build and maintain affordable housing.
Program 1-1-2	The City of Hughson is a member of the Stanislaus County Consortium for CDBG entitlement funds.	Annually, subject to available funds	We receive CDBG funds as a part of the county consortium.
Program 1-2-1	The Redevelopment Agency did set aside 20 percent of the gross tax increment revenues received from the Redevelopment Project into a low-to-moderate income housing fund for affordable housing activities. Those funds were designated for low-to moderate income housing rehabilitation programs including financing, infrastructure improvements, land acquisitions, and construction.	Sunsetting.	Funds are no longer available from this program.
Program 1-3-1	Provide technical assistance to developers, nonprofit organizations, or other qualified private sector interests in the application and development of projects for federal and state financing.	Ongoing as projects are submitted to planning and building department	The City continues to develop strategies to attract affordable housing developers.
Program 1-4-1	Continue to use HOME funds to assist first time homebuyers.	Open	The City does not currently have an open HOME grant to provide down payment assistance.
Program 1-5-1	The city will continue to explore the feasibility of an inclusionary requirement for the development of affordable	Explore inclusionary	City staff continues to evaluate developing an inclusionary zoning program city-wide.

Name of Program	Objective	Timeframe	Status of Program Implementation
	housing.	housing options by 2015	
Program 1-6-1	The City will continue to research and seek out developers to build affordable multifamily housing in Hughson through the Low Income Housing Tax Credit (LIHTC) program	Annually	The City continues to respond to low-income housing projects.
Program 1-7-1	Offer deferrals or reductions in zone change fees for affordable multifamily projects, in order to have sufficient low cost land available to meet the City's low-and very low-income Regional Housing Needs Allocation	Ongoing	The City evaluates the deferral or reduction of zone change fees for affordable multifamily projects.
Program 1-7-2	Transitional and supportive housing provides temporary housing, often with supportive services to formerly homeless persons for a period that is typically between six months and two years. The supportive services, such as job training rehabilitation, and counseling, help individuals gain life skills necessary for independent living. Currently, the City permits transitional housing by right in the High Density Residential (R-3) zoning district, and in the General Commercial (C-2) zoning district subject to a conditional use permit. Pursuant to Senate Bill 2, the City must explicitly allow both supportive and transitional housing types in all residential zones. The City currently defines transitional housing in the Zoning code, but will update it Zoning Code to include the definition of supportive housing as defined in the Health and Safety Code Sections 50675.2 and 50675.14. Both transitional and supportive housing types will be allowed as a permitted use subject to only the same restrictions on residential uses contained in the same type of structure.	Ongoing	Due to staff shortages, the update to Hughson's Zoning Ordinance to address Program 1-7-2 has not been completed. Program 1-7-2 ensures the City of Hughson will be compliant with SB 2 and Health and Safety Code Sections 50675.2 and 50675.14.
Program 1-7-3	Assembly Bill 2634 requires the quantification and analysis of existing and projected housing needs to extremely low-income households and requires Housing Elements to identify zoning to encourage and facilitate supportive housing and single room occupancy units (SROs). Currently, single room occupancy units are included under	Ongoing	Due to staff shortages, the update to Hughson's Zoning Ordinance to address Program 1-7-3 has not been completed. Program 1-7-3 ensures the City of Hughson will be compliant with AB 2634.

Name of Program	Objective	Timeframe	Status of Program Implementation
	the definition of "boarding and rooming houses". To ensure zoning flexibility that allow for the development of SROs, the City will update its Zoning Code to allow for SROs in all zones where boarding and rooming houses are allowed. SROs will continue to be allowed with a conditional use permit in the Multiple Family Residential Zone (R-3) and in the General Commercial Zone (C-2). The conditions for these units will continue to be minimal and will only require review by the Planning Director.		
Program 1-7-4	The City continues to provide a comprehensive listing of the current housing developments in the City which have units reserved for low-income, senior, and disabled households.	Updated annually	The list is available on request. Currently housing available within the city limits is administered by the Stanislaus County Housing Authority.
Program 1-7-5	State Law requires group residential facilities of six or fewer persons to be permitted in all residential zones. Currently Residential Care Homes with 6 or fewer persons are permitted with a conditional use permit. The City will revise the current regulations to meet state law requirements. The City will amend the Zoning Code to allow for Residential Care Homes by right in all residential zones and will allow larger group homes of 7 or more persons in the residential zones with a conditional use permit. Additionally, to further comply with SB 520, the City will amend the Zoning Code to define the definition of family as "One or more persons living together in a dwelling unit".	Immediately	Due to staff shortages, the update to Hughson's Zoning Ordinance to address Program 1-7-5 has not been addressed. Program 1-7-5 ensures the City of Hughson will be compliant with SB 520.
Program 1-7-6	Farmworker housing is defined in Sections 17021.5 and 17021.6 of the Health and Safety Code as any employee housing consisting of no more than 36 beds in a group quarters, or 12 units or spaces designed for use by a single family or household shall be deemed an agricultural land use designation. For the purpose of all local ordinances, employee housing shall not be deemed a use that implies that the employee housing is an activity that differs in any other way from an agricultural use. No conditional use permit, zoning variance, or other zoning clearance shall be required of this employee housing that is not required of any other agricultural activity in the same zone. The permitted	Immediately	Due to staff shortages, no progress has been made on this program. The City will continue its efforts to implement this program.

Name of Program	Objective	Timeframe	Status of Program Implementation
	occupancy in employee housing in an agricultural zone shall include agricultural employees who do not work on the property where the employee housing is located. To comply with Sections 17021.5 and 17021.6 of the Health and Safety Code the City will amend the Zoning Code to allow for farmworker housing in the R-1 zone by right.		
Program 1-8-1	Identify specific incentives, zoning actions, and reporting procedures that can be implemented to encourage and monitor the development of affordable and special needs housing opportunities. Identify the demographics and specific needs of the City's population. Determine the City's role for ensuring the construction of affordable housing projects and financing to developers.	Ongoing	Due to staff shortages, no progress has been made on this program. The City will continue its efforts to implement this program.
Program 1-8-2	Continue to permit persons with disabilities of any age to locate in senior citizens independent living facilities that are funded with federal funds according to federal law.	As these types of facilities become available.	No senior independent living facilities that are federally funded are currently available in the City of Hughson. The City will continue to permit persons of any age to locate in senior citizen independent living facilities that are funded with federal funds according to federal law.
Program 1-8-3	Develop and formalize a general process that a person with disabilities will need to go through in order to make a reasonable accommodation request in order to accommodate the needs of persons with disabilities and stream line the permit review process. The City will provide information to individuals with disabilities regarding reasonable accommodation policies, practices, and procedures based on the guidelines from the California Housing and Community Development Department (HCD). This information will be available through postings and pamphlets at the City and on the City's website.	Ongoing	Due to staff shortages, no progress has been made on this program. At this time, all persons applying for permits are treated equally with regard to the application process. The City will continue to have information available to those who need it.
Program 1-8-1	Identify specific incentives, zoning actions, and reporting procedures that can be implemented to encourage and monitor the development of affordable and special needs housing opportunities. Identify the demographics and specific needs of the City's population. Determine the City's role for ensuring the construction of affordable housing projects and financing to developers.	Ongoing	Due to staff shortages, no progress has been made on this program. This is a continuing need and it is appropriate for the City to continue its efforts.

Name of Program	Objective	Timeframe	Status of Program Implementation
Program 1-9-1	Work with the Housing Authority of Stanislaus County.	Ongoing, as funding becomes available	The City continues to work with the Stanislaus Housing Authority. No vouchers are currently available. However, used vouchers can become available in certain situations such as renters buying a home. The vouchers would be available to people on the waiting list.
Program 1-9-2	Continue to work with the Stanislaus Economic Development and Workforce Alliance (the "Alliance") to provide sufficient detail on employment growth and housing production to ensure affordability to a broad spectrum of City residents.	Ongoing	The City is currently working with the Alliance to track commercial and industrial development in Hughson. These demographics are made available on the City's website as well as in brochures to help attract developers of retail and affordable housing to Hughson.
Program 1-10-1	The City will continue to be responsible for implementing the State's energy conservation standards (e.g., Title 24 Energy Standards). This includes checking of building plans and other written documentation showing compliance and the inspection of construction to ensure that the dwelling units are constructed according to those plans. Applicants for building permits must show compliance with the state's energy conservation requirements at the time building plans are submitted.	Ongoing	The City requires projects to comply with energy conservation standards.
Program 1-10-2	The City will annually ensure that local building codes are consistent with state mandated or recommended green building standards.	Ongoing	The City has adopted Tiers One and Two of CalGreen Standards.
Program 1-10-3	The City will continue to partner with PG&E to promote energy saving programs such as, the California Alternate Rates for Energy (CARE), the Relief for Energy Assistance through Community Help (REACH) and the Family Electric Rate Assistance (FERA).	Ongoing	The City will continue to coordinate with PG&E to promote energy saving programs.
Program 2-1-1	To preserve affordability, allow developers to "piggyback" or file concurrent applications (i.e., rezones, tentative tract maps, conditional use permits, variance requests, etc.) if consistent with applicable processing requirements.	Ongoing	The City allows filing of concurrent applications.
Program 2-1-2	To preserve affordability, provide incentives (i.e., density bonus units, fee reductions, fee deferral, fast-tracking, etc.) to developers of residential projects who agree to provide	Ongoing	The Hughson Zoning Ordinance includes a density bonus provision that provides incentives for the production of housing for very low-income and low-income households.

Name of Program	Objective	Timeframe	Status of Program Implementation
	the specified percentage of units mandated by state law at a cost affordable to very low and/or low-income households.		
Program 2-2-1	The City will establish an annual review of the newly adopted citywide Design Guidelines (adopted July 2009) to ensure that they do not create a constraint to the development of multi-family housing in Hughson. The City will commit to amending the guidelines as appropriate to address or mitigate any identified constraints. The intent of the Design Guidelines is to ensure design compatibility with the existing neighborhoods and community and not to add a constraint to the development of multi-family housing in the community. The City will, on an annual basis, review and update as necessary its design review guidelines.	Bi-annually	The Guidelines are used when an appropriate development proposal is submitted.
Program 2-3-1	To ensure that the development community (both nonprofit and for-profit) is aware of the housing programs, technical assistance, and funding available, the City will publish and make available, to developers, housing development agencies, and City Residents, the City's Housing Element and updates, Annual Action Plan, Annual Redevelopment Agency Report, and respective notices. Provide and annual funding application workshop for interested agencies and developers.	Annually	The Housing Element is available on the City of Hughson website. Public meetings involving annual reports are held every year before final submissions to the appropriate agencies.
Program 2-4-1	The City will continue to have sufficient capacity to meet the additional housing needs of the City of Hughson based on the construction of the 750,000 – gallon water storage.	Evaluate as part of each Housing Element update	The water tank infrastructure was constructed primarily to insure proper fire flows. The installation of new Well #8 is complete and will help provide adequate water capacity. The well is also a treatment facility for removing arsenic from the water supply. Additional well design and distribution systems are under consideration.
Program 2-5-1	The City will continue to determine the transportations needs of its citizens and services as necessary.	Annually	The City of Hughson works with START, the County's bus system that serves Hughson. The City will continue to evaluate the transportation needs of its citizens.
Program 2-5-2	Apply for funding, such as PTA grant, to aid in the development of a public transportation system for the City.	As funding is available.	No activity has occurred. The City will continue to its effort to implement this program.
Program 3-1-1	The City will provide information regarding vacant land to for-profit and nonprofit developers and other housing providers.	Ongoing	The City updates the vacant land inventory for residential development as part of the Housing Element annual progress report.
Program 3-2-1	To ensure the development of housing that has, to extent	Ongoing	The General Plan Land Use Policies promotes commercial

Name of Program	Objective	Timeframe	Status of Program Implementation
	possible, a support structure of shopping, services, and jobs within easy access, the City will encourage the development of well planned and designed projects that provides compatible residential, commercial, industrial, institutional, or public uses within a single project or neighborhood.		development integrated with residential neighborhoods with good access for pedestrians and bicyclists and industrial development that will provide jobs for the area.
Program 3-3-1	Monitor the amount of land zoned for both single-family and multifamily development and initiate zone changes as necessary to accommodate affordable housing.	Quarterly	The 2009 Housing Element provides an inventory of 97 acres of land zoned for single family development (R-1) land and 35 acres of land zoned for multiple family development (R-2 and R-3). There is sufficient inventory of residential land and no zone changes are needed.
Program 3-4-1	The City will continue to allow lot consolidation to combine small residential lots into one large lot to accommodate affordable housing production. Provide incentives such as fee waivers and fast tracked timing to developers who provide affordable housing. In addition, where opportunities exist, the City will allow lot consolidation in the low density residential (R-1) and medium density residential (R-2) zones.	Ongoing	The Hughson Zoning Ordinance does not have a lot size requirement in the R-2 and R-3 Zones which would impede consolidation of small residential lots. No lot consolidation projects have been proposed. The City will continue to provide affordability incentives to developers.
Program 3-5-1	Contact landowners within the Sphere of Influence that have land which is appropriate for residential zoning for possible annexation, in order to meet the very low-and low-income housing needs. Initiate annexation and zoning processes on suitable land.	Annually	Currently the City has sufficient vacant land for an affordable project, however should the need arise the City stands ready to initiate processes needed to facilitate an affordable project.
Program 3-6-1	Allow for second units to be constructed with minimal restrictions and in accordance with AB 1866.	As projects are processed through the Planning Department	Hughson's Zoning Ordinance allows for second units in the R-1 Zone provided lot size will accommodate it. The ordinance in effect during our previous Housing Element did not allow for this.
Program 4-1-1	Continue to seek funding for public facilities such as community facilitated loans and public works grants.	Annually	The City continues to seek infrastructure funding.
Program 4-2-1	Supply energy conservation awareness brochures in all public meeting places.	Ongoing, at all public meetings.	The City supplies energy conservation awareness brochures in all public meeting places.
Program 4-3-1	The City will provide technical and financial assistance to all eligible homeowners and residential property owners to rehabilitate existing dwelling units through grants or low	Annually, with Consortia	The City will continue to use CDBG and other housing rehabilitation funds.

Name of Program	Objective	Timeframe	Status of Program Implementation
	interest loans. The City will also continue to apply for and use CDBG and other housing rehabilitation funds.	funding.	
Program 4-4-1	Expand rehabilitation program eligibility to include rental properties.	Sunsetting	The State has removed the opportunity to use redevelopment as a funding source for rental property rehabilitation. We currently have no other open rehab grant programs.
Program 5-1-1	Require that all recipients of locally administered housing assistance funds acknowledge their understanding of fair housing and affirm their commitment to the laws.	Ongoing	The City require recipients of locally administered housing assistance funds to acknowledge their understanding of fair housing
Program 5-1-2	Acquire and maintain fair housing materials, including all pertinent resource, posters, and information available through the Department of Fair Employment and Housing (DFEH) and Housing and Urban Development (HUD) to educate on a variety of fair housing issues. Develop informational flyers and brochures in Spanish and in English that highlight (1) disability provisions of both federal and state fair housing laws and (2) familial status discrimination to be distributed at all types of outreach events including health fairs and City-sponsored events. Distribute materials to public locations such as the library and senior center, multifamily housing, and City Hall.	Ongoing	Information on fair housing laws is available at City Hall. The City staff and recipients of locally administered housing assistance funds are informed about fair housing laws.
Program 5-1-3	Continue to refer all housing discrimination referrals to the City Principal Planner who will work with the complainant and refer complaints to the State Fair Employment and Housing Commission.	Ongoing	The City has protocols to deal with events due to housing discrimination. None has been received.
Program 5-1-4	Conduct regular workshops on the fair housing laws, as they pertain to race, disability, family size, and income discrimination and protection, to educate property owners, managers, and real estate professionals.	Ongoing	No activity has occurred. The City will continue to its effort to conduct workshops on fair housing laws.
Program 6-1-1	The City will continue to support the Housing Authority of the County of Stanislaus to provide housing assistance to very low-, low-, and moderate-income households. The City will maintain membership in the Housing Authority to qualify City residents for the Housing Choice Voucher Program and other existing housing assistance programs administered by the Housing Authority. Provide information on the availability of Housing Authority programs to qualified residents.	Immediate and ongoing	The City is a member of the Stanislaus Housing and Support Services Collaborative and will continue to work with the Housing Authority.

Name of Program	Objective	Timeframe	Status of Program Implementation
Program 6-2-1	Continue to establish cooperative agreements with a nonprofit housing organization as a support agency to the City.	Immediate and ongoing	The City will continue to work with and maintain agreements with nonprofit agencies.
Program 6-3-1	The City will cooperate with large employers and major commercial and industrial developers to identify and implement development that can balance employment in the City with the housing growth. Develop housing opportunities that are affordable to the incomes of jobs within the City. Consider the effects of new development as proposed. The City will coordinate annual workshop with employers, members of the housing community, and City officials to identify the City's housing and commercial needs.	Annually	No activity has occurred. The City strongly supports development that will create jobs in the community. The City will continue to identify housing and commercial needs.
Program 6-4-1	Monitor the completion and implementation of the goals and policies set by the Housing Element. Continue to update and amend codes and policies as necessary.	Annually	The preparation of the Annual Progress Report helps the City monitor the policies of the Housing Element.

PLANNING COMMISSION AGENDA
ITEM NO. 3.3
SECTION 3: NEW BUSINESS

Meeting Date:	**March 18, 2014**
Subject:	**Mitigated Negative Declaration for the Seventh Street Park Project**
Presented By:	**Jim Duval, Interim Director of Community Development**
Enclosures:	**1. Mitigated Negative Declaration for the Seventh Street Park Project** **2. Resolution No. PC 2014-02**
Desired Action:	**Adopt Resolution No. PC 2014-02, A Resolution of the Planning Commission of the City of Hughson Recommending Adoption of the Mitigated Negative Declaration for the Seventh Street Park Project**

Staff Recommendation:

Adopt Resolution No. PC 2014-02, A Resolution of the Planning Commission of the City of Hughson Recommending Adoption of the Mitigated Negative Declaration for the Seventh Street Park Project to the Hughson City Council.

Background and Overview:

The City has made application for grant funding under the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006. The application is proposing acquisition of approximately twenty-nine (29) acres owned by the School District at the corner of Seventh Street and Whitmore Avenue here in Hughson. Approximately two-thirds of this acreage is proposed for development under the grant application as well.

California Environmental Quality Act - CEQA

Since the proposed project met the definition of a project under California environmental laws, an Initial Study was prepared. Following preparation of the Initial Study, it was determined that the project could significantly affect the environment and a Draft Mitigated Negative Declaration was prepared. This document says, in brief, that with mitigation measures, the impact to the environment can be reduced to less than significant levels.

The purpose of the Negative Declaration is to inform decision-makers, other interested agencies, and the public of potential environmental effects of the

proposed project. The review and comment period has been established to enable interested parties to evaluate environmental consequences and to examine implement methods of eliminating or reducing any adverse impacts caused by the project. While CEQA requires that consideration be given to avoiding environmental damage, the City must balance any potential environmental effects against other public objectives, including economic and social goals.

Discussion:

PROJECT LOCATION

The proposed park site is located at the corner of Seventh Street and Whitmore Avenue. Both of these streets are designated as four-lane collectors in the City's adopted Streets Master Plan. The planned entrance to the proposed facility is on Seventh Street to avoid adding traffic congestion in front of the High School, where it may endanger children.

PROJECT DESCRIPTION

The proposed project consists of acquisition and development for park and recreational purposes of approximately 29 acres. Six acres are within the city limits and approximately 23 acres are within the City's sphere of influence. If the grant application is successful, the City will annex all the parcels into city limits to avoid payment of property taxes.

AGENCY AND PUBLIC REVIEW

The environmental document was sent to the following agencies for review and comment:

- ✓ Stanislaus County Chief Executive Office
- ✓ Hughson Unified School District
- ✓ Hughson Fire Protection District
- ✓ Turlock Irrigation District
- ✓ Pacific Bell Engineering
- ✓ Pacific Gas and Electric
- ✓ Hughson Post Office
- ✓ Stanislaus County Department of Planning and Community Development
- ✓ Stanislaus County Department of Public Works
- ✓ Stanislaus County Department of Environmental Resources
- ✓ Stanislaus County Agricultural Commissioner's Office
- ✓ Stanislaus Council of Governments
- ✓ Stanislaus County Fire Protection Bureau
- ✓ Neumiller and Beardslee
- ✓ Charter Communications

- ✓ San Joaquin Valley Unified Air Pollution Control District

Three of these agencies commented on the Draft Mitigated Negative Declaration. These comments and the City's responses are attached to and will be made a part of the Final Mitigated Negative Declaration that will go before the City Council on April 26, 2010.

The response period for public comment opened on February 23, 2010 and initially proposed to close the comment period on March 15, 2010. This would give the public and affected agencies 21 days to comment and a public hearing was therefore set before the Planning Commission on March 16, 2010. However, to err on the side of caution, it was determined that it would be beneficial to the process to extent the comment period for another two weeks, ending on March 30, 2010. The public hearing was then rescheduled to the April 20, 2010 Planning Commission meeting.

CITY OF HUGHSON
PLANNING COMMISSION
RESOLUTION NO. PC 2014-02

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HUGHSON RECOMMENDING ADOPTION OF A MITIGATED NEGATIVE DECLARATION FOR THE SEVENTH STREET PARK PROJECT TO THE HUGHSON CITY COUNCIL

WHEREAS, the City of Hughson has made application for grant funding through the State of California Department of Parks and Recreation; and

WHEREAS, the potential grant funding will be used to acquire up to 29.05 acres of land located at Whitmore Avenue and 7th Street for future parkland for the Hughson and surrounding communities; and

WHEREAS, if successful, the grant will allow purchase of real property, all of which may not be within the city limits but may be subsequently annexed; and

WHEREAS, in April 2010, an Initial Study was prepared for the proposed project which indicated it could have impacts on the environment, and a Mitigated Negative Declaration (MND) was subsequently prepared that included measures to reduce environmental impacts to less than significant; and

WHEREAS, the MND was recommended to the City Council for adoption by the Planning Commission in 2010, and has been updated and revised by staff to be again recommended to the City Council for adoption; and

WHEREAS, NOW THEREFORE BE IT RESOLVED that the Planning Commission of the City of Hughson, based on the whole record before it and after having reviewed the documents submitted and considered the information contained therein, and utilizing its own independent judgment and analysis does hereby recommend adoption of the Mitigated Negative Declaration for the Seventh Street Park Project to the City Council of the City of Hughson.

PASSED AND ADOPTED by the Hughson Planning Commission at a regular meeting thereof, held on March 18, 2014, by the following vote:

AYES:

NOES:

ABSTENTIONS:

ABSENT:

_____

JULIE STRAIN, Chair

ATTEST:

_____

JIM DUVAL, Secretary

MITIGATED NEGATIVE DECLARATION

CITY OF HUGHSON

SEVENTH STREET PARK PROJECT

February 2010

Lead Agency: City of Hughson
7018 Pine Street
Hughson, CA 95326

Contact Person: Jim Duval
Interim Community Development Director
Phone: (209) 883-4054

SECTION THREE – EVALUATION OF ENVIRONMENTAL IMPACTS

Introduction

This Initial Study section provides a typical evaluation of the environmental impacts from the project. For each topic the following is provided:

1) A brief explanation is provided for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to the project (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) For impacts falling into the “No Impact” category, the checklist indicates whether the impact is potentially significant, less than significant with mitigation, or less than significant without mitigation. “Potentially Significant Impact” is appropriate if there is evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries (after mitigation) when the determination is made, an EIR is required.

3) Earlier analyses are used where, pursuant to tiering, a program EIR, or another CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, the discussion identifies whether earlier analysis is used, which impacts were adequately analyzed in an earlier document pursuant to applicable legal standards, and describes the mitigation measures that were incorporated or refined from the earlier document to address site-specific conditions for the project.

4) The explanation of each issue identifies the significance criteria or threshold, if any, used to evaluate each question, and the mitigation measure identified, if any, to reduce the impact to a less than significant level.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.1 Aesthetics				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

Response:

Impact #3.1.1 - Scenic Resources and Visual Character (a, b, c): The site of the proposed Park is located on undeveloped orchard land adjacent to a residential subdivision on the west, as well as future planned residential development on the south and east. The proposed Park will have predominantly grass surfaces with ornamental shade tree coverage which will enhance the visual character of the site.

Conclusion: There are no scenic vistas, scenic resources or state designated scenic highways within the Project. The proposed Project is consistent with urban development and will not degrade the visual character or quality of the site and its surroundings. As there are no scenic resources within the vicinity of the Project, the impact is less than significant.

Mitigation Measures: None are required.

Impact #3.1.2 - New Source of Light or Glare (d): Development of the park includes lighted ballfields. The effects of this lighting could result in a loss of darkness in the night sky that may be noticeable to residents in the area; some sky glow and light 'spillage' could occur.

Conclusion: There are residences across Seventh Street from the Project area. Future planned nearby residences may also experience a change in the night sky due to the project. The impact is considered to be potentially significant.

Mitigation Measure #3.1.2: All lighting shall be hooded and directed on site to prevent glare onto surrounding properties and roadways.

Effectiveness of Measure: The implementation of this measure will reduce Project light and glare impact to less than significant.

Implementation/Monitoring: This requirement shall be included in the conditions of approval and shall be implemented by the construction contractor and the applicant. Monitoring shall be performed by the City and the construction manager.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.2 Agricultural Resources				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☒	☐	☐
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use?	☐	☐	☐	☒

Response:

Impact #3.2.1 - Agricultural Farmland (a), (b), (c): The proposed Project is located upon land designated for Public Facility Use in the General Plan. The Project site and surrounding areas are currently designated for development.

Conclusion: There will be the loss of approximately 29 acres of agricultural land.

Mitigation Measures: The loss of agricultural land will be mitigated with the purchase of preservation easements. Landscape buffers will be planted on the sides adjacent to other agricultural lands.

3.3 Air Quality

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management of air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations or hazardous emissions?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Response:

Impact #3.3.1 – Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$) Construction Emissions (a), (b), (c), (d): Project construction will result in activities that generate dust which may create a nuisance if left unmitigated. Grading, earthmoving and excavation are the activities that generate the most PM_{10} and $PM_{2.5}$ emissions. Construction activities associated with project development include site preparation, soil excavation, grading, drilling, equipment traffic on paved and unpaved surfaces, and the construction of well structures.

Because prediction of PM_{10}/$PM_{2.5}$ generation depends on a large number of variables which may change from project to project or from day to day, the SJVAPCD has recommended a

qualitative, rather than a quantitative, approach to assessing impact significance for $PM_{10}/PM_{2.5}$ construction activity emissions.

The air district has developed a menu of $PM_{10}/PM_{2.5}$ control options that define the minimum content of a construction dust control program. The control measures are required under Regulation VIII. Regulation VIII (Table 3.3-1) control measures reduce the amount of $PM_{10}/PM_{2.5}$ emissions generated from fugitive dust sources.

Regulation VIII, Rule 8021 was last amended in August 2004. Rule 8021 was adopted by the SJVAPCD to limit dust emissions from construction, excavation and other earthmoving activities. Prior to the start of construction activities, the owner/operator will be required to file a Dust Control Plan with the SJVAPCD in accordance with Section 6.3 of Rule 8021. In addition to other measures, the SJVAPCD reported an 87% control in reducing PM_{10} emissions when properly using water as a control measure according to a UC Davis Study conducted in 1994.

Conclusion: $PM_{10}/PM_{2.5}$ emissions generated during construction constitute a temporary, potentially significant impact, possibly exposing residents downwind to elevated PM_{10} concentrations and contributing to the regional $PM_{10}/PM_{2.5}$ emission burden.

Mitigation Measure #3.3.1: From the perspective of the SJVAPCD, compliance with Regulation VIII (Table 3.3-1) will constitute sufficient mitigation to reduce PM_{10} impacts to a level below significance.

Table 3.3-1
Mandatory Control Measures for Construction, Excavation, Extraction, and Other Earthmoving Activities

A. Pre-Activity:
- A1: Pre-water site sufficient to limit Visible Dust Emissions (VDE) to 20% opacity
- A2: Phase work to reduce the amount of disturbed surface area at any one time.

B. During Active Operations:
- B1: Apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity
- B2: Construct and maintain wind barriers sufficient to limit VDE to 20% opacity. If utilizing wind barriers, control measure B1 above shall also be implemented.
- B3: Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20% opacity and meet the conditions of a stabilized unpaved road surface.

C. Temporary Stabilization During Periods Of Inactivity:
- C1: Restrict vehicular access to the area
- C2: Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acres or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a stabilized surface area as defined below:

  Stabilized Surface: any disturbed surface area or open bulk material storage pile that is resistant to wind blown fugitive dust emissions. A surface is considered to be stabilized if it meets at least one of the following conditions:
  - A visible crust; or
  - A threshold friction velocity (TFV) for disturbed surface areas corrected for non-erodible elements of 100 centimeters per second or greater; or

- A flat vegetative cover of at least 50 percent that is attached or rooted vegetation; or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind; or
- A standing vegetative cover of at least 30 percent that is attached or rooted vegetation with a predominant vertical orientation; or
- A standing vegetative cover that is attached or rooted vegetation with a predominant vertical orientation that is at least 10 percent and where the TFV is at least 43 centimeters per second when corrected for nonerodible elements; or
- A surface that is greater than or equal to 10 percent of non-erodible elements such as rocks, stones, or hard-packed clumps of soil.

D. Speed Limitations and Posting of Speed Limit Signs

D1: Limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.

D2: Post speed limit signs that meet State and Federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.

E. Wind Generated Fugitive Dust Requirements

E1: Cease outdoor construction, excavation, extraction, and other earthmoving activities that disturb the soil whenever VDE exceeds 20% opacity. Indoor activities such as electrical, plumbing, dry wall installation, painting, and any other activity that does not cause any disturbances to the soil are not subject to this requirement.

E2: Continue operation of water trucks/devices when outdoor construction excavation, extraction, and other earthmoving activities cease, unless unsafe to do so.

Effectiveness of Mitigation Measure: The mitigation measure will reduce PM10/PM2.5 emissions generated during construction, and assure that they remain at less than significant levels.

Implementation/Monitoring: The mitigation measure shall be implemented by the construction contractor and the applicant. Monitoring shall be the responsibility of the SJVAPCD.

Impact #3.3.2 – Construction Emissions (Carbon Monoxide (CO), Reactive Organic Gases (ROG), Nitrogen Oxide (NOx), Particulate Matter (PM_{10}), & Fine Particulate Matter ($PM_{2.5}$) (a), (b), (c), (d): Several pieces of diesel-powered heavy equipment typically operate during the site preparation phase of the Project.

Conclusion: Impacts by construction activities associated with the proposed Project will temporarily increase emissions and will degrade local air quality. This impact is regarded as potentially significant unless mitigation measures are implemented.

Mitigation Measure #3.3.2: To minimize emissions and thus reduce construction impacts, the following shall be implemented:

1. The idling time of all construction equipment used at the site shall not exceed ten minutes.

2. The hours of operation of heavy-duty equipment shall be minimized.

3. All equipment shall be properly tuned and maintained in accord with manufacturer's specifications.

4. When feasible, alternative fueled or electrical construction equipment shall be used at the project site.

5. The minimum practical engine size for construction equipment shall be used.

6. When feasible, electric carts or other smaller equipment shall be used at the project site.

7. Gasoline-powered equipment shall be equipped with catalytic converters.

Effectiveness of Measures: These mitigation measures will reduce Project construction exhaust emissions, and assure that they remain at less than significant levels.

Implementation/Monitoring: The mitigation measures shall be implemented by the construction contractor and the applicant. Monitoring shall be the responsibility of the SJVAPCD.

Impact #3.3.3 – Odor Emissions (e): Operation of the project will not produce or result in any odor emissions.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Global Warming/Climate Change

"Global warming" is the term coined to describe very widespread climate change characterized by a rise in the Earth's ambient average temperatures with concomitant disturbances in weather patterns and resulting alteration of oceanic and terrestrial environs and biota. The predominant opinion within the scientific community is that global warming is currently occurring, and that it is being caused and/or accelerated by human activities, primarily the generation of "greenhouse gases" (GHG).

When sunlight strikes the Earth's surface, some of it is reflected back into space as infrared radiation. When the net amount of solar energy reaching Earth's surface is about the same as the amount of energy radiated back into space, the average ambient temperature of the Earth's surface would remain more or less constant. Greenhouse gases disturb this equilibrium by absorbing and retaining infrared energy, trapping heat in the atmosphere—the "greenhouse gas effect." The belief is that global warming is now occurring because natural carbon cycle processes (such as photosynthesis) are unable to absorb sufficient quantities of carbon dioxide and other GHG, and cannot keep the level of these gases under control. It is believed that a combination of factors related to human activities, such as deforestation and an increased emission of GHG into the atmosphere, is causing global warming.

Water vapor is the most predominant GHG, and is primarily a natural occurrence: approximately 85% of the water vapor in the atmosphere is created by evaporation from the oceans. The predominant types of anthropogenic greenhouse gases (those caused by human activity), are

- carbon dioxide (CO_2), largely generated by combustion activities such as coal and wood burning and fossil fuel use in vehicles but also a byproduct of respiration and volcanic activity;

- methane (CH_4), known commonly as "natural gas," is present in geologic deposits and is also evolved by anaerobic decay processes and animal digestion. On a ton-for-ton basis, CH_4 exerts about 20 times the greenhouse gas effect of CO_2;

- nitrous oxide (N_2O), produced in large part by soil microbes and enhanced through application of fertilizers. N_2O is also a byproduct of fossil fuel burning: atmospheric nitrogen, an inert gas that makes up a large proportion of the atmosphere, is oxidized when air is exposed to high-temperature combustion. N_2O is used in some industrial processes, as a fuel for rocket and racing engines, as a propellant, and as an anesthetic. N_2O is one component of "oxides of nitrogen" (NOX), long recognized as precursors of smog-causing atmospheric oxidants.

- chlorofluorocarbons (CFCs), synthetic chemicals developed in the late 1920s for use as improved refrigerants (e.g., "Freon™"). It was recognized over two decades ago that this class of chemicals exerted powerful and persistent greenhouse gas effects. In 1987, the Montreal Protocol halted production of CFCs.

- hydrofluorocarbons (HFCs), another class of synthetic refrigerants developed to replace CFCs;

- perfluorocarbons (PFCs), used in aluminum and semiconductor manufacturing, have an extremely stable molecular structure, with biological half-lives tens of thousands of years, leading to ongoing atmospheric accumulation of these GHGs.

- sulfur hexafluoride (SF_6) is used for insulation in electric equipment, semiconductor manufacturing, magnesium refining and as a tracer gas for leak detection. Of any gas evaluated, SF_6 exerts the most powerful greenhouse gas effect, almost 24,000 times as powerful as that of CO_2 on a ton-for-ton basis.

In an effort to address the perceived causes of global warming by reducing the amount of anthropogenic greenhouse gases generated in California, the state enacted the Global Warming Solutions Act of 2006 (Codified as Health & Safety Code Section 38501 et seq.). Key provisions include the following:

- Codification of the state's goal by requiring that California's GHG emissions be reduced to 1990 "baseline" levels by 2020.

- Set deadlines for establishing an enforcement mechanism to reduce the GHG emissions:

  - By June 30, 2007, the California Air Resources Board ("CARB") was required to publish “discrete early action” GHG emission reduction measures. Discrete early actions are regulations to reduce greenhouse gas emissions to be adopted by the CARB and enforceable by January 1, 2010;

  - By January 1, 2008, CARB was required to identify what the state's GHG emissions were in 1990 (set the “baseline”) and approve a statewide emissions limit for the year 2020 that is equivalent to 1990 levels. (These statewide baseline emissions have not yet been allocated to regions, counties, or smaller political jurisdictions.) By this same date, CARB was required to adopt regulations to require the reporting and verification of statewide greenhouse gas emissions.

  - By January 1, 2011, CARB must adopt emission limits and emission reduction measures to take effect by January 1, 2012.

As support for this legislation, the Act contains factual statements regarding the potential significant impacts on California's physical environment that could be caused by global warming. These include, an increase in the intensity and duration of heat waves, the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snow pack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

On August 24, 2007, California also enacted legislation (Public Resources Code §§ 21083.05 and 21097) requiring the state Resources Agency to adopt guidelines for addressing climate change in environmental analysis pursuant to the California Environmental Quality Act. By July 1, 2009, the Governor's Office of Planning and Research (OPR) is required to prepare guidelines for the mitigation of greenhouse gas emissions, and transmit those draft regulations to the Resources Agency. The Resources Agency must then certify and adopt the guidelines by January 1, 2010.

Because it is believed that global warming is being caused by human activities on the entire planet, it would be highly speculative to conclude that this project would have a direct adverse impact on global climate. CARB has not adopted GHG emission limits and emission reduction measures and because CEQA guidelines have not been established for the evaluation and mitigation of greenhouse gas emissions, there is an absence of regulatory guidance to assist any lead agencies in determining whether a particular project will have a significant impact on global warming.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.4 Biological Resources				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Response:

Impact #3.4.1 – Biological Resources (a, b, c, d, e, f): The proposed site of the new Park provide no native habitat for plants or animals. The Project site is currently an active farming operation and does not include any wetlands or migratory corridors, nor does it conflict with any habitat conservation plans or tree preservation policies.

Conclusion: There is no impact.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.5 Cultural Resources				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 of the CEQA Guidelines?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Response:

Impact #3.5.1 – Disturbance of Cultural Resources (a, b, c, d): There are no known historical structures or resources within the project area. However, the Project will include excavation and grading where subsurface cultural resources may be discovered.

Conclusion: Construction activities and improvements have the potential to disturb or destroy unknown cultural resources. As such, there is a potentially significant impact.

Mitigation Measure #3.5.1: In the event presently unknown archaeological or historical resources are discovered during development of specific projects, work shall be terminated until such time that a certified archaeological/historical consultant can investigate the findings. In such a case, the investigating archaeologist/historian shall determine appropriate future actions that must be taken prior to continuation of all affected project(s) pursuant to Appendix K of the CEQA Guidelines.

Effectiveness of Measure: Implementation of this measure will reduce the Project's cultural resources impact to less than significant.

Implementation/Monitoring: Monitoring shall be performed by the City and construction manager.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.6 Geology/Soils				
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction of collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems when sewers are not available for the disposal of wastewater?	☐	☐	☒	☐

Response:

Impact #3.6.1 – Seismic Ground Shaking, Landslides, and Ground Failure (a): According to the City of Hughson General Plan 2005, the risk of damage related to seismic activity is low and there are no known active or potentially active faults crossing or within 15 miles of the proposed Project site.

Conclusion: Damage to the structures associated with the Project could occur if such structures are not constructed to withstand anticipated maximum ground-shaking events. All Project related construction will conform to the latest requirements for seismic design code standards. Therefore the impact is less than significant.

Mitigation Measures: None are required.

Impact #3.6.2 – Soil Erosion (b): The Project site is flat and major grading for the storm water retention basin will occur on the site interior, while minor grading for sidewalks and curbs will conform to NPDES and City of Hughson storm water discharge protection requirements. All soils shall be maintained on site, therefore no erosion will occur.

Conclusion: The impact is considered less than significant.

Mitigation Measures: None are required.

Impact #3.6.3 – Soils (c, d): The City of Hughson General Plan 2005 Safety Element determined that land within the City is not subject to significant settlement, nor is the Project site in an area subject to a high potential for liquefaction. The Project will be designed by an engineer to resist any seismic related impacts, including liquefaction.

Conclusion: The impact is less than significant.

Mitigation Measures: None are required.

Impact #3.6.4 – Wastewater Disposal (e): The Project will connect to the City wastewater system when facilities needing waste disposal are constructed.

Conclusion: The impact is considered less than significant.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.7 Hazards/Hazardous Materials				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Response:

Impact #3.7.1 – Release of Hazardous Materials (a, b): The project will not involve the use or transport of hazardous materials during construction or operation.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.7.2 – Hazards Within ¼ mile from Schools (c): The project does not include the use or release of hazardous materials.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.7.3 – Hazardous Sites (d): There are no hazardous waste sites in the immediate vicinity of the proposed project.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.7.4 – Airports (e, f): The Project is not located within an airport land use plan. The Project is not located in the vicinity of a private airstrip.

Conclusion: There is no impact.

Mitigation Measures: There are none required.

Impact #3.7.5 – Emergency Plans (g): The project would not impair implementation of the adopted emergency response plan or emergency evacuation plan.

Conclusion: There is no impact

Mitigation Measures: There are none required.

Impact #3.7.6 – Wildland Fires (h): There are no wildlands or flammable brush, grassy or dry tree areas in the Project area.

Conclusion: There is no impact.

Mitigation Measures: There are none required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.8 Hydrology/Water Quality				
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Response:

Impact #3.8.1 – Water Quality (a, f): The proposed Project will not violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.

Conclusion: There are no impacts.

Mitigation Measures: None are required.

Impact #3.8.2 – Groundwater Supply (b): The proposed Project will be placed upon a site that is currently irrigated by flood irrigation techniques. The per acre use of water using this technique is similar in water volume to that of single family residential land use patterns. The Project will not require flood irrigation techniques and therefore will use less water than the current use.

Conclusion: The proposed Park will not have a significant impact on the groundwater basin. The basin is not at risk of overdraft.

Mitigation Measures: No mitigation is required.

Impact #3.8.3 – Stream Alteration (c, d, e): There are no streams located within close proximity to the Project site.

Conclusion: The Project will not alter the existing drainage pattern of the site areas or increase the rate or amount of surface runoff or result in substantial erosion or siltation on or off the sites.

There is no impact.

Mitigation Measures: None are required.

Impact #3.8.4 – Stormwater Drainage (e): The project will not alter existing drainage patterns. Storm drain collection piping will serve the Project.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.8.5 – Flooding (g, h): The project site is not located within a 100-year floodplain.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.8.6 - Dam Failure Inundation (i): According to the City of Hughson General Plan 2005 Safety Element, there is a slight risk in Hughson of flooding related to dam inundation from failure of the Don Pedro Dam on the Tuolumne River. The dam is maintained by the Turlock Irrigation District. Flooding would only occur in the event of dam failure, and would affect the entire city and the surrounding areas. To minimize the risk of dam failure, the California Department of Water Resources Division of Safety of Dams inspects the Don Pedro Dam on an annual basis for safety. The chances of this dam failing while at capacity are considered remote.

Conclusion: The impact is less than significant.

Mitigation Measure: None are required.

Impact #3.8.7 - Seiche/Tsunami (j): There is no potential for seiche or tsunami due to the lack of a significant water body near the site. The Project site is flat, therefore eliminating the possibility for mudflow.

Conclusion: There is no impact.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.9 Land Use/Planning				
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Response:

Impact #3.9.1 – Divide Established Community (a): No change in surrounding land uses will occur as a result of the project.

Conclusion: The project does not impede growth or divide the community. There is no impact.

Mitigation Measures: None are required.

Impact #3.9.2 – Land Use Plan (b): The Project does not involve any change to, or conflict with, applicable land use plans, policies, or regulations.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.9.3 – Conservation Plan (c): The project site is not within an adopted habitat conservation plan.

Conclusion: No significant impacts will result.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.10 Mineral Resources				
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Response:

Impact #3.10.1 – Mineral Resources (a,b): There are no known mineral resources within the Project area. The Project will not result in a loss of mineral resources.

Conclusion: There are no impacts.

Mitigation Measures: None are required.

3.11 Noise

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Response:

Impact #3.11.1 – Construction Noise Impacts on Sensitive Receptors (d): Construction of the Project will create short-term noise that may adversely impact sensitive receptors. The Noise Element of the City of Hughson General Plan 2005 prescribes noise standards to ensure that noise sensitive areas are not adversely affected from noise sources. The Noise Element has established that internal noise impacts shall not exceed 45 decibels.

Typical construction equipment would include tractors, forklifts, and miscellaneous equipment (e.g., pneumatic tools, generators and portable air compressors). Noise levels generated by this type of construction equipment at various distances from the noise source are shown in Table 3.11-1.

Table 3.11-1
Estimated Construction Noise Levels

	Typical Noise Level (dBA) (distance from source)		
Construction Equipment	**50 feet**	**100 feet**	**1.0 mile**
Pneumatic tools	85	79	45
Truck (e.g., dump, water)	88	82	48
Concrete mixer (truck)	85	79	45
Scraper	88	82	48
Bulldozer	87	81	47
Backhoe	85	79	45
Portable air compressor	81	75	41

Noise levels generated from construction activities decrease with increasing distance from the noise source; generally, noise levels reduce by six decibels for every doubling of distance from the source.

Conclusion: Construction activities will be temporary in nature and will only occur during the daytime hours. The City enforces the Noise Ordinance from 10:00 p.m. to 7:00 a.m. Monday through Friday and from 10:00 p.m. to 8:00 a.m. on Saturday, Sunday, and holidays. Construction noise impacts could result in annoyance or sleep disruption for nearby residents if nighttime operations were to occur or if equipment is not properly muffled or maintained. Construction noise will be a temporary and less than significant impact.

Mitigation Measure: None are required.

Impact #3.11.2 – Operations Noise Impacts on Sensitive Receptors (a, b, c, d, e, f): The project includes a skatepark, amphitheater type seating for entertainment purposes, and several sport complexes including a baseball facility capable of holding tournaments. The Project will increase noise levels in the neighboring vicinity.

Conclusion: The noise generated by the Project will not exceed the thresholds established by the City's Noise Element. The impact is less than significant.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.12 Population and Housing				
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Response:

Impact #3.12.1 – Population Growth and Displacement (a, b, c): The proposed Project does not include the development or removal of any residential structures. The Project is in response to a need for additional park facilities in the City of Hughson.

Conclusion: There is no impact.

Mitigation Measures: None are required.

3.13 Public Services

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impact, in order to maintain acceptable service ratios for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Response:

Impact #3.13.1 – Fire Protection Services (a): Fire protection services are provided to the Project site by the Hughson Fire Protection District. District staff consists of a full-time Fire Chief and 25 to 30 volunteers.

Conclusion: The project will not create a significant demand for additional fire services.

Mitigation Measures: None are required.

Impact #3.13.2 – Police Protection (a): Police protection services are already provided to the Project site by the Stanislaus County Sheriff's Department.

Conclusion: The project will not create a demand for additional police protection services.

Mitigation Measures: None are required.

Impact #3.13.3 – School Facilities (a): Primary educational services within the City are provided by the Hughson Unified School District.

Conclusion: The project will not create a demand for additional school facilities.

Mitigation Measures: None are required.

Impact #3.13.4 – Park Facilities (a): The Project does not include the construction of residential uses which would require new parks. Existing park facilities will be positively impacted by this project.

Conclusion: There is no significant impact.

Mitigation Measures: None are required.

Impact #3.13.5 – Other Public Facilities (a): The Project does not include any other impacts to public facilities.

Conclusion: There is no impact.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact

3.14 Recreation

Would the project:

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Response:

Impact #3.14.1 – Recreational Facilities (a, b): See Impact #3.13.4

Conclusion: See Impact #3.13.4

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.15 Transportation/Traffic				
Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections?	☐	☐	☒	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?)	☐	☐	☐	☒
f) Result in inadequate parking capacity?	☐	☐	☒	☐
g) Conflict with adopted polices, plans, or programs supporting alternative transportation?	☐	☐	☐	☒

Response:

Impact #3.15.1 – Transportation/Traffic: The project will potentially alter traffic conditions in the City by attracting more automobiles to the site than the existing orchard. However, these impacts were analyzed and addressed in the City's 2005 General Plan. Pedestrian and bicycle access to the site will be encouraged to the highest extend feasible.

Conclusion: During construction, the contractor will implement a traffic control plan. There is no impact.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.16 Utilities/Service Systems				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Response:

Impact #3.16.1 – Water and Wastewater (a, b, e) The Project will not require the use of, or

construction of new wastewater facilities.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.16.2 – Stormwater (c): The Project will not alter existing drainage conditions. Storm drain collection piping will serve the Project and a large storm drainage retention basin is part of the project design.

Conclusion: There is no impact.

Mitigation Measures: None are required.

Impact #3.16.3 – Water Supply (d): See Impact #3.8.2

Conclusion: See Impact #3.8.2

Mitigation Measures: None are required.

Impact #3.16.4 – Solid Waste (f, g): The Project will use solid waste facilities as determined by the City's contract solid waste hauler. Sufficient capacity exists in a number of local landfills. The Project's impacts on solid waste were considered in the 2005 General Plan.

Conclusion: There is no impact.

Mitigation Measures: None are required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
3.17 Mandatory Findings of Significance				
Would the project:				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals?	☐	☐	☐	☒
c) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Response:

a) The project will not have any impacts on wildlife species, rare or endangered plant species or eliminate major periods of California history or prehistory.

b) The Project is in response to a need for additional park facilities within the City of Hughson in accordance with General Plan polices. There will be no impact to long term environmental goals.

c) CEQA Guidelines Section 15064(i) states that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects.

   Due to the nature of the project and consistency with environmental policies, incremental contributions to impacts are considered less than cumulatively considerable.

d) The analyses of environmental issues contained in this Initial Study indicate that the project is not expected to have substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in project design to reduce all potentially significant impacts to less than significant.

3.18 Determination

I find that although the proposed project could have potentially adverse impacts, the design features and the mitigation measures adopted by the City of Hughson will reduce such impacts to a less than significant level.

A MITIGATED NEGATIVE DECLARATION will be prepared.

_____ _____

JIM DUVAL
Interim Director of Community Development Date

PLANNING COMMISSION AGENDA
ITEM NO. 3.4
SECTION 3: NEW BUSINESS

Meeting Date:	**March 18, 2014**
Subject:	**The Low Impact Development (LID) Manual**
Presented By:	**Jim Duval, Community Development Director**
Enclosures:	**1. The Low Impact Development (LID) Manual**
Desired Action:	**Recommend Adoption of The Low Impact Development (LID) Manual to the City Council.**

Staff Recommendation:

Approve Recommending Adoption of The Low Impact Development (LID) Manual to the City Council.

Background and Overview:

The City of Hughson, in partnership with Stanislaus County and the other eight cities in the County, was awarded a Sustainable Communities Planning grant to develop a model planning tool for inclusion in the Stanislaus County Planners Toolbox project. Each jurisdiction was responsible for development of a model planning tool of their choosing. As you recall, the City of Hughson received funding for the development of a Climate Action Plan. This was approved at your November meeting and forwarded to the City Council for adoption.

The City of Riverbank chose to prepare a Low Impact Development (LID) Strategies document for implementation in its jurisdiction. Planning staff has taken this document and tailored it for implementation in the City of Hughson. The Draft L.I.D. is attached for your review.

Discussion:

The City of Hughson General Plan 2005-2025 identifies ten (10) different land use categories. L.I.D. opportunities and applications will vary across these different land uses. However, for the purpose of this manual, land uses have been distilled into the following three simple categories:

- greenfields;
- infill areas; and,
- special conditions

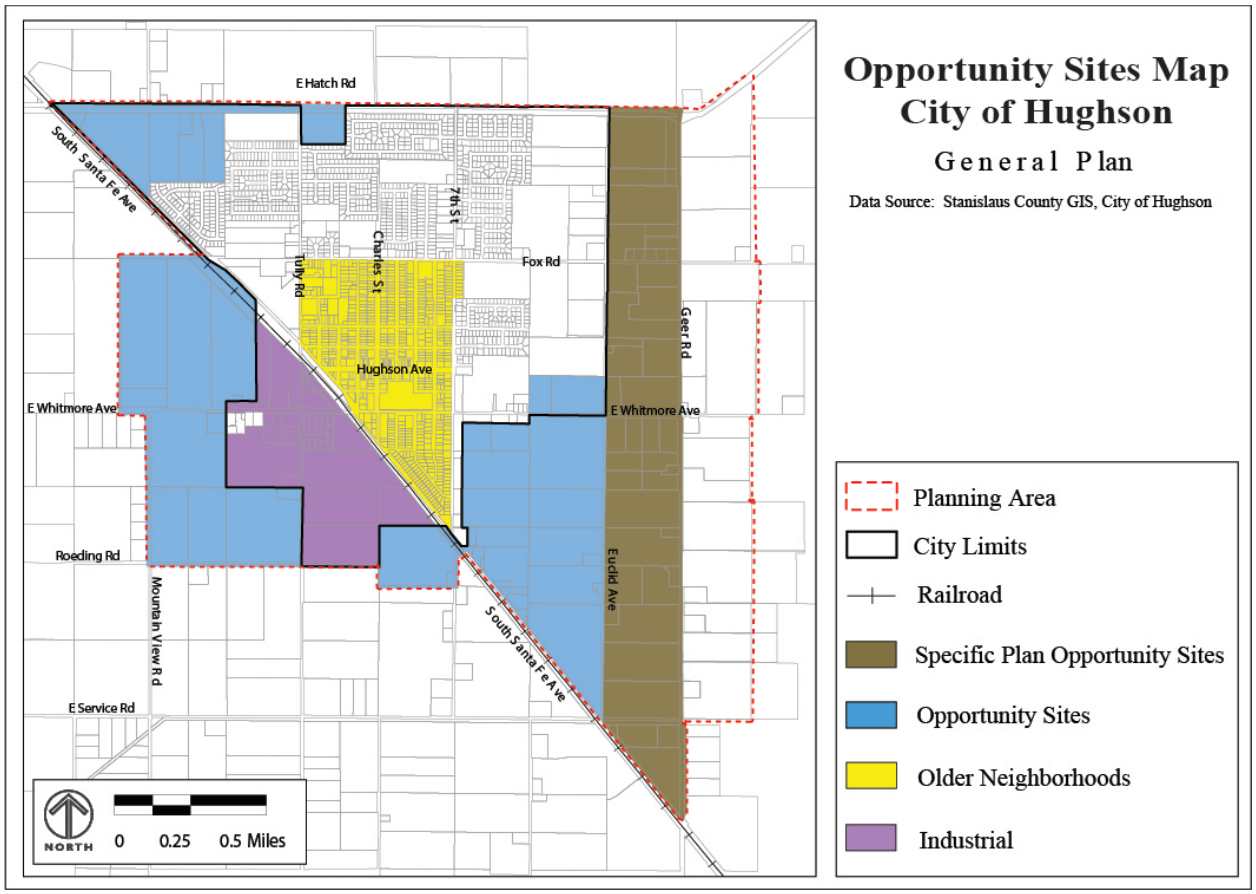
The purpose of developing these categories is to assist in identifying and understanding the opportunities and constraints associated with each.

Greenfield lands are those areas that are undeveloped or are in a substantially natural state. The majority of the land within the Hughson Planning Area outside of city limits would be classified greenfields (e.g. rural residential parcels, agricultural land, and undisturbed natural areas).

Infill areas that have the most opportunity for redevelopment within the City include vacant lots and older neighborhoods in need of revitalization or necessary improvements. Though implementation of LID practices can be more challenging in redevelopment areas, they can provide water quality benefits by removing pollutants and sediment.

Special conditions might be an area between the public right-of-way and adjacent improved lands that historically experience flooding and where collection infrastructure is non-existent or is of a size that cannot efficiently receive the stormwater.

The figure illustrated below identifies areas that may be more or less likely to experience development or redevelopment over the next thirty (30) years. By analyzing the City's growth patterns, in conjunction with other planning data (such as the Downtown Specific Plan), these areas fit within the categories of greenfields, infill areas, and special conditions.



Land planning and drainage design should be integrated to emphasize water conservation and the use of onsite naturalized features to protect water quality and downstream receiving water bodies.

LID stormwater treatment standards appropriate for the local conditions will be used to guide new development and redevelopment projects. This guidance ensures more thoughtful and responsible stormwater management, stormwater pollution prevention, reduction of community infrastructure costs, and environmental enhancement in drainage designs.

In addition to stormwater management treatment, the implementation of LID practices can augment groundwater recharge. Neighborhoods will also benefit from landscape aesthetics, natural resource conservation, and habitat creation – all of which can provide stormwater treatment functions.

The specific LID techniques and design guidance provided in this manual were developed by overlaying these potential development areas with the specific physical (e.g. soil, hardpan) and drainage conditions. The intent is to provide stormwater management techniques that are specific to the conditions that designers and developers will encounter in the Hughson area.

There have been limited LID standards or manuals developed specific to the unique conditions in the central valley. These conditions include seasonal rainfall patterns, arid climate, hardpan soils, groundwater tables, and native vegetation. This manual provides targeted design guidance for developers, designers, and city staff to implement LID solutions.

Conclusion:

The LID is an approach that seeks to mimic the natural processes occurring on a site, while addressing the small, frequent storms that, when combined, produce the majority of a site's runoff.

LID practices can greatly improve stormwater quality by encouraging processes (such as sedimentation, filtration, or evaporation/transpiration) which reduce the pollutants present in urban and suburban runoff.

Another primary purpose of the LID is to preserve a site's pre-development hydrologic pattern by minimizing impervious surfaces, capturing the low-intensity events that contribute to erosion, and providing a measure of control over the larger events, which can cause both erosion and flooding.

LID stormwater management facilities are most effective when dispersed throughout a site to address runoff at its source. Draining sidewalks to vegetated filter strips, constructing parking lots with permeable pavement, and outletting roof downspouts to a retention area can all provide treatment and attenuation of stormwater flows.

Though there are numerous reasons to implement the LID strategies on a site, there are also a variety of limiting constraints. They include:

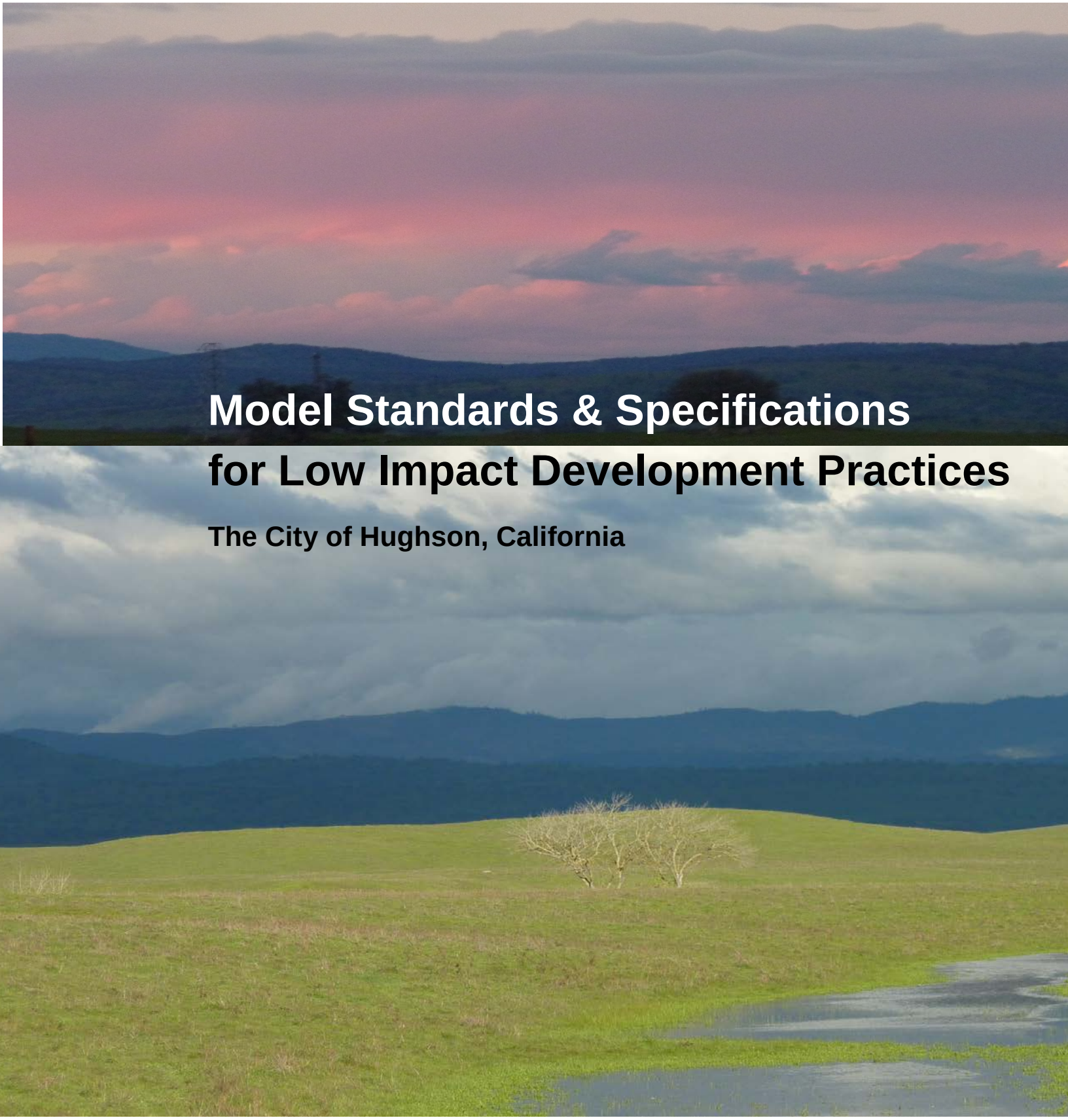
- impermeable soils
- shallow hardpan
- shallow groundwater
- tributary area
- available space
- retrofit capability

Both opportunities and constraints will be taken into consideration during the design and pre-development process.

Finally, it has been determined that the City of Hughson Low Impact Development strategies will not have a significant effect on the environment and is therefore exempt from CEQA by statute, pursuant to Section 15061(b)(3) of the CEQA Guidelines. A Notice of Exemption has been prepared and is attached.

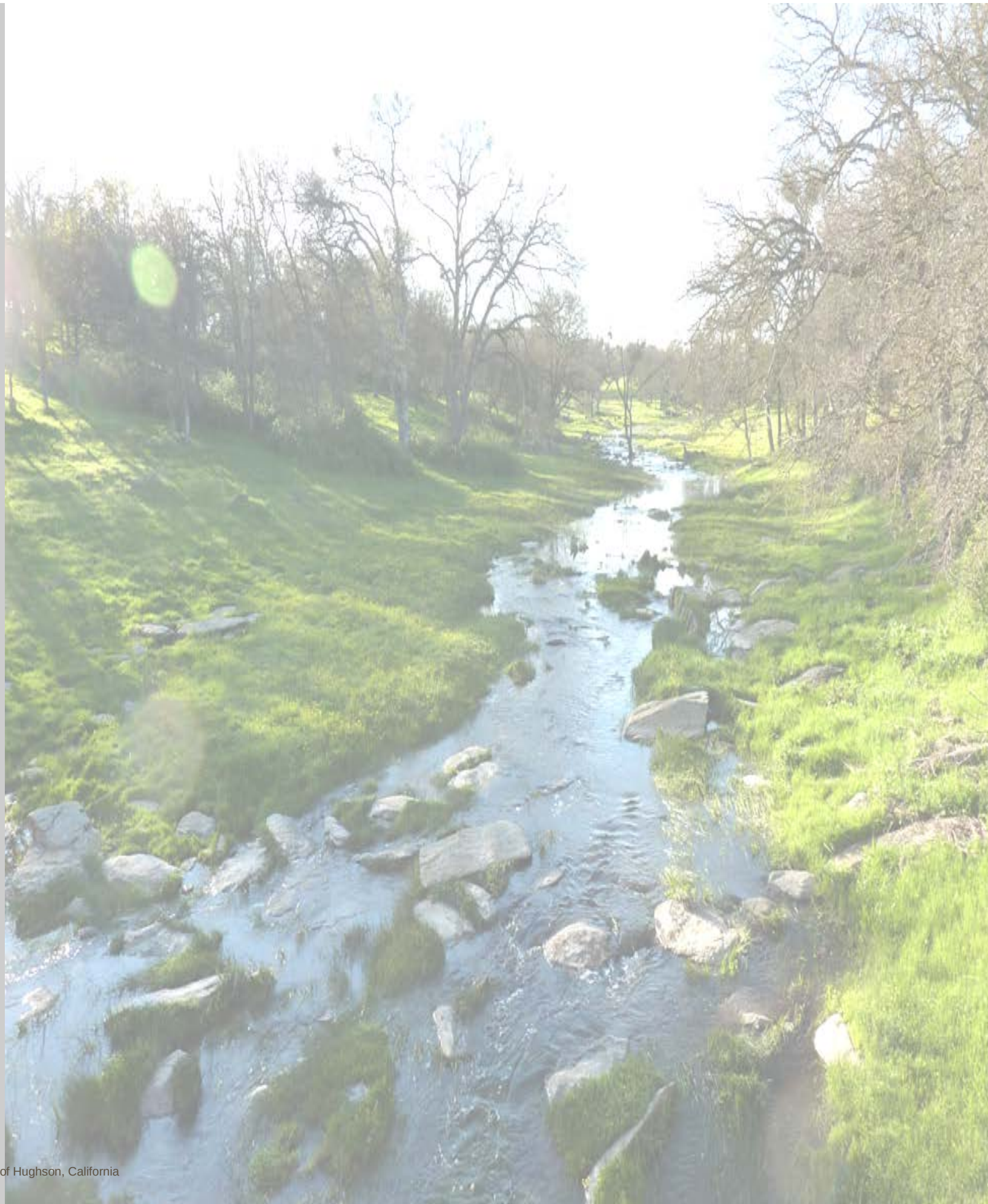
PROCESS:

A public comment period began on January 22, 2014 and ended on February 20, 2014. No comments were received. The intent of this meeting is to offer one final opportunity for the public to offer comments on the plan. Following the public comment period, staff requests the Planning Commission to recommend adoption to the City Council.



Model Standards & Specifications for Low Impact Development Practices

The City of Hughson, California



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(Two cover photos courtesy of Thom Clark)

1.0

Introduction

In order to comply with existing and future stormwater discharge regulations, while promoting an efficient resource and a sustainable approach to reducing stormwater runoff pollution, the City of Hughson (City) has recognized the need to develop Low Impact Development (LID) standards and specifications. The City's General Plan provides the overarching policy framework for a more natural approach to drainage. This document provides specific guidance for LID solutions that are customized to the local context.

Land planning and drainage design should be integrated to **emphasize water conservation** and the use of on-site naturalized features to **protect water quality and downstream receiving water bodies**. To achieve this, natural and engineered hydrologic controls can mimic predevelopment hydrologic conditions to **improve water quality**, **reduce flooding,** and **improve overall watershed health**.

LID stormwater treatment standards **appropriate for the local conditions** will be used to **guide new development and redevelopment** projects. This guidance ensures more thoughtful and responsible stormwater management, stormwater pollution prevention, **reduction of community infrastructure costs,** and environmental enhancement in drainage designs.

As Hughson and other San Joaquin Valley cities have developed, stormwater runoff from impervious hardscape has had a substantial negative impact on the Tuolumne River, the San Joaquin Delta, and regional wildlife. By implementing standards and specifications for municipal LID planning and development, tributaries to the San Joaquin River, including the Tuolumne River, can realize water quality and ecological benefits – both on a watershed and local scale. LID standard practices of intercepting stormwater runoff at or near the source and using natural vegetation to settle and filter stormwater runoff pollutants can have a widespread beneficial impact to the rivers of the Central Valley and the ecological health of the Sacramento-San Joaquin Delta.

In addition to stormwater management and treatment, the implementation of LID practices can augment groundwater recharge, assist in the removal of air pollutants, mitigate urban heat island effect, and sequester carbon. Local communities will also benefit from pleasing landscape aesthetics, natural resource conservation, and habitat creation - all of which can provide stormwater treatment functions.

Although the techniques for LID implementation are well documented in many regions, there are limited LID standards or manuals developed specific to the unique conditions in the San Joaquin Valley. These conditions include seasonal rainfall patterns, arid climate, hardpan soils, high groundwater tables, and native vegetation. This manual provides design guidance for developers, designers and City staff to implement LID solutions at any scale for any land use.

How to Use This Document

The following flow chart summarizes the steps to be taken when implementing LID practices for a project.

Step 1: Site Context — *Section 1*

- Map your site and its preliminary design considerations
- Review local regulatory conditions and applicability to your proposed development
- Understand LID goals, benefits, and challenges

Step 2: Site Assessment — *Section 2*

- Analyze your site to identify constraints and opportunities
  - Land Use/Existing Infrastructure
  - Hydrology
  - Groundwater
  - Topography
  - Soils and Geology
  - Space Constraints
  - Identify appropriate Best Management Practices (BMPs) using BMP Selection Matrix

Step 3: Detailed LID Design — *Section 3*

- Understand site opportunities, goals, and constraints
- Review BMP Fact Sheets
  - Underground Infiltration
  - Bioretention Area
  - Vegetated Swale
  - Filter Strip
  - Detention Pond
  - Constructed Wetland
  - Permeable Pavement
  - Rainwater Harvesting
  - Green Roof
- Implement and design BMPs

Hughson Context

The City of Hughson General Plan 2005-2025 identifies 10 different land uses categories, as shown on the following page in Figure 2. LID opportunities and applications will vary across these different land uses. However for the purpose of this manual, land uses have been distilled into the following three simple categories:

- greenfields;
- infill areas; and
- special conditions

The purpose of developing these categories is to assist in identifying the type of BMPs and understanding the opportunities and constraints associated with each.

Figure 3 shows the historical growth patterns in the City. This map aids in identifying areas that may be more or less likely to experience development or redevelopment over the next 30 years. For example, residential areas built within the past 20 years are considered a stable land use and most of these are unlikely to see major change in the near future. By analyzing the City's growth patterns, in conjunction with other planning data (such as the Downtown Specific Plan), areas have been identified that fit within the categories of greenfield development, redevelopment, or special conditions sites. These opportunity sites are shown in Figure 1 below and discussed in more detail on the next pages.

The specific LID techniques and design guidance provided in this manual were developed by overlaying these potential development areas with the specific physical (e.g. soil, hardpan) and drainage conditions. The intent is to provide stormwater management techniques that are specific to the expected conditions that designers will encounter when developing in the Hughson area.

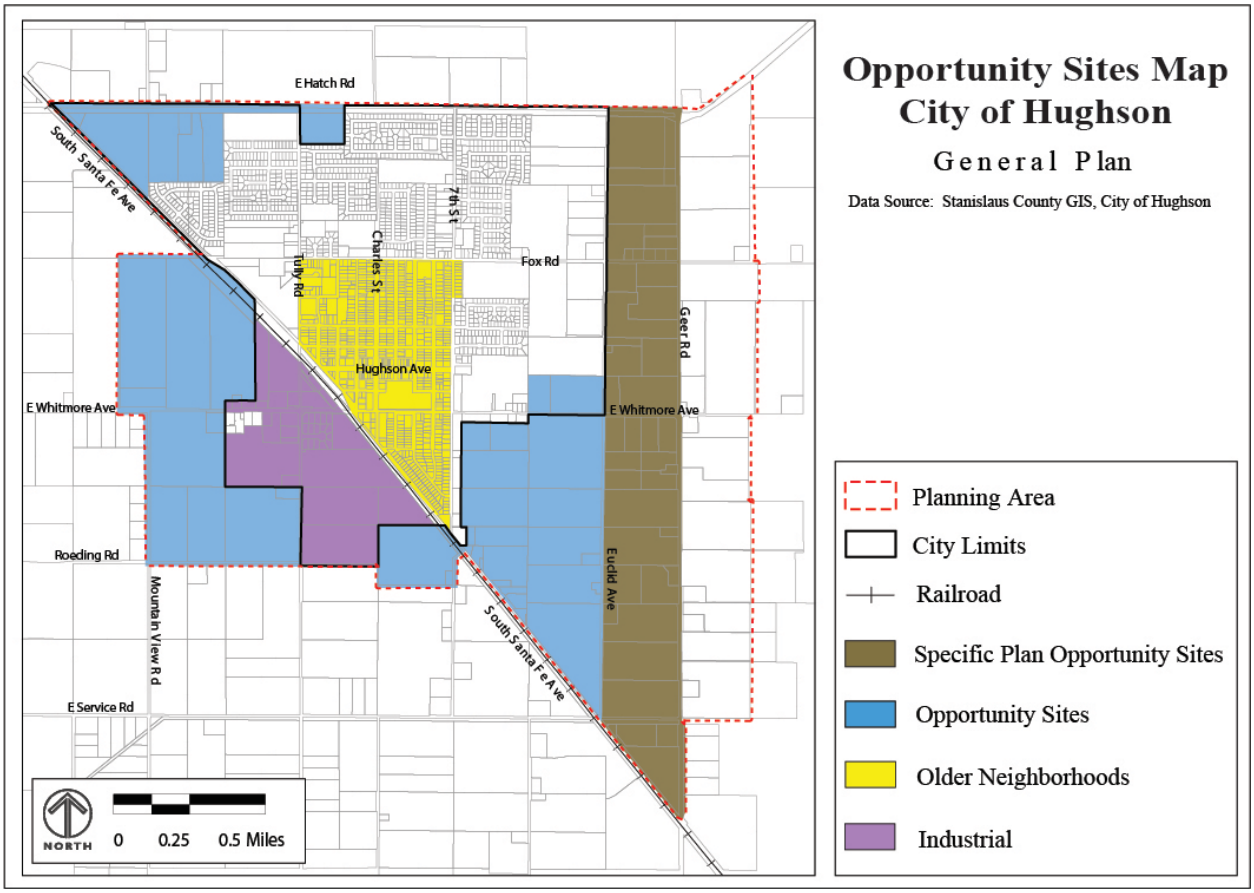


Figure 1: Opportunity Sites Map (Source: General Plan)

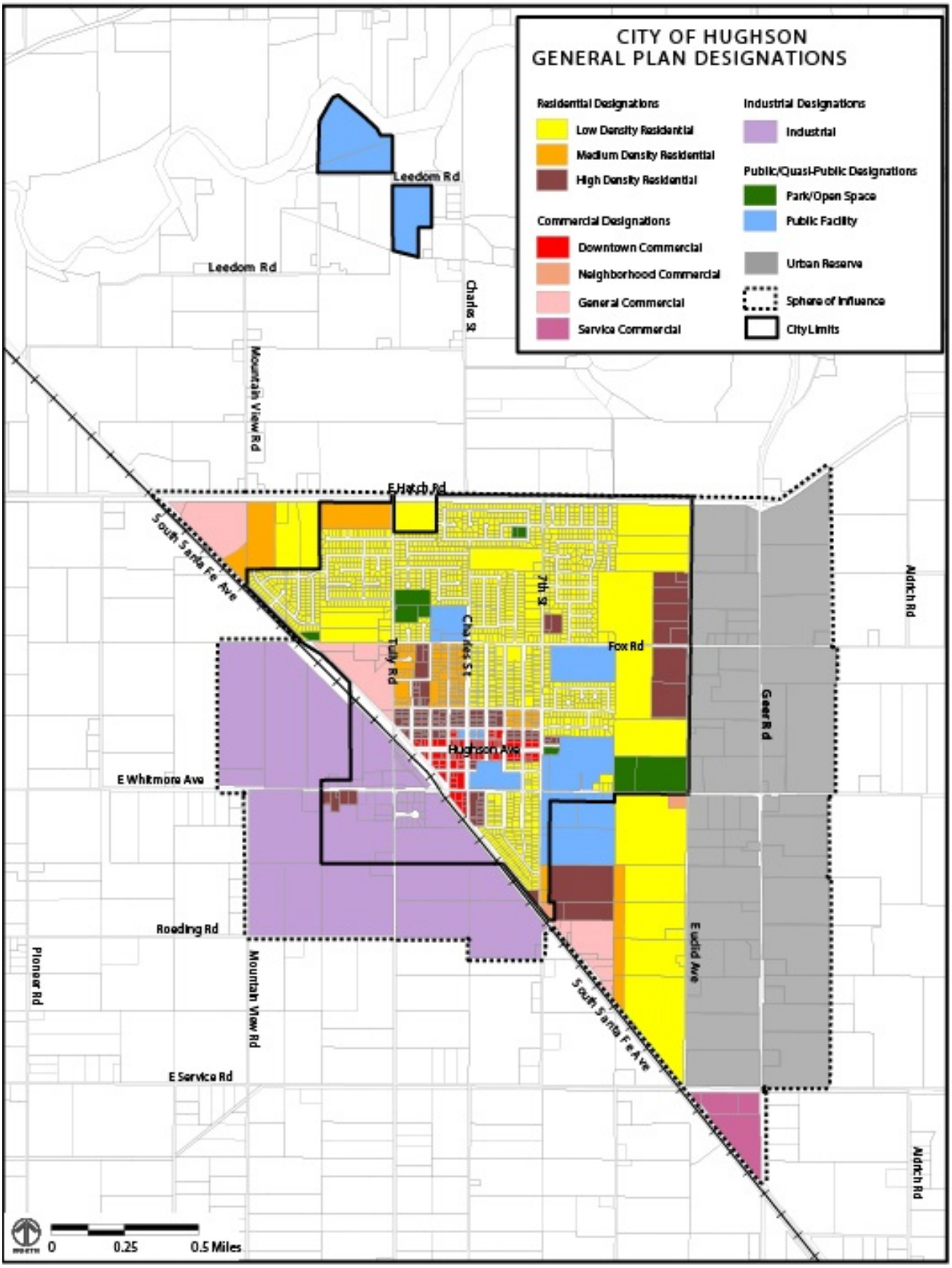


Figure 2: Existing Land Use Map (Source: General Plan)

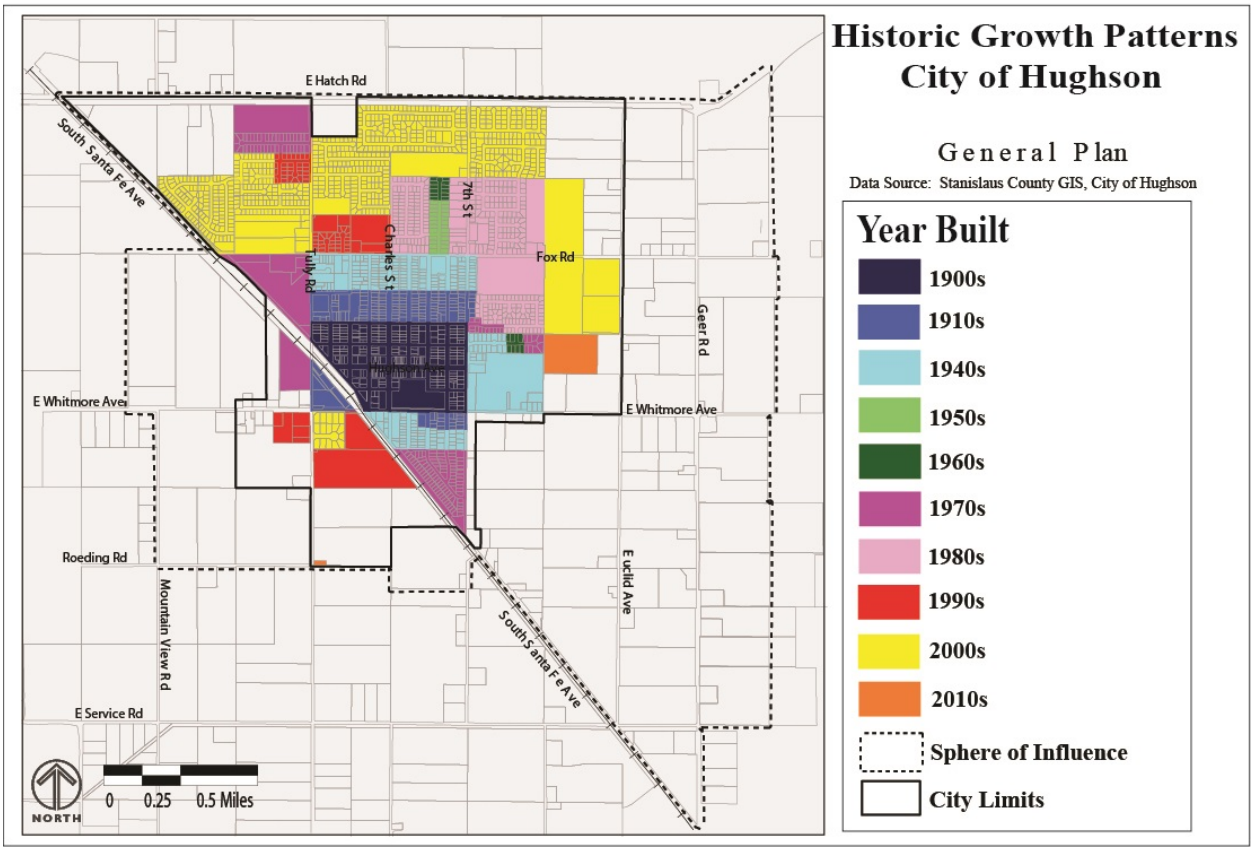


Figure 3: Historic Growth Patterns Map (Source: City of Hughson)

Greenfields

Greenfield lands are those areas that are undeveloped or are in a substantially natural state. The majority of the land within the Hughson Planning Area outside of City limits would be classified as greenfield (such as rural residential parcels, agricultural land, and undisturbed natural areas).

When developing within a greenfield area, it is important to maintain existing hydrological conditions by conserving natural areas and existing drainage features, where possible. Impervious hardscape surfaces (conventional roofs and paving) should be minimized and designed to discharge to pervious areas to help filter and infiltrate the stormwater runoff. To further aid infiltration, native soil compaction in landscaped areas should be minimized.

New infrastructure costs related to development can be reduced by incorporating LID techniques. Vegetated swales and permeable pavements can minimize or replace gutters and drain pipes. Retention and infiltration systems can reduce or eliminate the need for connections to storm drain mains. A rainwater harvesting system might avoid the need to upsize or install a new water supply line.

Infill Areas

Areas that have the most opportunity for redevelopment within the City include vacant lots and older neighborhoods in need of revitalization or necessary improvements. Though implementation of LID practices can be more challenging in redevelopment areas, they are of crucial importance in these locations. Within these more urbanized areas LID can provide substantial water quality benefits by removing pollutants and sediment currently reaching local streams and rivers.

Site design practices that provide hydrologic benefits and improve groundwater conditions in previously developed areas should be considered. These can include distributed BMPs that slow down or infiltrate water closer to its source, conversion of paved surfaces to permeable surfaces, rainwater harvesting retrofits, and rerouting runoff from impervious surfaces across naturalized and vegetated areas.

Greenfield areas with no prior development can use a wide array of treatment elements, but care should be taken to preserve the natural character of the site in order to minimize pollutants and changes to drainage patterns. (Photo courtesy of Thom Clark)

Retrofit or redevelopment sites present important opportunities to reduce the amount of impervious surface and treat runoff before it enters the storm drain system. (Photo: LA Times)

Regulatory Context

The State Water Resources Control Board (SWRCB) established the requirements for storm water discharges from small municipal separate storm sewer systems (MS4s). The City of Hughson incorporates these requirements and is designated as an MS4 operator.

Requirements include the prohibition of the discharge of any materials other than stormwater, implementation of BMPs to the maximum extent practicable (MEP) to protect water quality, the development and implementation of a Storm Water Management Plan (SWMP), reducing the discharge of pollutants to the MEP, and annually reporting on the progress of SWMP implementation to the Regional Water Quality Control Board (RWQCB).

The MS4 Permit includes specific post-construction design standards and BMP implementation procedures. These design standards are summarized on the following page. The BMPs implemented should focus on LID, source control, and treatment control.

Typical Development Process

Confirm Zoning. Areas are zoned to facilitate the development of compatible neighboring land uses. Zoning rules also set building and other standards or determine how much of a certain land use may occur.

Planning Review Process. Most projects are required to go through the Planning Review Process. Applicants have the option of submitting a Preliminary Proposal to the Planning Department for preliminary feedback, and would follow this with a full Planning Application. This application is then reviewed for approval.

Building Plan Review. Additional processes, such as obtaining a building or encroachment permit, may be required after planning approval and prior to the commencement of construction.

Inspections. The aim of the Building Division is to create partnerships with the development community, business community and citizens to accomplish mutually beneficial goals such as the safe, successful and timely completion of projects.

More information on these processes as well as associated forms, applications, guides, and fee schedules can be found on the City's website:

http://hughson.org/government/city-departments/community-development/

Relevant Documents
Fact Sheet for State Water Resources Control Board Water Quality Order No. 2003 – 0005 – DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000004 This is the permit which contains the waste discharge requirements for stormwater discharges from MS4s. This is the primary guiding document for stormwater quality regulations in Hughson and is summarized on this and the following page. *www.swrcb.ca.gov/water_issues/programs/stormwater/docs/final_ms4_permit.pdf*
City of Hughson Storm Drain System Master Plan (June 2007) This plan serves as a basis for storm drain infrastructure and as an aide to assessing the impact of new and future development. It contains a summary of the existing storm drain system and recommended improvements. *City of Hughson Public Works Department*
Phase II Small Municipal Storm Sewer System (MS4) Permit Program (2013) This document establishes the four cities as co-permittees to the small MS4 Permit, characterizes the conditions of receiving streams, and describes proposed stormwater quality management activities and objectives. *www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml*
City of Hughson Standard Specifications, Section 7 - Storm Drains (2007) This document section contains the required City standard design parameters, specifications, and details for storm drain infrastructure built within the public right-of-way within the City. *City of Hughson Public Works Department*
Stanislaus County Standards and Specifications, Chapter 4 - Storm Drainage (2007) This document chapter contains the required County standard design parameters, specifications, and details for storm drain infrastructure built within, or to be maintained by, the County. Though not directly applicable to development in the City, this is useful for background and reference. *www.stancounty.com/publicworks/pdf/2007_Imp_stand.pdf*

Design Standards

The design standards apply to projects that fall into one of the following categories:

Applicable Development Categories
Commercial or Industrial Developments (of 100,000 square feet or more)
Automotive Repair Shops
Retail Gasoline Outlets
Restaurants
Home Subdivisions (with 10 housing units or more)
Parking Lots (5,000 sf or more or with 25 or more parking spaces and potentially exposed to stormwater runoff)

The following must be implemented for all categories:

- **Mitigate peak runoff flow rate.** Post-development peak stormwater discharge rates shall be equal to or less than the peak pre-development rates for developments where the increased runoff rate will result in increased potential for downstream erosion.
- **Conserve and create natural areas.** Developments shall incorporate and implement the following items:
    - concentrate development and minimize disturbance of remaining areas;
    - minimize the clearing of native vegetation;
    - maximize trees and vegetation, cluster tree areas, and promote native and/or drought tolerant plants in landscaped areas and parking lot islands; and
    - preserve any riparian areas and wetlands.
- **Minimize stormwater pollutants of concern.** Development must be designed to minimize the discharge of pollutants of concern (POC) to the MEP. The BMPs used must be chosen for the optimal removal of the POC. POC are pollutants that exhibit one or more of the following characteristics:
    - current loadings or historic deposits of the pollutant are impacting the beneficial uses of a receiving water;
    - elevated levels of the pollutant are found in sediments of a receiving water and/or have the potential to bioaccumulate in organisms; or
    - the detectable inputs of the pollutant are at concentrations or loads considered potentially toxic to humans and/or flora and fauna.
- **Protect slopes and channels.** Development must be designed to minimize erosion by:
    - conveying runoff safely from slope tops;
    - stabilizing disturbed slopes;
    - utilizing natural drainages to the MEP;
    - stabilizing permanent channel crossings;
    - vegetating slopes with native or drought tolerant vegetation, as appropriate; and
- **Provide storm drain stencilling and signage.** All inlets and catch basins within a project area should be labeled with standard warnings.
- **Properly design outdoor material and trash storage areas.** Trash and materials stored outdoors that have the potential to contaminate stormwater must be placed in a covered and enclosed structure that averts drainage from surrounding areas and prevents runoff and spillage from leaving.
- **Provide proof of ongoing BMP maintenance.** Permanent BMPs must have a system in place for maintenance, with an inspection at least annually.
- **Incorporate treatment control BMPs for water quality.** Pollutant levels in site stormwater runoff must be mitigated through the use of permanent post-construction treatment control BMPs designed to either a volumetric or flow-based standard. The LID techniques and stormwater BMP design standards contained in this manual are intended address this water quality requirement.

There are additional design provisions intended to further reduce the potential for pollutant discharge that apply to specific development categories. These are outlined in the table below.

Development Category	Additional Design Provisions
Commercial/Industrial	Loading Dock Areas, Repair/Maintenance Bays, Vehicle/Equipment Wash Areas
Auto Repair Shops	Loading Dock Areas, Repair/Maintenance Bays, Vehicle/Equipment Wash Areas, Fueling Areas
Retail Gasoline Outlets	Fueling Areas
Restaurants	Equipment/Accessory Wash Areas
Home Subdivisions	none
Parking Lots	Reduce Impervious Area, Infiltrate Runoff, Limit Oil Contamination

Overview of Low Impact Development (LID)

LID is an approach that seeks to mimic the natural processes occurring on a site, while addressing the small, frequent storms that, when combined, produce the majority of a site's runoff.

LID practices can greatly improve stormwater quality by encouraging processes (such as sedimentation, filtration, or evapotranspiration) which reduce the pollutants present in urban and suburban runoff.

Another primary purpose of LID is to preserve a site's pre-development hydrologic pattern by minimizing impervious surfaces, capturing the low-intensity events that contribute to erosion, and providing a measure of control over the larger events, which can cause both erosion and flooding.

LID stormwater management facilities, referred to as Best Management Practices (BMPs), are most effective when dispersed throughout a site to address runoff at its source. Draining sidewalks to vegetated filter strips, constructing parking lots with permeable pavement, and outletting roof leaders to the surface of a bioretention area can all provide treatment and attenuation of stormwater flows.

Though there are numerous reasons to implement LID on a site, there are also a variety of constraints that will limit certain practices and inform an ideal design. The site constraints summarized below are discussed in more detail in Section 2, with explanation of how each constraint will influence LID design.

Goals and Benefits

- **Improve water quality.** A primary goal is the protection of downstream receiving water bodies from increased pollutant loads. All BMPs have potential to provide treatment. However, site constraints can hamper this (underground infiltration and permeable pavement, for example, must be able to infiltrate in order to provide acceptable pollutant removal).
- **Attenuate flows.** LID can be very effective at mitigating flooding and erosion issues. The volume of stormwater can be reduced by capturing runoff in retention systems (which drain by infiltration or reuse) and the flow rate and velocity of runoff can be lowered, to varying degrees, by all BMPs.
- **Recharge groundwater.** By increasing pervious area and managing the runoff from impervious area, LID is able to help restore water to the aquifer through infiltration.
- **Reduce potable water consumption.** A central component of LID is an emphasis on water conservation, primarily through the harvesting of rainwater. Utilizing captured water allows a site to address stormwater challenges while also lowering municipal water use.
- **Habitat restoration.** In addition to their hydrological goals, with proper design many BMPs are able to serve as desirable habitat.
- **Improve aesthetics.** Landscape-based stormwater management facilities and preservation of natural areas offer development sites unique opportunities to create an appealing character.
- **Reduction of community infrastructure costs.** Widespread use of LID serves a community by helping to minimize costs, such as storm drain upsizing, erosion maintenance, and street repairs.

Potential Constraints

- Impermeable soils. Sites with high clay content in the native soils typically have low infiltration rates, limiting the use of infiltration practices.
- Shallow hardpan. This will influence the ability to provide infiltration.
- Shallow groundwater. Certain areas, especially closer to the river, have a shallow groundwater table which precludes the use of infiltration.
- Tributary area. BMPs differ in the amount of drainage needed to function properly. Some are only effective with smaller catchments, while others can handle, or even require, larger upstream areas.
- Available space. In areas with existing development, especially dense commercial areas, it can be difficult to fit BMPs into locations receiving drainage.
- Retrofit capability. It is often preferred to reuse a site's existing infrastructure, which may affect BMP siting or design. Infiltration practices must have a setback from building foundations and wells.

Regulatory Considerations

- Facilities should achieve the water quality standard targeting pollutants, especially pollutants of concern.
- Design facilities and lay out sites to promote and conserve natural and vegetated areas.
- Help mitigate potential runoff rate increases and erosive flows through dispersed retention, infiltration, and energy dissipation.

The deployment of BMPs on a site can take many forms, which allows the facilities to integrate with landscaping while still providing optimal stormwater functionality. These examples show bioretention areas within an outdoor courtyard (above left), a vegetated swale and filter strip serving as a buffer for homes (above right), and a rocky swale area meant to be appealing while dry but able to handle infrequent large flows.

2.0

Site Assessment

This section provides a framework for selecting appropriate LID BMPs. Proper site planning and BMP selection involves a comprehensive assessment to evaluate existing conditions, such as hydrology, land use, runoff water quality, topography, and soils.

This site assessment will help to identify and understand constraints that exist at the site that will influence the performance and applicability of different BMP options. The maps and selection matrix included in this section can be used to quickly identify which BMPs are most appropriate for a site. This initial assessment should always be followed up and validated by a detailed site investigation.

Floodplain

Areas within the floodplain (see Figure 4) have a high groundwater table and an increased likelihood for erosion. Although the only area within the floodplain is a portion of the wastewater treatment plant, it is essential that development in this area does not change the ground elevation in a manner that might result in an increased water surface elevation during a flood event.

Development should limit grading and the creation of surface features (such as berms or unreinforced channels) that could be washed-out or substantially eroded in a flood. Surface discharge from BMP facilities should be in the form of dispersed sheet-flow, with point discharges minimized or eliminated.

As noted above, the floodplain only affects the abandoned Lower Ponds at the City's Wastewater Treatment Plant.

Groundwater

Groundwater plays a significant role in the hydrologic process, and it is important to promote groundwater recharge, especially in areas with limited rainfall. LID features can facilitate groundwater recharge by promoting rainwater infiltration. Groundwater recharge maintains local water tables, provides base flow to streams and rivers during dry periods, and maintains the integrity of riparian habitats.

It is important to determine the depth to the groundwater table's surface (see Figure 5), as a high groundwater table that is close the surface must be protected from contamination. Infiltration into the subgrade soil of a BMP is not allowed if there is less than 10 feet of separation between the bottom of the BMP and the top of the seasonally high groundwater table. BMPs constructed in areas of high groundwater tables should be installed with an impermeable liner (such as a waterproof membrane or compacted native clay) if their design would promote infiltration.

As noted on Figure 5, depth to groundwater throughout the city limits is over 200 centimeters or 6.5 feet.

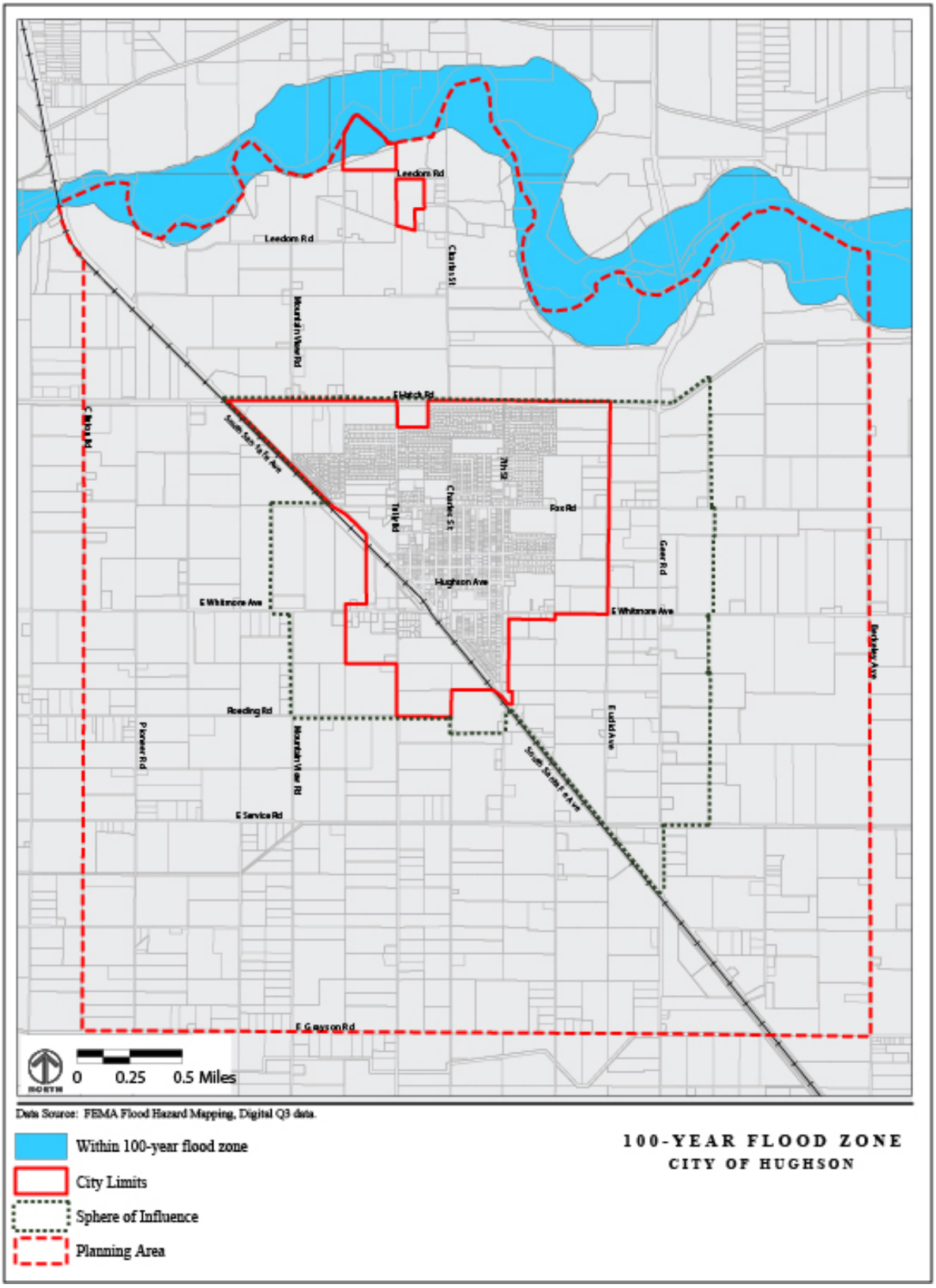
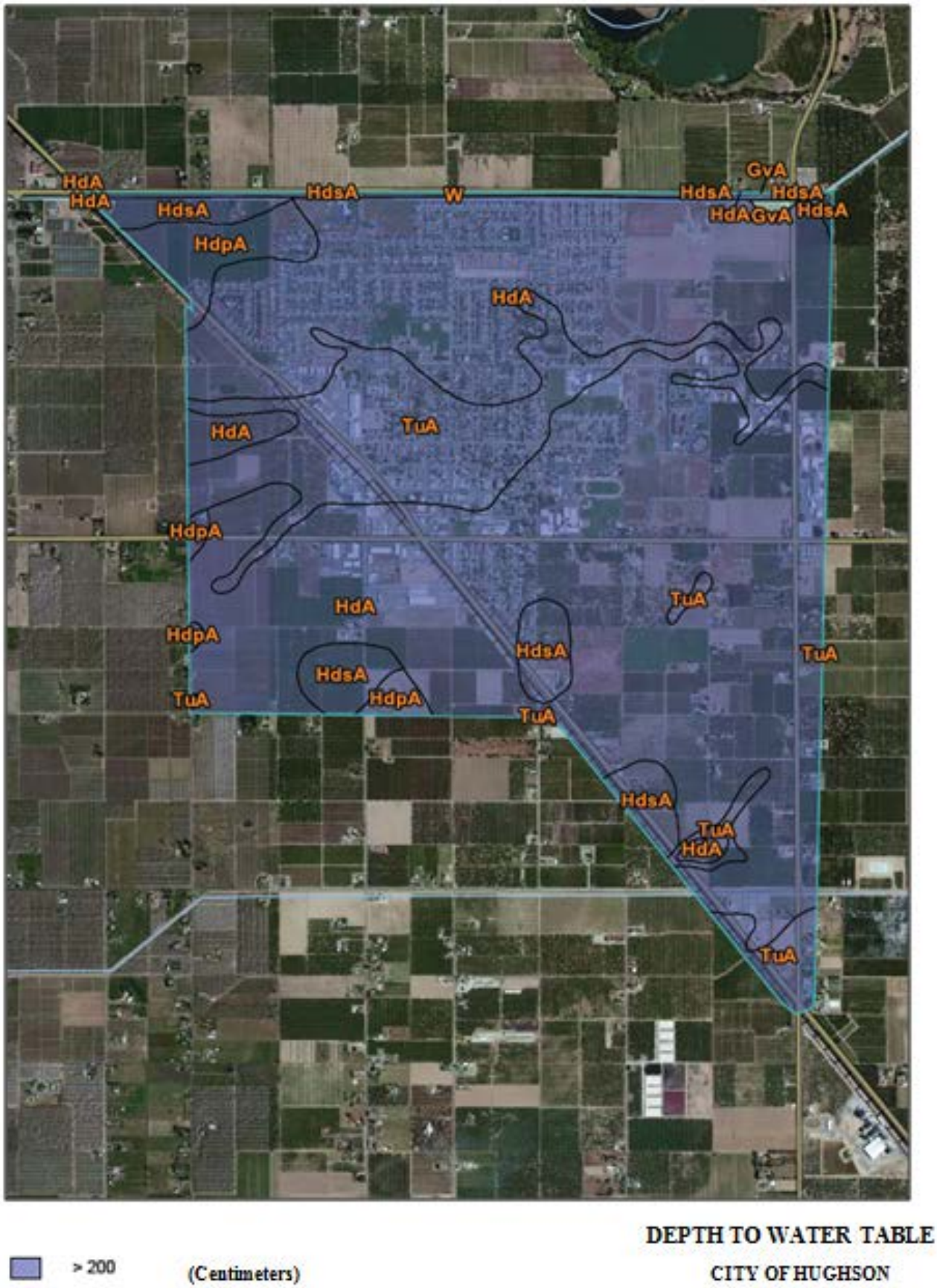


Figure 4: Flood Zones Map (Source: FEMA 2011)



DEPTH TO WATER TABLE

CITY OF HUGHSON

> 200 (Centimeters)

Figure 5: Expected Depth to Groundwater Map (Source: NRCS 2011)

Pollutants of Concern

Urban runoff can transport pollutants, including sediment, oils, metals, fertilizers, pesticides, bacteria, and trash into local surface water bodies. In the region, the Tuolumne River and downstream waters have been impacted by the application of pesticides and fertilizer as well as commercial extraction of natural resources. Urban runoff pollutants are becoming more of a concern as well. These include: organics, organophosphate, nitrogen, selenium, pyrethroids, pathogens, fecal coliform, and PCBs (industrial runoff). General guidance on the effectiveness of BMPs to remove common urban pollutants is included in Appendix B.

Topography

The topography of the site, including site slopes and locations of existing drainages, can impact the effectiveness of BMPs and must be considered. Steeper slopes (from 5%-15%) increase flow velocity (which may cause scour and reduced treatment effectiveness in both receiving and conveying stormwater) and make construction of larger volume facilities more difficult.

Infiltration practices are not recommended adjacent to or within very steep slopes, as water put into the ground could cause slope stability issues. There are very few extremely steep slopes in the Planning Area, mostly adjacent to the river floodplain.

Soils and Geology

One of the most important components of selecting appropriate LID features is the evaluation of existing soils and geologic conditions to determine soil group, texture, and permeability. Many LID strategies, especially retention BMPs, function optimally when they are able to infiltrate runoff. A minimum infiltration rate of 0.5 in/hr is typically required for infiltration facilities.

As a preliminary assessment, the Hydrologic Soil Group designation assigned by the National Resources Conservation Services (NRCS) to the site soils can be examined (see Figure 7). This rating describes the physical properties of each soil type.[1] Soils of Type A or B are typically better suited for infiltration practices (assuming all other site conditions are met). Soils of Type C or D have low permeability and are more susceptible to clogging and will, therefore, limit the applicability of infiltration.

[1] Soils classified as Group A (gravel, sand, sandy loam) are highly permeable and produce the least surface runoff; Group B soils (silt loam, loam) have good permeability; Group C soils (sandy clay loam) offer fair to poor drainage characteristics; and Group D soils (clay loam, sandy clay, silty clay, clay) have very little infiltration potential and produce the greatest surface runoff.

The City of Hughson has only Type A soils. However, all LID potential project locations should have a geotechnical report that yields permeability information for at least 10 feet below the bottom of the proposed improvements.

Hardpan Condition

Infiltration strategies will also be affected by the hardpan condition found in the Hughson area (see Figure 8). The hardpan, a thick layer of dense soil found beneath the topsoil layer, is most likely very impervious and will require special design considerations. In locations of hardpan, there exists the possibility to break up the hardpan and install rock wells or other methods to convey treated stormwater below the hardpan layer. (All hardpan within the city limits is below 200 centimetres or 6.5 feet – see Figure 6).

The general strategy for considering infiltration within a hardpan area is as follows:

- If the depth to hardpan, as measured from the bottom of the BMP, is greater than 10 feet, infiltration is acceptable.
- If the depth to hardpan is less than 10 feet and the hardpan thickness is 4 feet or less, infiltration is acceptable if soils below the hardpan are well draining and rock well is installed through hardpan.
- If the depth to hardpan is less than 10 feet and the hardpan thickness is greater than 4 feet, infiltration is not acceptable.
- Separation of 10 feet between the bottom of the infiltration BMP or rock well and the groundwater surface elevation is also necessary.

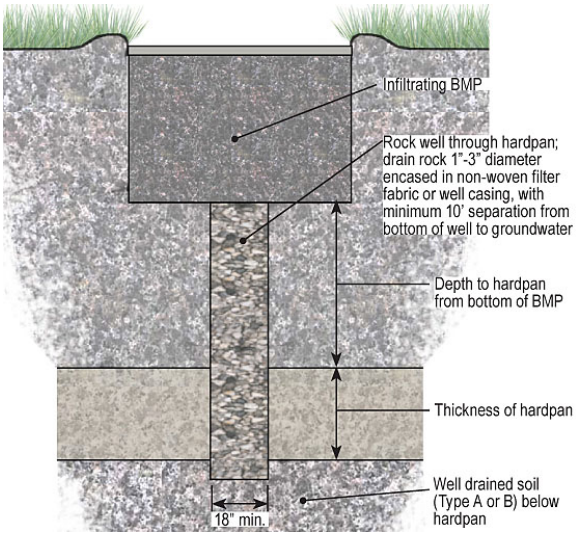


Figure 6: Typical rock well installed beneath an infiltrating BMP in an area with a hardpan layer close to the surface that is less than 4 feet thick.

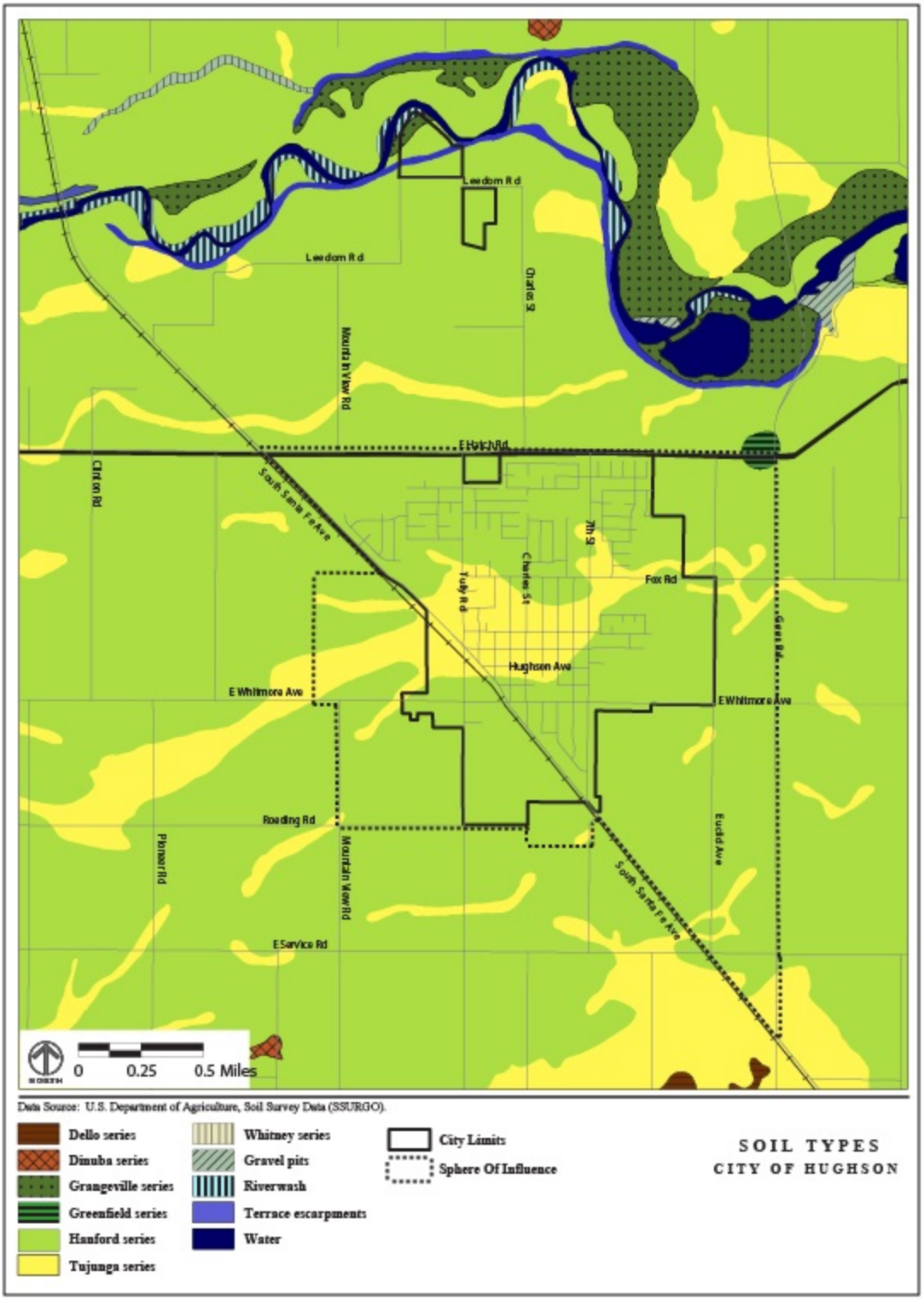
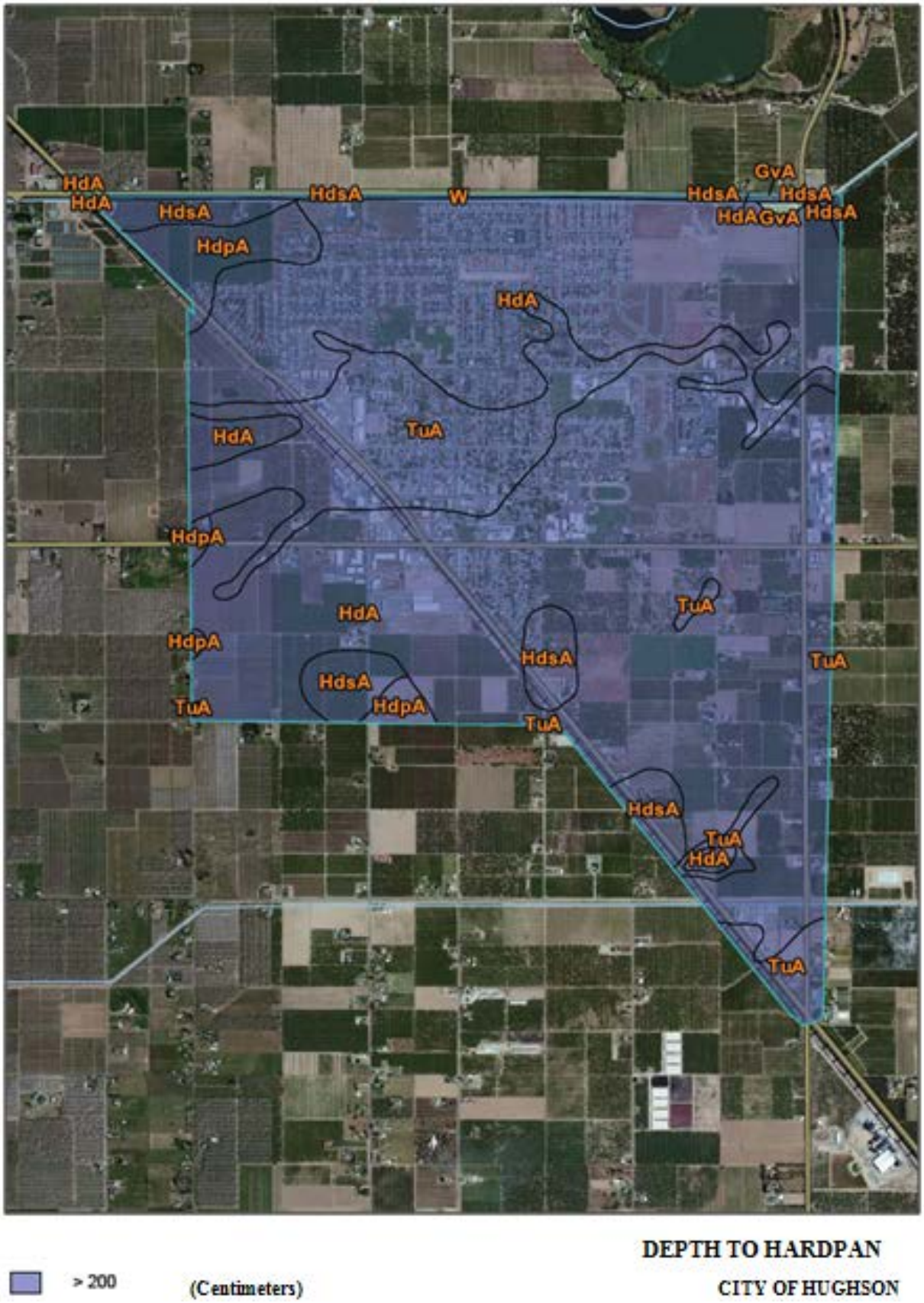


Figure 7: Soils Map (Source: NRCS 2011)



DEPTH TO HARDPAN

> 200 (Centimeters)

CITY OF HUGHSON

Figure 8: Depth to Hardpan Layer Map (Source: NRCS 2011)

Space Limitations

Another factor to consider when selecting BMP features is site configuration and available space. Some BMPs require more surface area than others. Therefore, it is important to evaluate the amount of space available and the best way to balance development goals and stormwater requirements.

If the characteristics of the site allow infiltration, consider piping runoff to underground infiltration systems, which can be located beneath many different surface types, or converting hardscape areas to permeable pavement. These systems can result in very little need to modify the layout or programming of a site, while still providing water management benefits. Similarly, a thin infiltration trench that is long and deep can provide the same function as a detention basin or wetland, only in a much smaller footprint.

Another strategy is to integrate numerous dispersed bioretention area cells into small open spaces on the site and strips of landscaping in the street. By locating many small areas throughout a project, runoff is captured and treated almost immediately. This allows the runoff to then be routed to existing infrastructure and eliminates the need for a larger facility to handle collected flows.

BMP Selection Matrix

The table below is intended to provide a quick and convenient method of identifying which BMPs are most appropriate for use on a given site. The left-hand column contains a list of questions that identify a possible site constraint. For any question answered “yes” the project should consider the BMPs marked with a green box, with any additional requirements for using a BMP listed within the green box.

For example, consider a site with a high groundwater table (less than 10’ to the bottom of BMPs), steep slopes of around 6%, and Type C soils (but not located in a floodplain, having no hardpan layer, and with adequate space). The BMPs which are appropriate for this location are bioretention areas (if terraced and installed with a liner and underdrain), rainwater harvesting, and green roofs.

Constraint	Underground Infiltration	Bioretention Area	Vegetated Swale	Filter Strip	Vegetated Basin	Constructed Wetland	Permeable Pavement	Rainwater Harvesting	Green Roof
Located in floodplain?									
Less than 10-foot separation to groundwater table?		With liner and underdrain	With liner		With liner		With liner & underdrain (provides no treatment)		
Sited on steep slope (5-15%)?		If terraced							
Limited space for BMP facilities?			With adequate length						

Figure 9: BMP Selection Matrix

3.0

Stormwater BMP Design

The use of LID techniques can aid in addressing the water quality and hydrologic issues that are typically exacerbated by development. When planning and designing new development and redevelopment the goals of LID and requirements of the MS4 Permit should be incorporated and promoted. These site design goals include:

- conserve natural areas and drainages;
- minimize impervious surfaces, drain to pervious area;
- minimize soil compaction;
- mitigate peak runoff and associated erosion; and
- treat runoff in stormwater BMPs.

There are a number of BMPs recommended for use in the City and surrounding areas. These facilities, along with sizing criteria and design recommendations, are detailed in this section.

BMP Sizing Criteria

Treatment control BMPs, which provide post-construction water quality benefits, are most efficient and economical when they target the frequent, small storm events that produce the majority of annual rainfall. Larger, more intense storms are the basis of design for conveyance and flood control facilities, but there are only marginal improvements to runoff water quality when BMPs are designed to this standard.

BMPs for treatment of stormwater pollutants should be sized to either a flow-based or volume-based standard, or both. The MS4 permit lists three methods for volume-based sizing and two methods for flow-based sizing, summarized below.

Volume-based BMPs must be sized for:

- The volume of annual runoff based on unit basin storage water quality volume, to achieve 80% or more volume treatment by the method recommended in California Stormwater BMP Handbook (2003); or
- The 85th percentile 24-hour runoff event, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ ASCE Manual of Practice No. 87, (1998); or
- The runoff volume produced from a historical-record based reference 24-hour rainfall criterion for “treatment” that achieves similar pollutant reduction to the 85th percentile 24-hour runoff event.

Flow-based BMPs must be sized for:

- The flow produced from a rain event equal to at least twice the 85th percentile hourly rainfall intensity; or
- The flow that will result in treatment of the same portion of runoff as treated using volume-sizing.

Methods for sizing flow and volume-based BMPs are explained on the following page.

Larger or more complicated projects may benefit from the use of continuous simulation modelling in lieu of these simplified methods.

Flow-Based Sizing

Flow-based BMPs must be designed to carry or process the runoff resulting from the targeted water quality rainfall under flow conditions that promote treatment (specific to each BMP, but generally low velocity and minimal flow depth). The water quality flow (WQF) is the flow of runoff produced by a rain event equal to twice the 85th percentile hourly rainfall intensity, based on local rainfall data. For the Hughson area, the 85th percentile hourly rainfall intensity is approximately 0.10 inches per hour[1], resulting in a design rainfall intensity of **0.20 in/hr**.

To calculate the required treatment flow, first determine the size of the drainage area contributing runoff to the BMP and the composite stormwater runoff coefficient[2] for that drainage area. The rational method can then be used to calculate the flow rate:

WQF = C x i x A = 0.20 x C x A

Where:

- WQF = water quality flow (cfs)
- C = composite runoff coefficient for drainage area (unitless)
- i = design rainfall intensity (0.20 in/hr)
- A = drainage area (acres)

[1] Based on California State University, Sacramento Office of Water Programs' Basin Sizer, Version 1.45 (2007).

[2] Standard runoff coefficients for different land use types can be found in Section 4.3 of the City of Hughson Storm Drain System Master Plan (2008).

Volume-Based Sizing

Volume-based BMPs must be designed to capture and treat 80 percent or more of the annual runoff volume, determined using the methodology recommended in the California Stormwater BMP Handbook. The water quality volume (WQV) to which a BMP must be sized is based on the drainage area's unit basin storage volume, determined from local rainfall data and site characteristics. A volume-based BMP must also be designed to release this volume (typically through an orifice or via infiltration) within an acceptable drawdown time (generally 24-48 hours).

To calculate the required treatment capture volume, first determine the size of the drainage area contributing runoff to the BMP and the composite stormwater runoff coefficient for that drainage area. The Unit Basin Storage Volume (UBS) for the drainage area is determined from the sizing curve for 80% capture; find the composite runoff coefficient of the drainage area on the x-axis, follow it up until it intersects the line representing the desired drawdown time, and read the corresponding UBS value from the y-axis. Calculate the treatment volume by multiplying the UBS by the drainage area (convert to more convenient units, such as cubic feet or gallons, for use during design):

WQV = UBS x A

Where:

- WQV = water quality volume
- UBS = Unit Basin Storage Volume (inches)
- A = drainage area (acres)

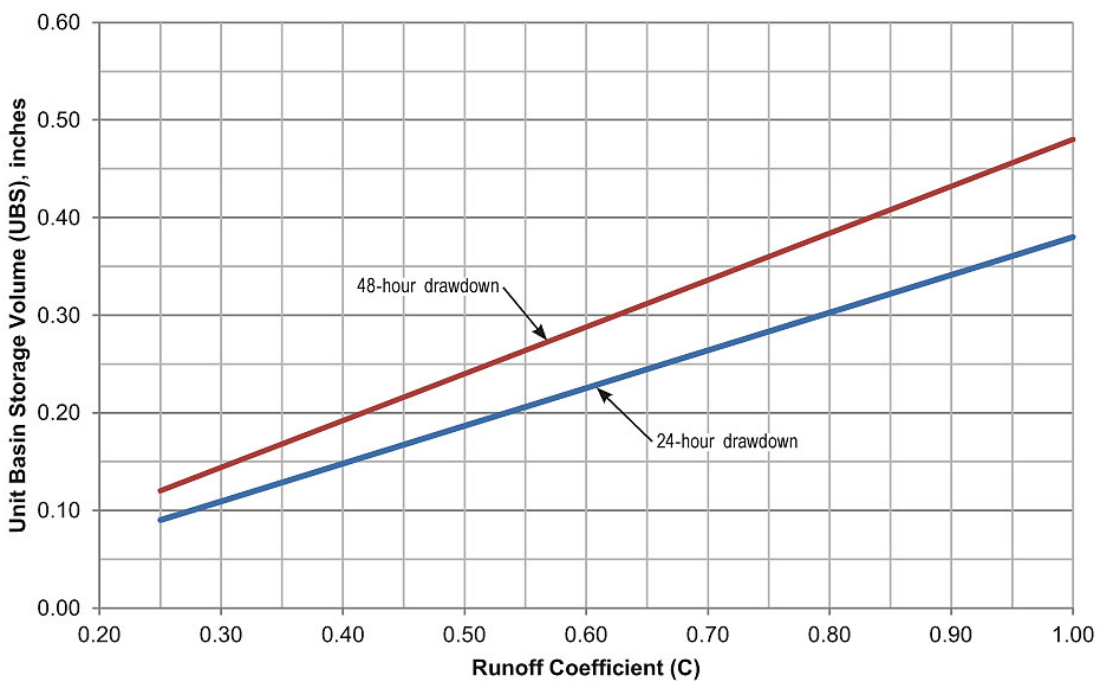


Figure 10: Unit Basin Storage Curves

Infiltration Feasibility

Typically, the preferred method of draining any stormwater BMP is through infiltration to the underlying subgrade soils. This allows for maximum treatment ability, groundwater recharge, and reductions in stormwater volume. Infiltration is not always possible though, as there are a variety of site constraints that can impede or prohibit the implementation of this function.

The table below summarizes the general parameters a site must meet in order for infiltration to be used and/or relied upon as a treatment or discharge method. More explanation of these constraints can be found in Section 2, and information on design considerations can be found in the BMP Fact Sheets which follow.

Site Constraint	Acceptable Condition
Hydrologic Soil Group	Type A or B
Soil infiltration rate	0.5 in/hr minimum
Slope	Less than 5% Note: terraced bioretention designs can accommodate slopes up to 15%
Separation from hardpan layer [1]	10-foot minimum (no minimum for thin hardpan with rock well installed through to underlying soils)
Separation from groundwater table [1, 2]	10-foot minimum
Setback from buildings foundations [2]	10-foot minimum
Setback from drinking water wells [2]	100-foot minimum
Soil or groundwater contamination [2]	Not allowed

[1] The acceptable 10' separation is based on a statewide standard and is a conservative criterion to minimize risk. Available information from NRCS does not provide any resolution of hardpan and groundwater data for depths greater than about seven feet, therefore geotechnical investigation will be necessary to determine actual depth.

[2] BMPs with less than the minimum separation to groundwater, setback to foundations and wells, or in contaminated soils must be lined with an impermeable liner to protect those elements. Other constraints generally require the installation of an underdrain or orifice for primary drawdown of captured stormwater.

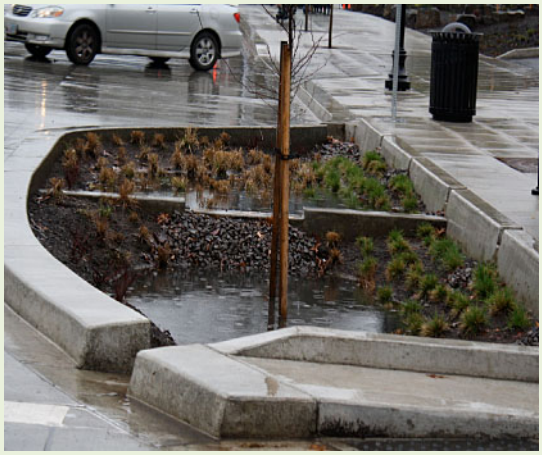
BMP Fact Sheets

Detailed information on the stormwater facilities recommended for LID design in the Hughson area is included in the BMP fact sheets that follow. Each fact sheet contains a description of the BMP, a retrofit opportunity example, technical design criteria, plant selection recommendations, and a list of benefits, constraints, and siting applications. This information is intended to aid in selecting, placing, and designing the various BMPs. Certain of the BMPs (in particular constructed wetlands, rainwater harvesting systems, and green roofs) will likely require prior experience or more detailed guidance to develop a design appropriate for construction.

BMP	Sizing Method	Other Sizing Criteria
Underground Infiltration	WQV	Drawdown time
Bioretention Area	WQV or WQF	Drawdown time
Vegetated Swale	WQF	Residence time, flow speed, flow depth
Filter Strip	WQF	Flow speed, flow depth, tributary width
Vegetated Basin	WQV	Drawdown time
Constructed Wetland	WQV	Drawdown time
Permeable Pavement	WQV	Drawdown time
Rainwater Harvesting	WQV	Drawdown time
Green Roof	WQF	Roof-based system

Sediment Forebay

Stormwater treatment facilities, especially those designed to treat catchment areas that are larger or have higher anticipated pollutant loads, benefit from pretreatment. One simple and effective pretreatment component is a sediment forebay, which helps prevent clogging of BMPs, eases maintenance requirements (such as easier cleanup of collected trash and debris), and can also be used to provide peak flow storage. A sediment forebay is a small basin located at the incoming discharge point or just upstream of a BMP. The forebay allows sediment to settle out and trash/debris to collect prior to runoff reaching the primary treatment area.



Tree-well Filter

Tree-well filters are systems which utilize one or more precast concrete chambers filled with engineered bioretention media. Stormwater is directed into the chambers and receives treatment as it flows through the filter media and then is collected and released by a perforated pipe. Proprietary systems are available which are designed for efficient pollutant removal at high flow rates and thus have a relatively small footprint compared to other LID facilities. Their unique attributes make tree-well filters suitable to almost any site. However, City approval must be obtained in order to use these devices.

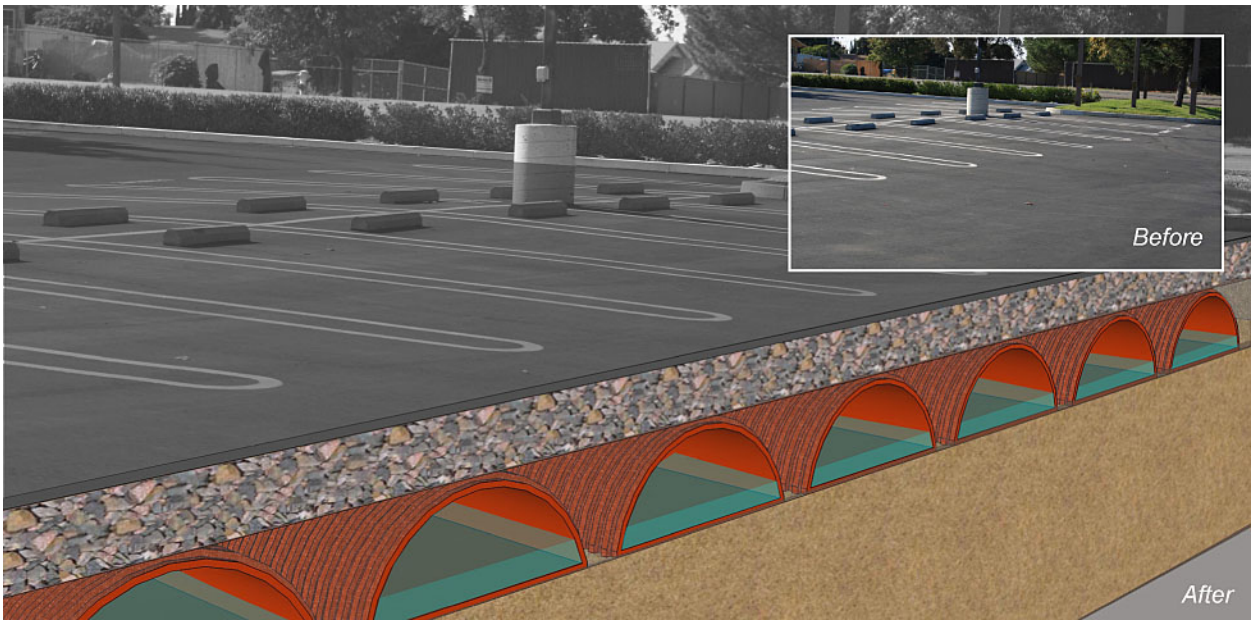
Note: Image courtesy of Filterra Bioretention Systems. Proprietary systems are included for representative purposes only and are not an endorsement of any specific product.

UNDERGROUND INFILTRATION

These systems can take different forms but provide identical function: controlled discharge of stormwater through infiltration. The primary pollutant removal mechanism of this practice is filtering through the native soil. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff from upstream areas. A dry well is a small rock-filled pit that usually receives runoff from rooftops or other impervious areas with low sediment loading. Water is stored in the void space between the stones and percolates through the underlying soil matrix. If high sediment loads are expected, pretreatment is desirable to reduce the maintenance burden.

Underground infiltration systems can be integrated into a site to enhance and diversify the landscaping, in addition to providing stormwater improvements.

Retrofit Opportunities



Benefits

- Reduces runoff volume and attenuates peak flows
- Improves water quality - good for removing fine sediment and adsorbed pollutants
- Enhances groundwater recharge and contributes to stream base flow
- Minimal surface space requirements; located underground and thus visually unobtrusive
- Low construction and maintenance costs

Potential Constraints

- Requires permeable subgrade soils.
- Requires groundwater separation
- Contributing area should generally be less than 5 acres
- Not suitable on fill sites, steep slopes (>15%), contaminated soils, industrial sites, or sites where spills are likely to occur
- May encounter siting challenges in urban retrofit areas due to foundation setback and poor soil conditions

Siting Applications

- Mixed-use and commercial
- Roads and parking lots
- Parks and open spaces
- Single and multi-family residential

Technical Information

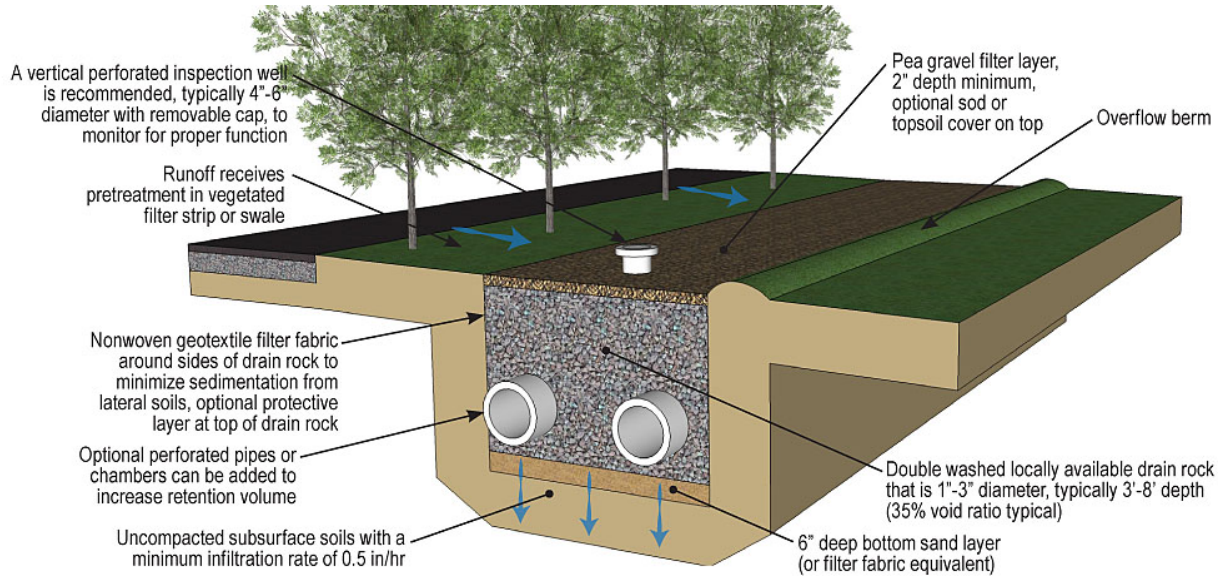


Figure: Infiltration trench typical detail

Design & Sizing Criteria

- Infiltration facilities are volume-based systems sized to capture the WQV within the void space of the storage layer and should infiltrate all stored runoff into the subsoils within a maximum 72 hour drawdown time.
- Requires a minimum subgrade soil infiltration rate of 0.5 in/hr minimum. If soil infiltration rates exceed 2.5 in/hr, runoff should be fully treated (with one or more upstream BMPs) prior to infiltration to protect groundwater quality.
- Requires a 10 foot minimum separation from the bottom of the facility to the seasonally high groundwater elevation.
- Should be placed a minimum of 10 feet from building foundations and 100 feet from drinking water wells.
- Should be installed with a flat bottom to promote uniform infiltration.
- To help prevent clogging and ease maintenance, it is important to provide upstream pre-treatment (using filter strips, swales, forebays, or manhole sumps) to remove coarse sediment, particles, and oils.
- If possible, system should be designed to avoid classification as a Class V injection well, which requires submission of an inventory form to the EPA. A Class V injection well is deeper than it is wide.
- If infiltration is not possible, can be installed with an orifice to provide flow and volume control functions without any water quality treatment.

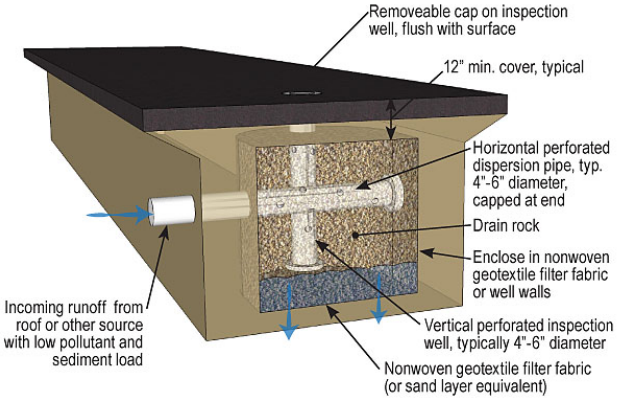


Figure: Dry well typical detail

Proprietary Systems

There are many retention systems designed to maximize subsurface capture volume and that include components for pretreatment and flow control.

Cudo Cubes are an example of a typical modular block system.

Triton stormwater chambers are a typical semi-circular linked chamber system.

Note: Proprietary systems are included for representative purposes only and are not an endorsement of any specific product.

BIORETENTION AREA

Bioretention areas are shallow, landscaped areas that receive and treat stormwater. Runoff is allowed to pond on the surface of the bioretention area, typically less than a foot deep, where it can then filter through a vegetative layer and engineered soil media to remove sediment and pollutants. In locations of well drained subsoils, the water may then infiltrate into the subgrade. At sites or locations that will not allow for infiltration, flow-through systems are required; underdrains are installed beneath the planting soil to drain the facility and release the treated water to a conveyance feature or storm drain system. Bioretention areas are very versatile facilities that can fit a wide range of settings.

Bioretention areas are among the most common LID techniques implemented, often in highly visible locations.

Retrofit Opportunities

Benefits

- Applicable to a wide range of sites and layout, easily integrated into urban retrofit projects
- Provides reliable water quality function
- Attenuates peak flows; reduces runoff volume and recharges groundwater when infiltration possible
- Provides greening and reduces heat island effect in urban areas
- Provides aesthetic amenity and creates habitat

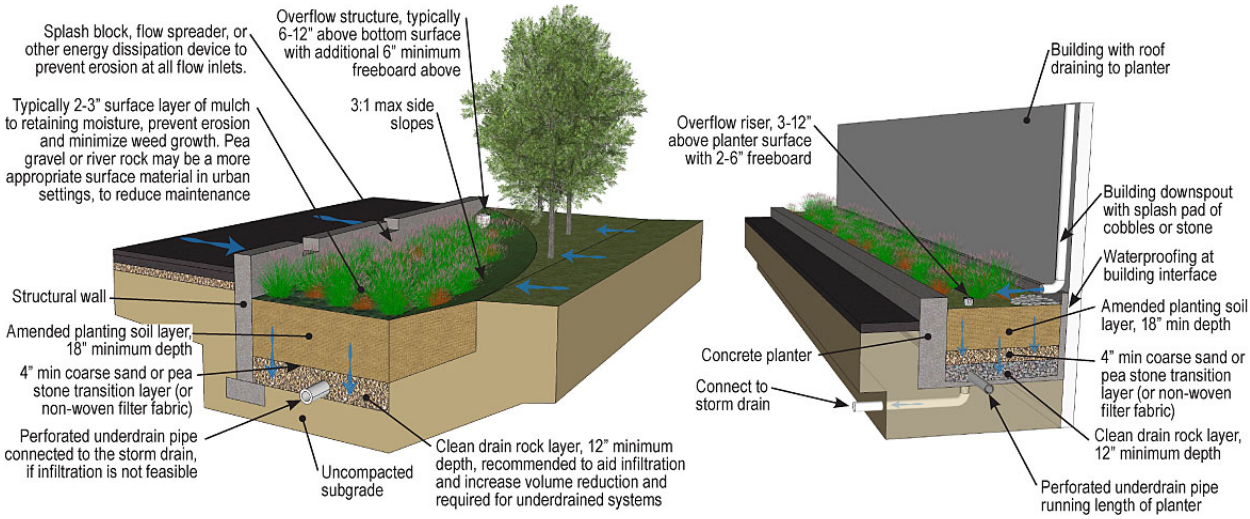
Potential Constraints

- Infiltration design requires sufficiently permeable soils, depth to groundwater/hardpan; underdrain system increases cost and infrastructure
- Vegetation requires maintenance
- Maintaining desired aesthetics may require dry season irrigation
- Should not receive more than about 1 acre of runoff; divide larger watersheds among dispersed cells

Siting Applications

- Residential yards
- Office and commercial storefronts
- Roadway medians, bulb-outs, and traffic circles
- Parking lot islands, cul-de-sacs
- Parks and other landscaped areas

Technical Information



Design & Sizing Criteria

- Bioretention areas can be sized as either volume-based or flow-based systems (or a combination).
- Volume-based systems are sized to capture the WQV within the surface ponding area and void space of the drain rock storage layer and should release all captured runoff within a maximum 48 hour drawdown time (either by subgrade infiltration or through an underdrain).
- Flow-based systems are sized to percolate the WQF through the bottom of the facility. The surface area of the system multiplied by the infiltration rate of the planting media (which should be considered as 5 in/hr for design) must equal or exceed the WQF. The subgrade infiltration rate must be high enough to process this flow as well, or an underdrain is necessary.
- Reliance on subgrade infiltration requires a minimum soil infiltration rate of 0.5 in/hr, in addition to the above requirements.
- If the separation from the bottom of the facility to the seasonally high groundwater elevation is less than 10 feet then an underdrain should be installed, with an impermeable liner placed beneath all system media.
- Infiltrating bioretention systems should be placed a minimum of 10 feet from building foundations and 100 feet from drinking water wells.
- Pre-treatment (e.g., vegetated buffer strip, swale, sediment forebay) can improve function and ease maintenance.
- Runoff from storms larger than the water quality event is ideally diverted to the storm drain system.

Plant Selection *(See Appendix A)*

Plants should be suitable for periods of inundation during the rainy season. Vegetation should be drought-tolerant, especially at the edges, but may require irrigation during initial establishment or dry periods. Trees require more intensive maintenance, and may show limited growth.

Blue eyed grass

Desert baccharis

California rose

San Diego sedge

Vegetated swales are shallow stormwater conveyance channels with vegetation covering the side slopes and bottom. Treatment occurs as runoff flows through the vegetation and infiltrates into the soil matrix. Swales can be designed as part of the stormwater conveyance system and can eliminate the need for some curbs, gutters and storm drains. They are also well suited to treat runoff from roads and highways because of their linear nature. The treatment effectiveness is correlated to the residence time of the runoff in the swale, and therefore, flow-based swales tend to be considerably longer than other types of treatment BMPs.

Vegetated swales, such as this installed in a parking lot, can both treat and convey runoff, eliminating the need for some catch basins and pipes.

Retrofit Opportunities

Benefits

- Can convey stormwater, including within street right-of-way
- Low installation and maintenances costs
- Reduces peak flows and velocity compared to concrete or piped conveyance
- Improves water quality, depending on site constraints, by removing sediment, suspended solids, and trace metals
- Vegetation provides aesthetic benefit and reduces the heat island effect in urban areas

Potential Constraints

- Larger space requirements than traditional conveyance methods
- Requires regular vegetative maintenance and trash removal
- Can be difficult to locate in retrofit applications
- Not suitable for areas with steep slopes or highly erodible soils
- Limited to relatively small drainage areas, generally less than 5 acres
- Limited volume reduction and peak flow attenuation, unless designed with check dams

Siting Applications

- Road shoulders and medians
- Parking lot islands
- Commercial, industrial, and residential developments
- Open space and parks

Technical Information

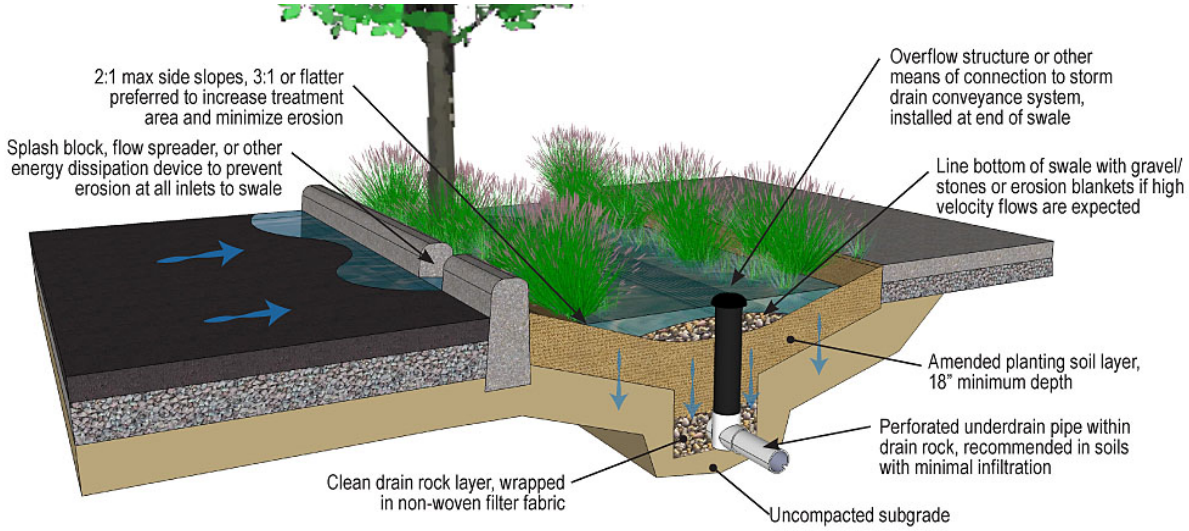


Figure: Vegetated swale typical detail

Design & Sizing Criteria

- Swales are flow-based systems sized to convey the WQF at a flow velocity not exceeding 1 foot per second and maximum water depth not exceeding the lesser of 6 inches or 2/3 of the vegetation height.
- Swales must provide a minimum of 10 minutes of stormwater residence time for pollutant removal, with a minimum length of 100 feet.
- The preferred longitudinal slope is 1-2% to limit flow velocity. Check dams placed across the flow path can promote additional infiltration and flow reduction, and should be used for longitudinal slopes exceeding 5%.
- Swales should generally have a trapezoidal or parabolic shape to promote even flow across the whole width of the swale. The bottom width should be between 2 and 10 feet.
- A dense and well maintained vegetative cover on the swale bottom and side slopes filters pollutants out of runoff and helps reduce flow velocities and protect the swale from erosion. Stones or gravel may also be used on the bottom to protect against erosion.
- Vegetated swales that are primarily designed to detain runoff (behind check dams or due to layout) should be considered bioretention facilities and designed accordingly.
- Most effective on soils that allow infiltration. In impermeable soils, installing well-drained planting media with an underdrain beneath is recommended.

Plant Selection *(See Appendix A)*

Hughson receives little precipitation and has a long dry period in the summer, so flow will be irregular and plants must be chosen accordingly. Periodically the swale will experience high flows and plants should be chosen with well established roots to protect against erosion, and the ability to withstand inundation

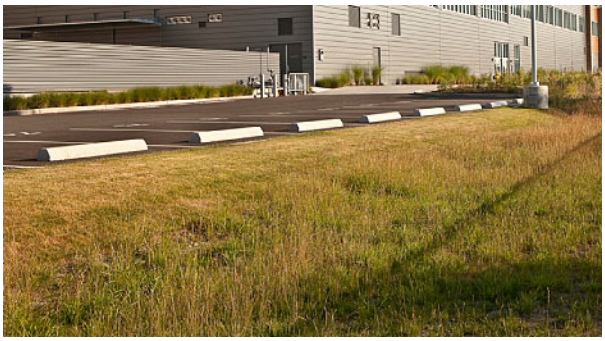
Purple needle grass

Hummingbird trumpet

Bush monkey flower

Western meadow sedge

Filter strips are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces. Filter strips function by slowing runoff velocities and allowing sediment and other pollutants to settle and by providing some infiltration into underlying soils. Filter strips are most effective when runoff passes over the filter surface as shallow, uniform sheet flow. They can suffer erosion and lack of treatment if exposed to concentrated flows. They are well suited to treat runoff from adjacent roads or small parking areas and are good for use as vegetated buffers between developed areas and natural drainages.



Filter strips can be as simple as a gentle slope covered in grass that receives runoff from an adjacent strip of parking stalls.

Retrofit Opportunities

Benefits

- Low construction cost and minimal maintenance requirements (generally just erosion prevention and mowing)
- Can provide reliable water quality benefits if properly designed, vegetated, and maintained
- Good for roadside shoulders and landscape buffers when slope and length criteria are met
- Simple, aesthetically pleasing landscape feature
- Easy to customize to varying site conditions

Potential Constraints

- Not appropriate for industrial sites or locations where spills may occur
- Limited ability to treat large drainage areas
- Water quality benefits severely limited without adequate filter length and flow characteristics
- Does not provide significant stormwater volume reduction
- Only minor reduction in flow rate, especially during larger storms
- May require dry season irrigation

Siting Applications

- Roads and highway shoulders
- Small parking lots
- Residential, commercial, or institutional landscaping
- Pre-treatment component for subsequent BMP

Technical Information

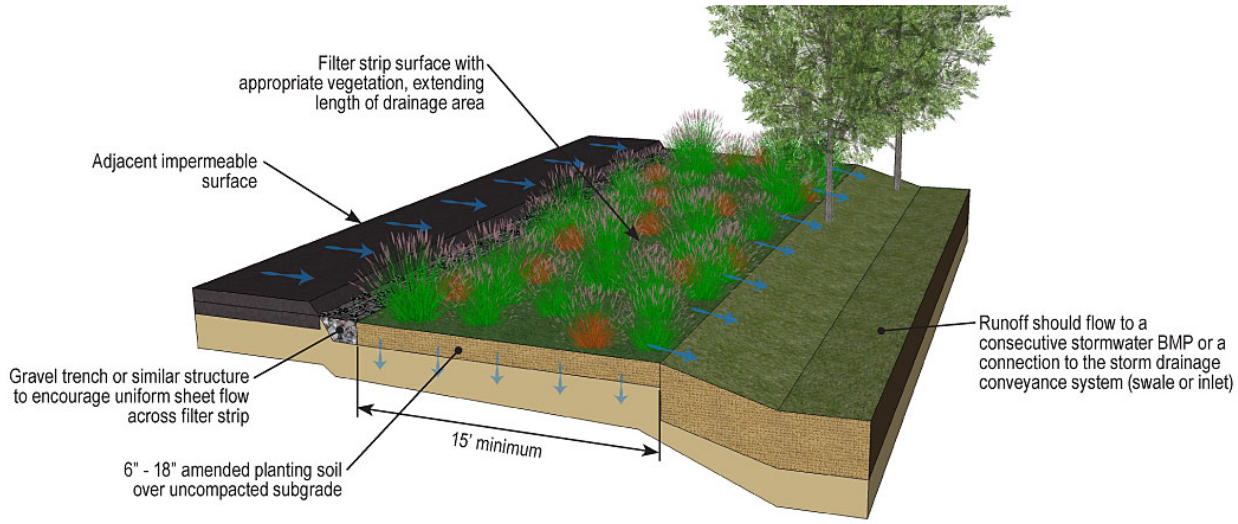


Figure: Filter strip typical detail

Design & Sizing Criteria

- Filter strips are flow-based systems designed to convey the WQF across the vegetated surface at a flow velocity not exceeding 1 foot per second and maximum water depth not exceeding 1 inch.
- Should be at least 15 feet wide and preferably 25 feet wide (in the direction of flow) to provide adequate water quality treatment.
- Filter strips are considered effective at treating contributing impervious surface widths up to twice the width of the vegetated strip. The maximum length (in the direction of flow towards the filter strip) of the contributing tributary area should be 60 feet.
- Should be immediately adjacent to, and extend the full length of, the contributing drainage area.
- Ideal cross-slope is between 2% and 6% to avoid ponding (at low slopes) and concentrated flows (at high slopes). Slopes up to 15% may be acceptable with proper design and careful maintenance, but are generally not recommended.
- If the cross-slope is less than 0.50%, or if the underlying soil infiltration rate is less than 0.5 in/hr, consider an underdrain system to facilitate drainage.
- Requires shallow, evenly-distributed sheet flow across the entire width of the strip. Level slopes perpendicular to the direction of flow are required to achieve sheet flow.

Plant Selection *(See Appendix A)*

The filter area should be densely vegetated with native grasses, shrubs, and trees that effectively bind the soil. The thicker and more uniform the plant cover, the greater the stormwater management benefits.

California encelia

Wild rye

California sagebrush

San Diego sedge

CONSTRUCTED WETLAND

Vegetated basins are temporary holding areas for stormwater that capture and detain flows from a water quality design storm for some minimum time (e.g. 48 hours) to allow particles and associated pollutants to settle. They are typically designed with an outlet structure that slowly releases the water requiring treatment via a small orifice and allows controlled routing of larger events. Water quality drawdown can be achieved through infiltration, if site conditions will allow. Stormwater collected in vegetated basins can be re-used for landscape irrigation, and basins can also be used to provide flood control by including additional flood detention storage.

Basins that are thoughtfully designed and planted can manage stormwater from a larger area, while still offering aesthetic appeal.

Retrofit Opportunities

Benefits

- Relatively low construction and maintenance costs
- Highly effective at attenuating peak flows, can reduce runoff volumes with infiltration or reuse
- Improves water quality by removing particulate matter, sediment, trash, and debris
- Suitable for sites where infiltration is poor or not an option
- Suitable for large drainage areas
- Multi-purpose detention ponds can provide open space, habitat, and aesthetic amenity

Potential Constraints

- Limitations of the release orifice may not allow use of detention in watersheds of less than 5 acres (would require an orifice with a diameter of less than 0.5 inches that would be prone to clogging)
- Only moderate pollutant removal, compared to some other BMPs and ineffective at removing soluble pollutants
- May exhibit undesirable aesthetics due to dry, bare areas and inlet and outlet structures
- Site must have no risk of land slippage if soils are saturated

Siting Applications

Parks, open spaces, and golf courses

- Commercial, industrial, or residential developments
- Regional detention & treatment

Design Variation

A basin designed with a permanent pool is commonly referred to as a wet pond; additional treatment and amenity benefits can be realized by the body of water, along with maintenance and the need for base flow or supplemental water.

Technical Information

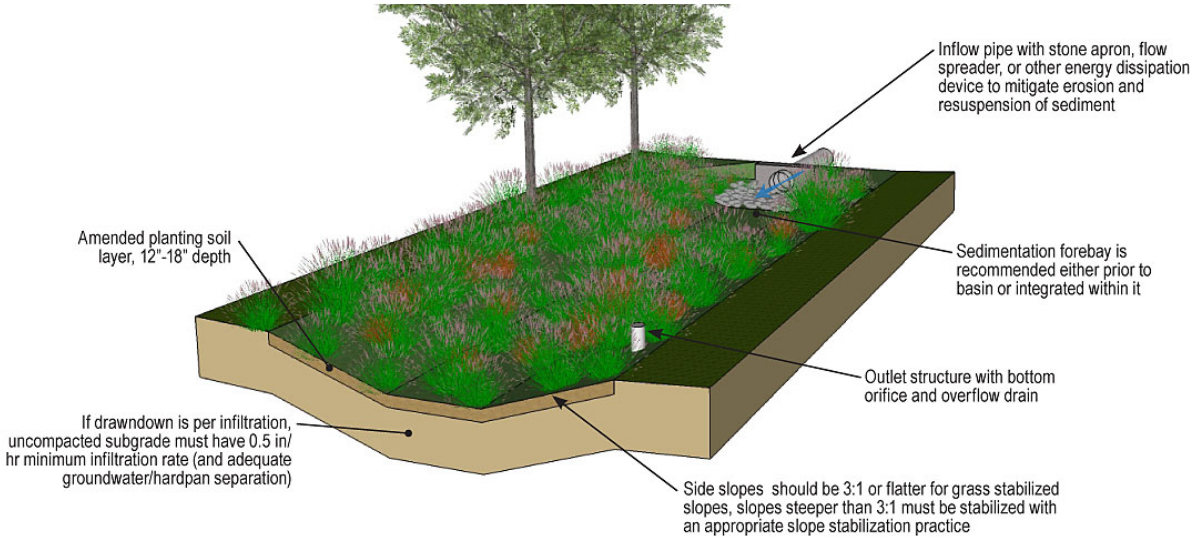


Figure: Vegetated basin typical detail

Design & Sizing Criteria

- Vegetated basins are volume-based systems sized to capture the WQV and discharge it within a typical 48 hour drawdown time, with no more than 50% of the total volume draining in the first 16 hours.
- Longer drawdown times may result in vector breeding, and should be used only after coordination with local vector control authorities. Shorter times should be limited to BMP drainage areas with coarse soils that readily settle or where infiltration is responsible for the majority of drawdown.
- A length to width ratio of at least 1.5:1 (and ideally 3:1) is recommended for greatest treatment capability (due to a longer flow path).
- A reinforced channel from inlet to outlet can be included to convey low flows through the basin.
- Maintenance can be reduced if runoff passes through upstream filtration BMPs or a sedimentation forebay prior to entering the basin.
- Outlet structure(s) include an orifice (and/or infiltration) for drawdown, an overflow drain for storms greater than the design storm, and an emergency spillway/drain for large flood events.
- If the separation from the bottom of the facility to the seasonally high groundwater elevation is less than 10 feet the facility should be lined with impermeable liner (compacted native clay or geomembrane).
- If sufficient space is available, a vegetated buffer around the pond can be used to slow overland runoff entering via the side slopes, help prevent access to the pond if desired, and provide an aesthetic and habitat amenity.

Plant Selection *(See Appendix A)*

Vegetation within the detention zone (up to the elevation of the design storm) increases pollutant removal and decrease resuspension of accumulated sediment. Vegetated detention basins have greater pollutant removal than concrete basins.

Sweet bay

Four wing saltbush

Chuparosa

Blue grama

Constructed wetlands are man-made systems that typically have multiple shallow permanent pools of water at varying depths, incorporating both emergent wetland plants and open water areas. Though possessing less biodiversity than natural wetlands, they still offer significant habitat enhancement and aesthetic value while being optimized for stormwater treatment. These facilities are among the most effective at removing pollutants from stormwater. Constructed wetlands provide water quality benefits through settling, microbial transformation, and plant uptake. Treatment primarily occurs in the root zone and soil media, where nutrients and dissolved pollutants are removed.

Though more technically complex, constructed wetlands have the potential to provide the most water quality improvements of any naturalized system.

Retrofit Opportunities

Benefits

- Effective at removing a broad spectrum of stormwater pollutants
- Reduces stormwater peak flows
- Provides substantial habitat
- Attractive landscape feature, well suited as an open-space amenity
- Good in areas unsuitable for infiltration or with high groundwater table
- Easily customizable to various sizes and dimensions, based on site, budget, and design intent

Potential Constraints

- Occupies relatively large area
- Standing water may represent safety concern
- Mosquito breeding is likely to occur, requiring vector control
- Cannot be placed on steep or unstable slopes
- Base flow or supplemental water source needed in dry season if water level is to be maintained
- Possible aesthetic concerns related to vegetation appearing dead or unkempt in winter and summer

Siting Applications

- Parks, open spaces, and golf courses
- Commercial, industrial, or residential developments
- Regional detention & treatment

Design Variation

A subsurface flow wetland has no open water and runoff is directed beneath the surface through a planted substrate. They generally require less surface area and have fewer vector issues, but may be more expensive to construct and maintain.

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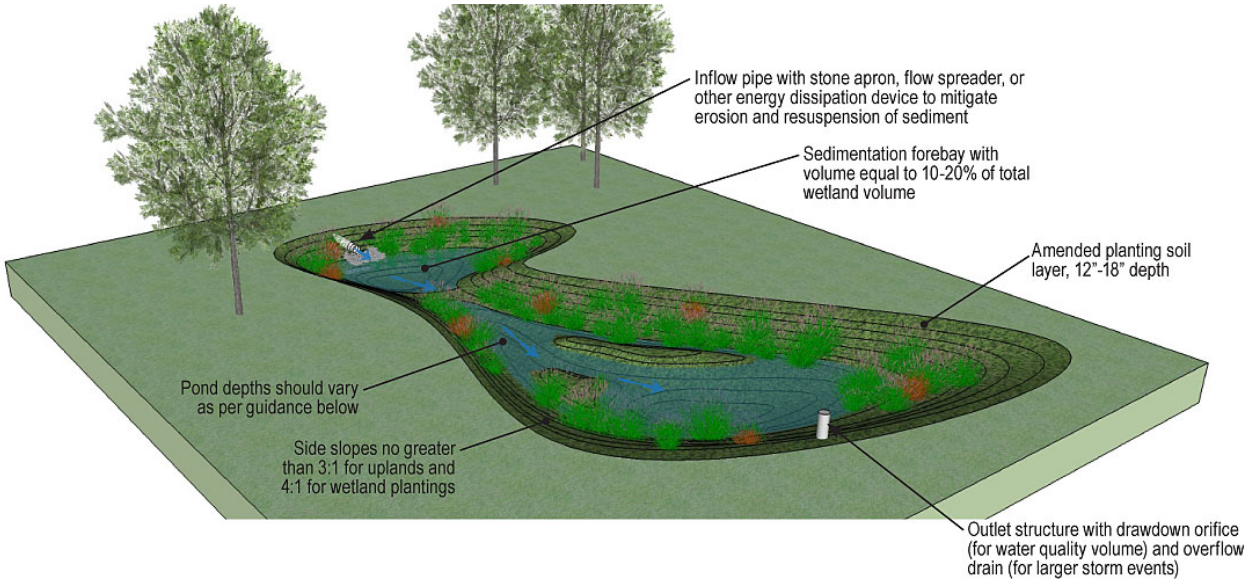
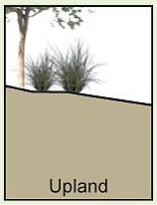


Figure: Constructed wetland typical detail

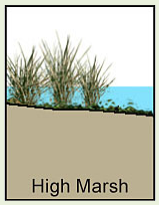
Design & Sizing Criteria

- Constructed wetlands are volume-based systems sized to capture the WQV and discharge it from the outlet within 24 hours.
- The health of wetland vegetation is integral to the ability of stormwater wetlands to improve water quality. Wetlands should have zones of both very shallow (less than 6 inches) and moderately shallow (6 to 18 inches) standing water to maintain both vegetated and open water areas, with maximum depths of about 5 feet.
- To enhance pollutant removal, wetlands should feature "complex microtopography" in which the underwater surface varies in elevation to increase the length of flow paths for runoff.
- The minimum length to width ratio should be 2:1 though 4:1 is preferred.
- Open water should be occupy 25-50% of the surface.
- Pre-treatment, which occurs via settling in a forebay, will greatly aid the function of constructed wetlands. Additional upstream BMPs may also be used to enhance treatment effectiveness.
- Stormwater wetlands require sufficient drainage to maintain a permanent pool, typically at least 5 acres.
- In areas with well draining soils (Type A or B) an impermeable liner may be necessary to maintain standing water.
- Wetlands may intersect the groundwater table, which will help maintain the permanent pool. This should be avoided in areas where stormwater or the groundwater may be contaminated. In these areas, an impermeable liner should be utilized.

Plant Selection *(See Appendix A)*

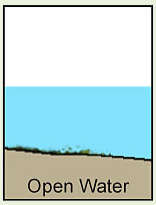


-Edge & small islands
-3:1 max side slope
-Inundated by runoff



-Water depth ≤6"
-4:1 max side slope
-May dry in summer

-Water depth 6"-18"
-5:1 max side slope
-Emergent plants



-Water depth ≤5'
-25-50% of total area

Plant Selection

Wetlands, with their variety of water depths and topography, will require a more diverse and extensive plant palette than other BMPs. Most locations will require plants suitable for prolonged standing water. Due to the permanent pool, it is acceptable to use plants with higher irrigation demand.

PERMEABLE PAVEMENT

Permeable pavement refers to any porous, load-bearing surface that allows runoff to pass through the surface layer and be temporarily stored in a drain rock layer. Ideally, site conditions will allow the subsurface storage layer to drain by infiltration into the subsoils. The permeable pavement system itself will provide some water quality benefits by filtering sediments and some other pollutants, but primarily will reduce peak flows due to detention in the rock layer. Infiltration functions as the primary mechanism for water treatment and volume reduction. Systems which use underdrains will not provide these benefits. When properly constructed, pervious pavements are durable, low maintenance, and have a low life-cycle cost.

Since they replace traditional hard surfaces, permeable pavement is easily integrated into developed areas. The wide variety of surface types provides diverse options for either matching or enhancing the character of an existing site.

Retrofit Opportunities

Benefits

- Assists in attenuating peak flows
- Reduces runoff volume and facilitates groundwater recharge (infiltration-based systems only)
- Easily integrated into existing infrastructure and retrofits
- Reduces the heat island effect
- Can be used as a design element to provide aesthetic benefits
- Construction costs can be equivalent to conventional paving
- Can reduce the need for curbing and storm sewers

Potential Constraints

- Not recommended for roads with high-speed traffic or frequent turning
- Maintenance costs are greater than for conventional paving
- Will require additional maintenance when exposed to regular high-volume traffic
- Storage and infiltration are only effective on relatively flat sites with slopes less than 5%, as level subgrade must be achieved
- Likely not effective as a treatment method if infiltration to the subgrade is not an option

Siting Applications

- Parking lots or parallel parking strips
- Driveways and low traffic roads
- Sidewalks and pathways
- Golf cart paths
- Park hardscape
- Plazas, patios, or terraces

Technical Information

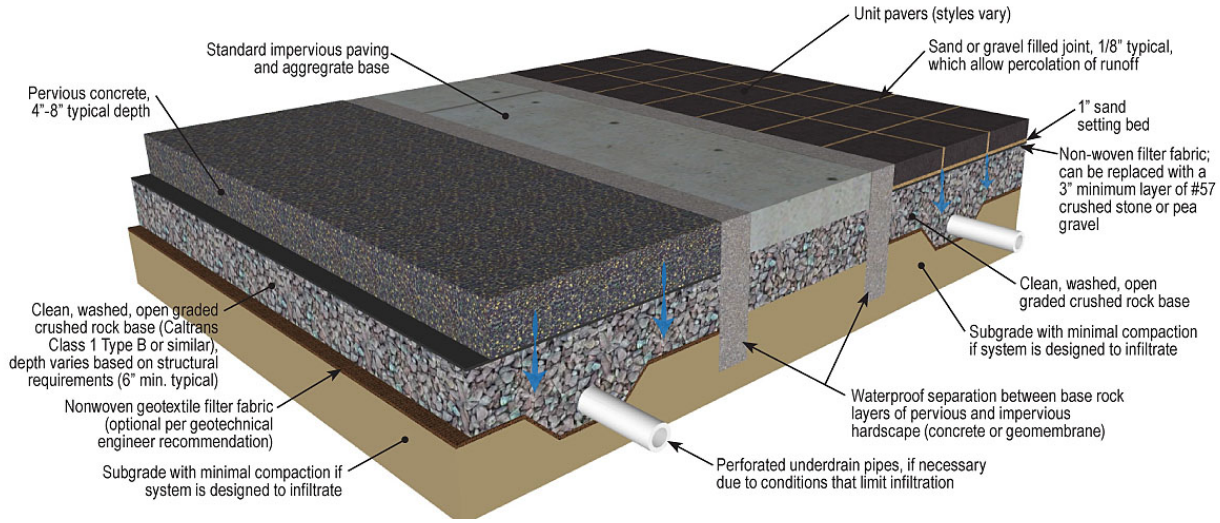


Figure: Pervious concrete and permeable pavers typical details

Design & Sizing Criteria

- Permeable pavements are volume-based systems sized to capture the WQV within the void space of the subsurface storage layer and should fully drain all stored runoff within a maximum 72 hour drawdown time.
- Infiltration-based systems (which provide treatment and volume reduction) must have a minimum subgrade soil infiltration rate of 0.5 in/hr; underdrains should be used in impermeable soils (Types C and D) that do not meet this standard. If infiltration exceeds 2.5 in/hr, runoff should be fully treated with upstream BMPs to protect groundwater quality.
- Infiltration requires a minimum 10-foot separation between the bottom of the drain rock layer and the seasonally high groundwater elevation. For areas with inadequate separation or where the groundwater is contaminated, an underdrain should be used with an impermeable liner placed beneath the rock.
- Infiltration-based systems should be placed a minimum of 10 feet from building foundations and a minimum of 100 feet from drinking water wells.
- Tributary areas should contribute runoff with low levels of sediment to avoid clogging the surface layer. If drainage will come from pervious or un-stabilized areas, appropriate pre-treatment measures should be implemented to filter the runoff before reaching the permeable pavement.
- To ensure proper system function, it is essential that permeable pavements (especially poured in place systems) are installed properly by a contractor with prior experience and certification.

Pavement Types

There are several styles of permeable pavement available, including those that are poured in place (such as pervious concrete and porous asphalt) and modular paving systems (such as interlocking concrete pavers, unit stone or brick pavers, or reinforced turf type systems).

Pervious Concrete

Porous Asphalt

Permeable Pavers

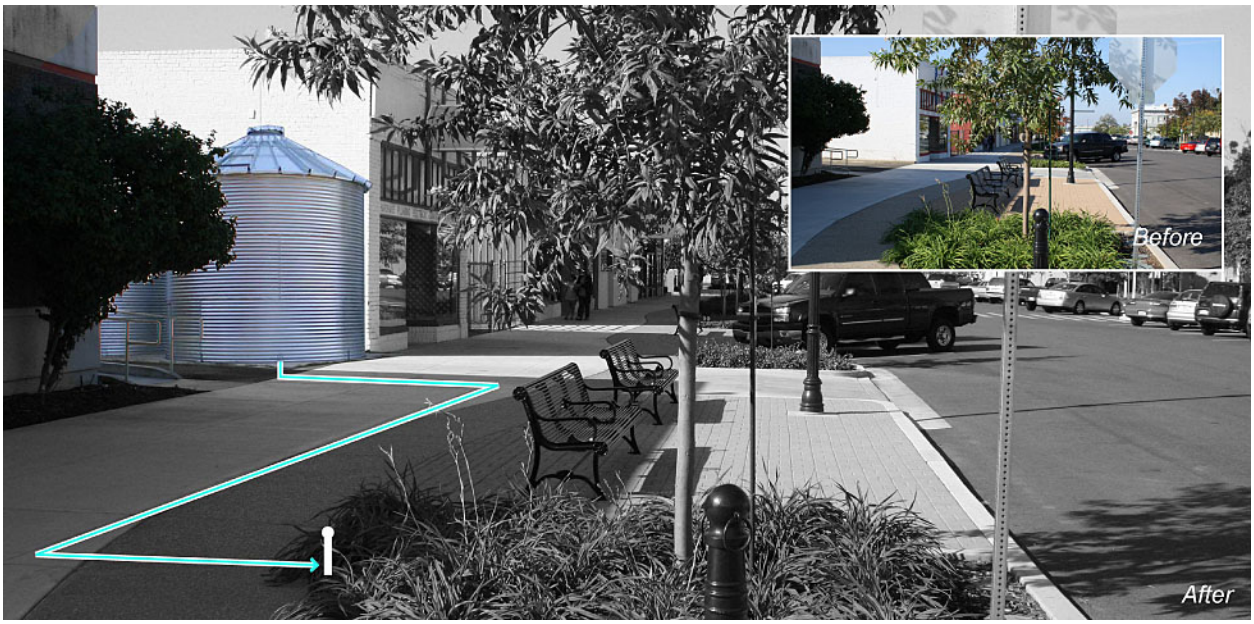
Reinforced Turf

RAINWATER HARVESTING

Rainwater harvesting involves capturing stormwater runoff and then using the stored water for a non-potable application, typically landscape irrigation. Captured runoff can be stored in anything from small rain barrels to large underground cisterns or retention ponds. A distribution system (a pump and/or valves) draws stored water and delivers it to the intended use, routing it through an appropriate treatment system, if necessary. With the right conditions, rainwater harvesting is a very effective stormwater control mechanism, as it provides substantial treatment and volume reduction while also satisfying a portion of the site's water demand.

Harvesting systems can incorporate sculptural or artistic rainwater conveyance components, which serve as aesthetic amenities in addition to making the practice more visible.

Retrofit Opportunities



Benefits

- Pollutant removal rates are nearly 100% for reused water
- Offsets a portion of the potable water required by a site
- Reduces the volume and peak flows of stormwater runoff
- Good for sites where infiltration is not an option
- Easy to apply to rooftop collection; both new buildings and retrofits on existing roofs
- Scalable to large drainage areas, provided demand is adequate

Potential Constraints

- Requires reliable reuse demand high enough to ensure availability of treatment volume in storage
- Lack of summer rainfall coincides with larger irrigation demands
- Often requires infrastructure (pumps or valves) to use stored water, increasing complexity
- Relatively frequent inspection and maintenance is necessary to ensure reliable system function
- Regulatory obstacles may limit reuse opportunities beyond irrigation

Siting Applications

- Collect rooftop runoff
- Golf courses and parks
- Any type of land use, provided adequate end use of water

Technical Information

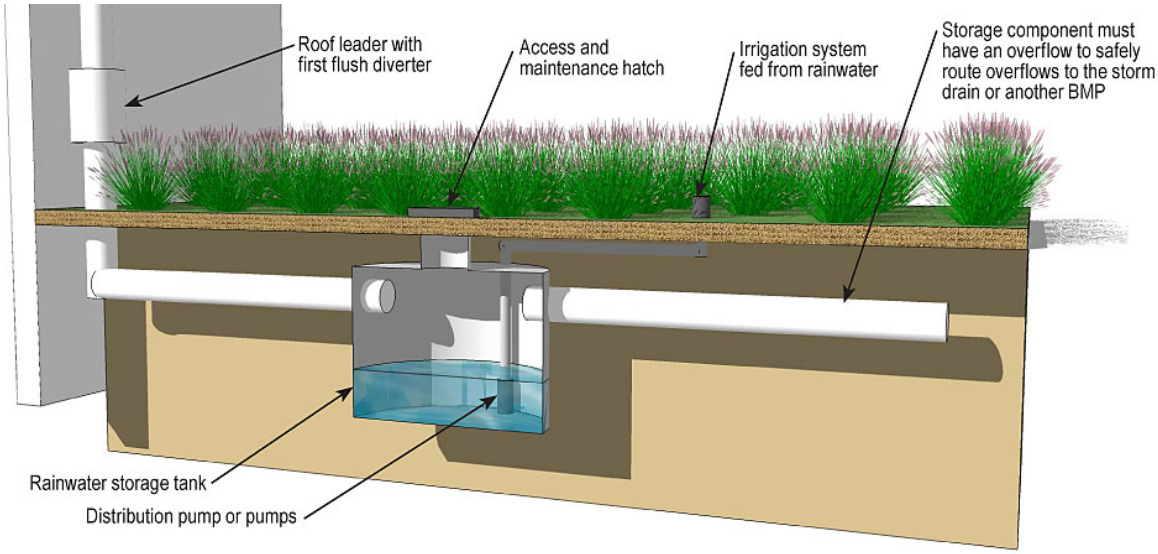


Figure: Rainwater harvesting system typical detail

Design & Sizing Criteria

- Rainwater harvesting systems are volume-based systems with adequate space available in the storage device to capture the WQV. In order to be used as a water quality treatment device, the demand on the system must sufficient to ensure that the system has available capacity to capture the WQV within 72 hours of any rain event.
- The seasonal rainfall patterns in Hughson present difficult circumstances for designing rainwater harvesting systems. Hughson receives approximately 13 inches of rain annually, with an average of less than an inch falling each month from April through October. This lack of rainfall coincides with the higher irrigation demand of the warmer summer months. It is this mismatch of supply and demand that will inhibit successful implementation of rainwater harvesting for many sites. To provide a noticeable offset to potable water demand will likely require enough storage to capture runoff from a large upstream watershed.
- Components of all rainwater harvesting systems include conveyance (to collect water), storage (to hold water), and distribution (to use water).
- In a typical pumped system, stormwater from a building's roof is conveyed through rainwater leaders into a storage tank. The storage tank is connected to a wet well or suction pump, which is linked to the irrigation system. When the pump receives a signal to deliver water, it will begin operation. When the pump receives a signal to stop (either because irrigation is complete or from a level sensor in the tank indicating that it is nearly empty), it will end operation.
- A supplemental method of supplying water is typically necessary, generally through a valved connection to the traditional water system to either refill the tank or supply irrigation water directly.
- All rainwater harvesting system pipes and fixtures should be labeled "NON-POTABLE WATER, DO NOT DRINK."
- Design of the stormwater storage component is flexible as long as the water quality volume and an appropriate distribution system can be accommodated.
- Enclosed tanks should have a hatch or manhole opening for maintenance access. Above-ground tanks should be sited in a stable area (ideally in a cool, shaded location to avoid algal growth) and may require seismic stabilization if greater than 5000 gallons.
- Any pumps and treatment components should be accessible for maintenance.

A pretreatment component is necessary to remove trash and sediment prior to storage to avoid clogging the distribution pump and to reduce maintenance. Pretreatment components may be:

- first flush diverter
- in-line filter
- upstream BMP

GREEN ROOF

A green roof is a vegetated system covering a building's roof that detains and filters incident rainfall. Stormwater is captured in the soil media and storage layers of the system, reducing peak storm flows and promoting evapotranspiration. A primary water quality benefit of green roofs is that they avoid the common pollutants associated with conventional roof runoff, instead releasing only rainwater that has been further filtered. Green roofs can be designed with minimal thickness to allow retrofit installation on existing buildings or with a mix of shrubs, trees, pathways, and benches to be a valuable amenity for building tenants and the public.

Green roofs are unique stormwater features which also provide a variety of diverse benefits to building systems as well as inhabitants and users.

Application Examples

Extensive green roof

Intensive green roof

Benefits

- Reduces the peak discharge rate by slowing down roof runoff
- Enhances site aesthetics and can provide a useable amenity or public space
- Creates habitat and increases vegetation, even in densely developed areas
- Can extend the life of the roof, compared to a conventional roof
- Reduces heat island effect and improves air quality
- Provides insulation, which reduces building energy use

Potential Constraints

- Not ideal for steep roofs (>20 degrees)
- Only manages rooftop runoff
- Greater roof weight may increase dead and live loads and increase structural support requirements
- Existing buildings may not be able to support increased load
- Will likely require irrigation during establishment (typically first 2 years) and dry seasons
- Requires increased maintenance compared to a conventional roof

Siting Applications

- Commercial, industrial, and large residential buildings
- Urban areas with limited space and/or minimal vegetation

Technical Information

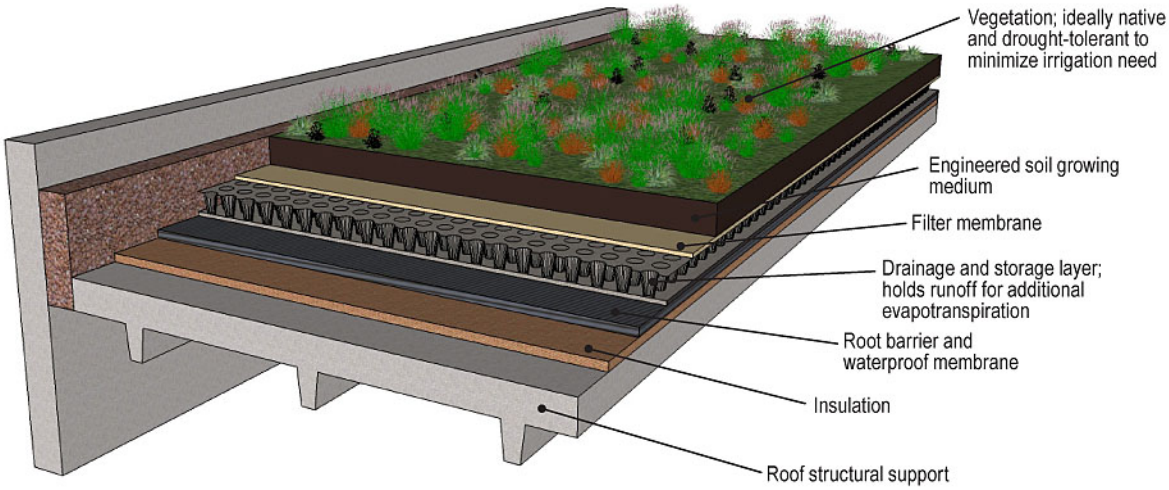


Figure: Green roof typical detail

Design & Sizing Criteria

- Green roofs are flow-based systems designed to treat the rainfall that falls directly onto the vegetated area.
- Runoff from rooftop areas that are not part of the vegetated system (such as spaces for mechanical or ventilation equipment) will likely need to be routed to treatment areas on the ground.
- Green roofs are generally classified as either extensive or intensive. Extensive green roofs generally have six inches or less of soil media, use smaller plants, are lower maintenance, and are typically not intended to be accessible. Intensive green roofs have greater than six inches of soil, larger plants, greater structural and maintenance requirements, and are often designed as rooftop gardens or park-like settings for use by people.
- They are most suitable for flat roofs or those with slopes less than 20 degrees. Extensive green roofs can be constructed on slopes up to 40 degrees with specialized designs.
- A new or retrofit building must be designed to support the weight of the green roof when all layers and vegetation are fully saturated. This wet weight can be up to 6 or 7 pounds per square foot per inch of soil depth.
- A waterproof membrane is needed to protect the roof structure and a root barrier can be installed to protect the membrane. Insulation, if included, can be installed either above or below the waterproof membrane.

Plant Selection *(See Appendix A)*

Vegetated roofs should feature drought tolerant plants that are well adapted to the local climate. Vegetation that is fire resistant is important considering the setting. Low maintenance plants that will create a healthy and appealing aesthetic are ideal candidates for vegetated roofs.

Coreopsis

Beard tongue

Lyme grass

Foothill penstemon

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Bruinville Area Master Public Facilities Plan, Public Review Draft, September 2005.

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EPA website(s)

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- City of Modesto Stormwater Management Program, 2010 Guidance Manual for Development Stormwater Quality Control Measures
- Stormwater Quality Design Manual for the Sacramento and South Placer Regions, May 2007
- San Joaquin County
- San Mateo County C.3 Guide
- SoCal LID Manual

Stanislaus County Department of Public Works, Standards and Specifications, 2007.

Storm Water Quality Handbook – Project Planning and Design Guide, California Department of Transportation, May 2007.

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A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California, University of California Cooperative Extension, California Department of Water Resources, August 2000.

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Appendix A - Plant List

The species listed below are intended to serve as a general guide for identifying plants likely to be suitable for use in LID within Central California climate zones. This list has been compiled of largely California native species and augmented with California friendly species to promote species diversity while avoiding monoculture. The list has been organized to group species likely to be compatible with the hydrozones found in the LID solutions in this manual and includes information for determining estimated water budgets. A qualified professional in LID site design should be consulted before construction and implementation.

Photo	Common Name	Latin Name	Form	Light Level	Irrigation Need	Height/ Spread
Suitable for long periods of inundation or permanent shallow water						
	Beaked Spikerush	*Eleocharis rostellata*	Grass	Sunny	High	3'-4' / 3'-4'
	Cardinal Flower	*Lobelia cardinalis*	Perennial	Sunny	Medium	1'-6' / 1'-3'
	Common Spikerush	*Eleocharis palustris*	Grass	Sunny	High	6"-18" / 6"-18"
	Gooding's Willow	*Salix gooddingii*	Tree	Sunny	High	10'-40'
	Long Leaf Rush	*Juncus macrophylla*	Grass	Sunny	High	2'-3' / 2'-3'
	Narrowleaf Willow	*Salix exigua*	Tree	Sunny	High	8'-16' / 8'-16'
	Needle Spikerush	*Eleocharis acicularis*	Grass	Sunny	High	6 "/ 6"
	Pacific Reed Grass	*Calamagrostis nutkaensis*	Grass	Sunny	Low	2' / 2'-3'
	Scarlet Monkey Flower	*Mimulus cardinalis*	Perennial	Sunny	Medium	3' / 2'
	Silvery Sedge	*Carex canescens*	Grass	Sunny	High	1'-2' / 1'-2'
	Soft Rush	*Juncus effuses*	Grass	Sunny	Medium	2'-3' / 2'-3'

Notes: Certain plants which prefer very wet environments will generally be suitable for use in locations which experience only short periods of inundation. Of the plants listed above, this would include Cardinal Flower, Pacific Reed Grass, and Scarlet Monkey Flower.

Photo	Common Name	Latin Name	Form	Light Level	Irrigation Need	Height/ Spread
Suitable for short periods of inundation (24-48 hours)						
	Blue eyed grass	*Sisyrichium bellum*	Grass	Sunny	Very Low	6”-18”
	Blue Oat Grass	*Helicotrichon sempervirens*	Grass	Sunny	Medium	24”-30” / 24”-30”
	California rose	*Rosa californica*	Shrub	Sunny	Low	3’-5’ / 8’-10’
	California wax myrtle	*Myrica californica*	Shrub	Sunny	Low	15’-20’ / 15’-20’
	Common Rush	*Juncus patens*	Grass	Sunny	Medium	18”-24” / 18”-24”
	Cottonwood	*Populus fremontii*	Tree	Sunny	Medium	40’-60’ / 25’
	Deer grass	*Muhlenbergia rigens*	Grass	Sunny	Low	2’-3’ / 2’-3’
	Desert Baccharis	*Baccharis sergiloides*	Shrub	Sunny	Low	4’-6’ / 4’-6’
	Desert willow	*Chilopsis linearis*	Tree / shrub	Sunny	Very Low	15’-20' / 15’-20’
	Fourwing saltbush	*Atriplex canescens*	Shrub	Sunny	Very Low	4’-5’
	Narrow leaf milkweed	*Asclepias fascicularis*	Shrub/gound-cover	Sunny	Low	2’-3’ / 3’-4’
	San Diego sedge	*Carex spissa*	Grass	Sunny	Medium	3’-5’ / 4’-5’
	Sweet bay	*Laurus nobilis*	Tree / shrub	Sunny/Partial Shade	Low	15’-20' / 15’-20’
	Western meadow sedge	*Carex praegracilis*	Grass	Sunny	Medium	12”-15”
	Western sycamore	*Platanus racemosa*	Tree	Sunny	Medium	40’-80’ / 30’-50’

Photo	Common Name	Latin Name	Form	Light Level	Irrigation Need	Height/ Spread
Prefer upland / suitable for slope stability						
	Beard tongue	*Penstemon spectabilis*	Shrub / perennial	Sunny	Low	3'-5'
	Blue grama	*Bouteloua gracilis*	Grass	Sunny	Low	15"-24" / 12"
	Broom Baccharis	*Baccharis sarothroides*	Shrub	Sunny	Low	8'-10' / 8'-10'
	Bush anemone	*Carpenteria californica*	Shrub	Partial Shade	Low	6' / 6'
	Bush monkey flower	*Mimulus aurantiacus*	Shrub	Sunny	Low	2'-3' / 2'-3'
	California encelia	*Encelia californica*	Shrub	Sunny	Very Low	3'-5' / 3'-5'
	California Meadow Sedge	*Carex Pansa*	Grass	Sunny	Medium	12" / 18"
	California sagebrush	*Artemisia californica*	Shrub	Sunny	Low	3'-5' / 5'-7'
	Canyon live oak	*Quercus chrysolepis*	Tree	Sunny/Partial Shade	Low	60' / 40'
	Chaparral honeysuckle	*Lonicera subspicata*	Shrub / vine	Partial Shade	Medium	3'-4' / 8'-10'
	Chuparosa	*Justicia californica*	Shrub	Sunny	Low	4'-6' / 6'-8'
	Coast live oak	*Quercus agrifolia*	Tree	Sunny	Very Low	30'-60' / 40'-70'
	Common buckwheat	*Eriogonum fasciculatum*	Shrub	Sunny	Low	2'-3' / 2'-3'
	Coreopsis	*Coreopsis grandiflora*	Shrub / perennial	Sunny	Low	1'-2' / 2'-3 '
	Coreopsis - large	*Coreopsis gigantea*	Shrub / perennial	Sunny	Low	3'-5' / 3'-4'
	Desert mallow	*Sphaeralcea ambigua*	Shrub	Sunny	Low	2'-3' / 2'-3'
	English lavender	*Lavandula angustifolia*	Shrub	Sunny	Low	2'-3' / 2'-3'
	Ericameria	*Ericameria laricifolia*	Shrub	Sunny	Low	2'-4' / 2'-4'

Photo	Common Name	Latin Name	Form	Light Level	Irrigation Need	Height/ Spread
	Foothill needle grass	*Nassella lepida*	Grass	Sunny	Low	1'-2' / 1'-2'
	Foothill penstemon	*Penstemon heterophyllus*	Shrub / perennial	Sunny	Low	1'-2'/ spreading
	Grape soda lupine	*Lupinus excubitus*	Shrub	Sunny	Very Low	3' / 4'
	Honey mesquite	*Prosopis glandulosa*	Tree	Sunny	Low	25'-30' / 25'-30'
	Hummingbird trumpet	*Epilobium canum*	Shrub	Sunny/Partial Shade	Low	varies
	Lyme grass	*Leymus arenarius*	Grass	Sunny	Very low	4'-5' / clumping
	Nodding needle grass	*Nassella cernua*	Grass	Sunny	Low	3' / 3'
	Parry's penstemon	*Penstemon palmeri*	Shrub / perennial	Sunny	Low	4'-6'
	Pink muhly grass	*Muhlenbergia capillaris*	Grass	Sunny	Low	2' / 2'-3'
	Purple needle grass	*Nassella pulchra*	Grass	Sunny	Low	18"-24" / 18"-24"
	Rosemary	*Rosmarinus officinalis*	Shrub	Sunny	Low	4'-6' / 6'-10'
	Saffron buckwheat	*Eriogonum crocatum*	Shrub	Sunny	Low	1'-2' / 2'-3'
	Scarlet bugler	*Penstemon centranthifolius*	Shrub / perennial	Sunny	Low	2'-3' / 2'-3'
	Sulfur buckwheat	*Eriogonum unbellatum*	Shrub /ground-cover	Sunny	Low	6"-18" / 1'-3'
	Western redbud	*Cercis occidentalis*	Tree	Sunny/Partial Shade	Very Low	15'-20' / 15'-20'
	Western serviceberry	*Amelanchier alnifolia*	Shrub / Tree	Sunny/Partial Shade	Low	3'-15' / 6'
	Wild rye	*Leymus condensatus*	Grass	Sunny	Very Low	2'-3' / 2'-3'
	Yarrow	*Achillea millefolium*	Ground-cover	Sunny	Low	18"-30" / clumping

Appendix B - BMP Pollutant Removal Efficiency

Different pollutants tend to be present in runoff depending on the land use. The table below provides general guidance as to which pollutants may be expected in higher concentrations, as well as the typical ability for different BMPs to remove the pollutants.

		Target Pollutant				
		Sediment	Nutrients	Metals	Bacteria	Oil & Grease
Land Use	Agriculture	✘	✘		✘	
	Commercial	✘		✘		✘
	Residential	✘				
	Industrial	✘		✘		✘
	Parks	✘				
	Vacant/Barren Areas	✘	✘			
	Roads & Parking Lots	✘		✘		✘

		Pollutant Removal Efficiency				
		Sediment	Nutrients	Metals	Bacteria	Oil & Grease
Best Management Practice	Underground	⭘	●	●	●	●
	Bioretention Area[2]	●	⭘	⭘	●	●
	Vegetated Swale	⭘	○	⭘	○	⭘
	Filter Strip	●	○	●	○	⭘
	Vegetated Basin	⭘	○	⭘	⭘	⭘
	Constructed Wetland	●	⭘	●	●	●
	Permeable Pavement [1]	●	●	⭘	⭘	⭘
	Rainwater Harvesting [3]	●	●	●	●	●
	Green Roof [4]	●	●	●	●	●

Key to Symbols: ● High ⭘ Medium ○ Low

[1] If underground infiltration and permeable pavement are unable to drain by infiltration, removal efficiency for all constituents is low.

[2] Assumes that bioretention area is drained by underdrains. If able to discharge via infiltration, efficiency will be increased.

[3] Rainwater harvesting effectively removes all pollutants from runoff since the water quality volume is never released downstream.

[4] Green roofs receive runoff which has not yet encountered pollutants, and eliminate the addition of pollutants typically found on roofs.

Appendix C - Planning Area Maps

Additional maps, two showing the entire Hughson Planning Area, are included for reference on the following pages.

- Opportunity Sites Map
- Soils Map
- Depth to Hardpan map

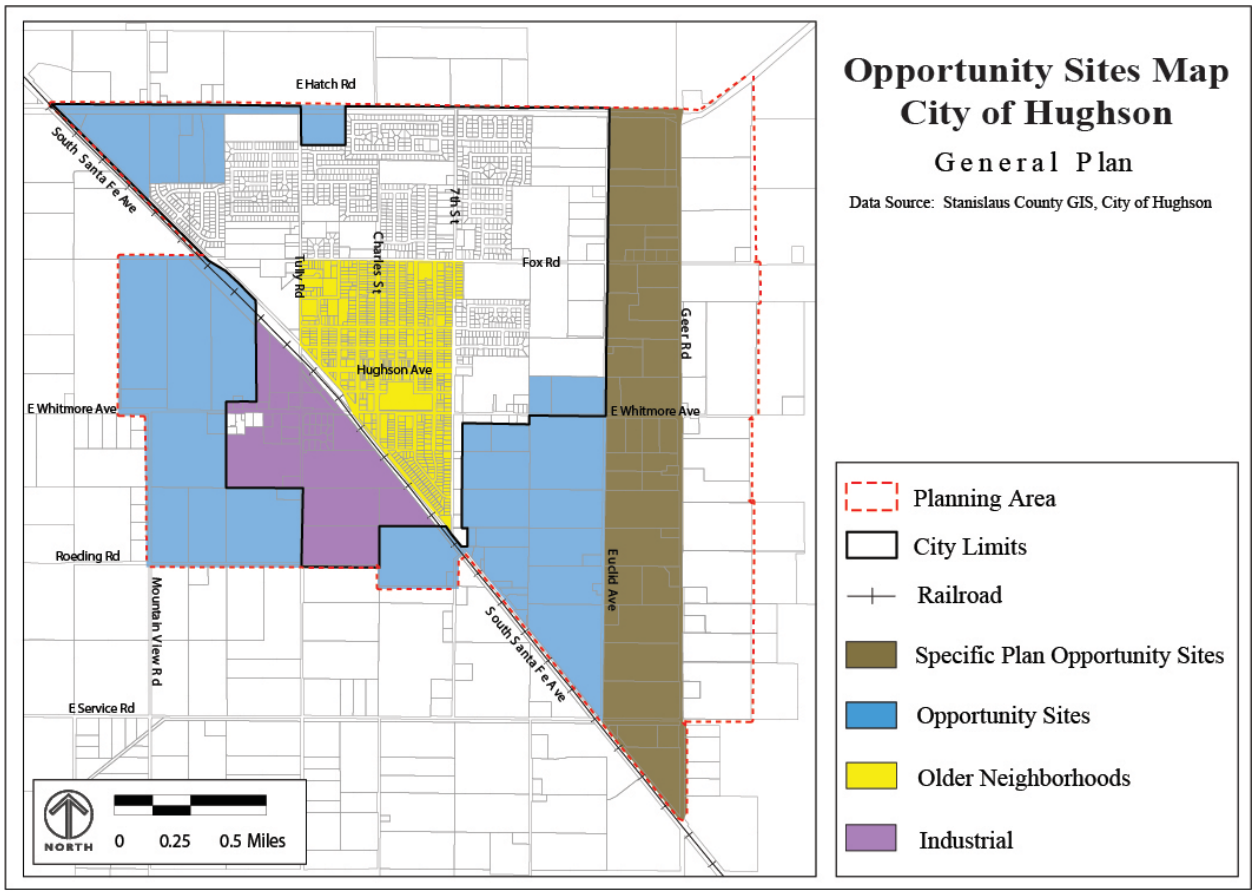


Figure C1: Opportunity Sites Map (Source: General Plan)

Hughson Arboretum and Gardens opportunity site. (Photo courtesy of Thom Clark)

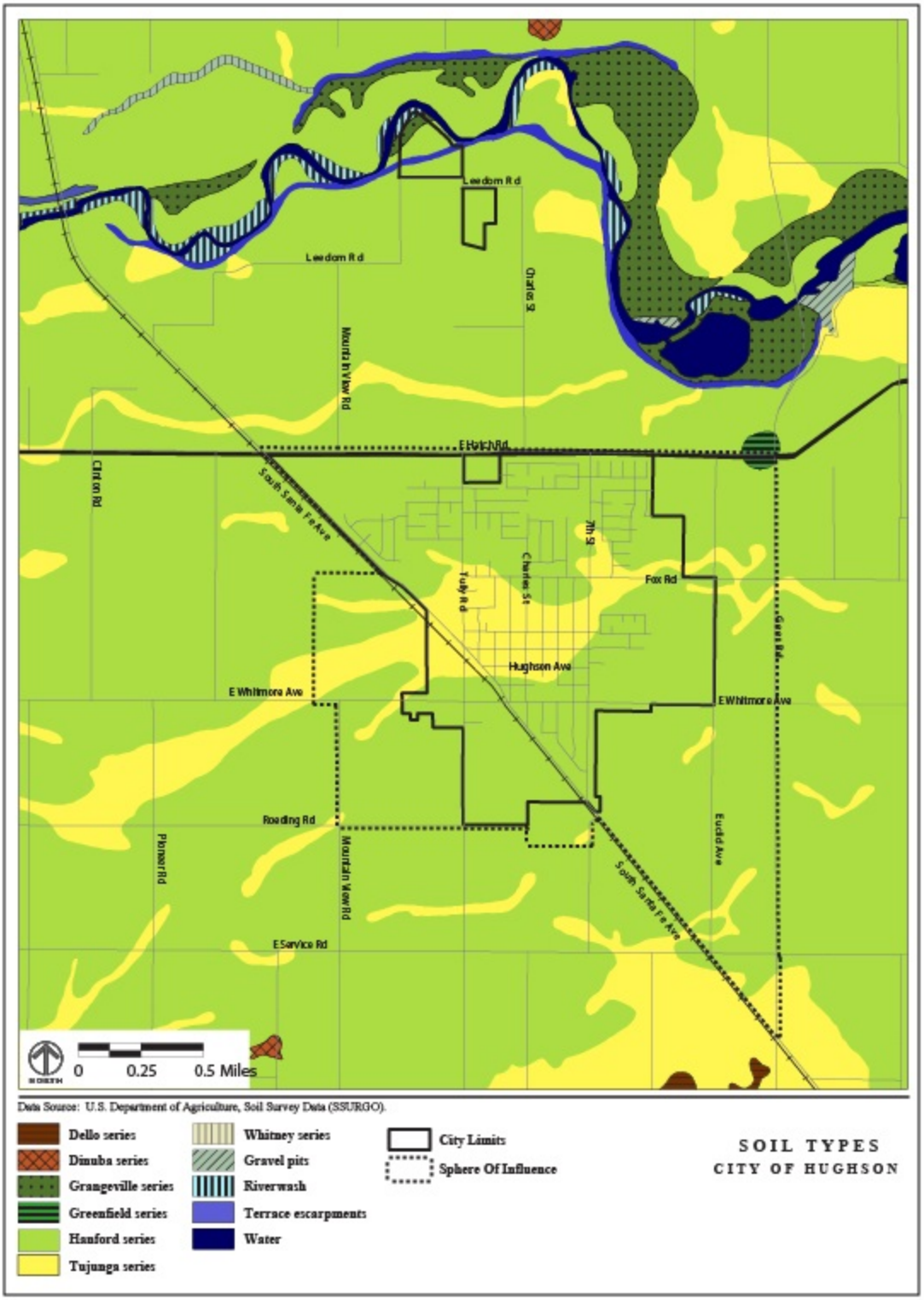
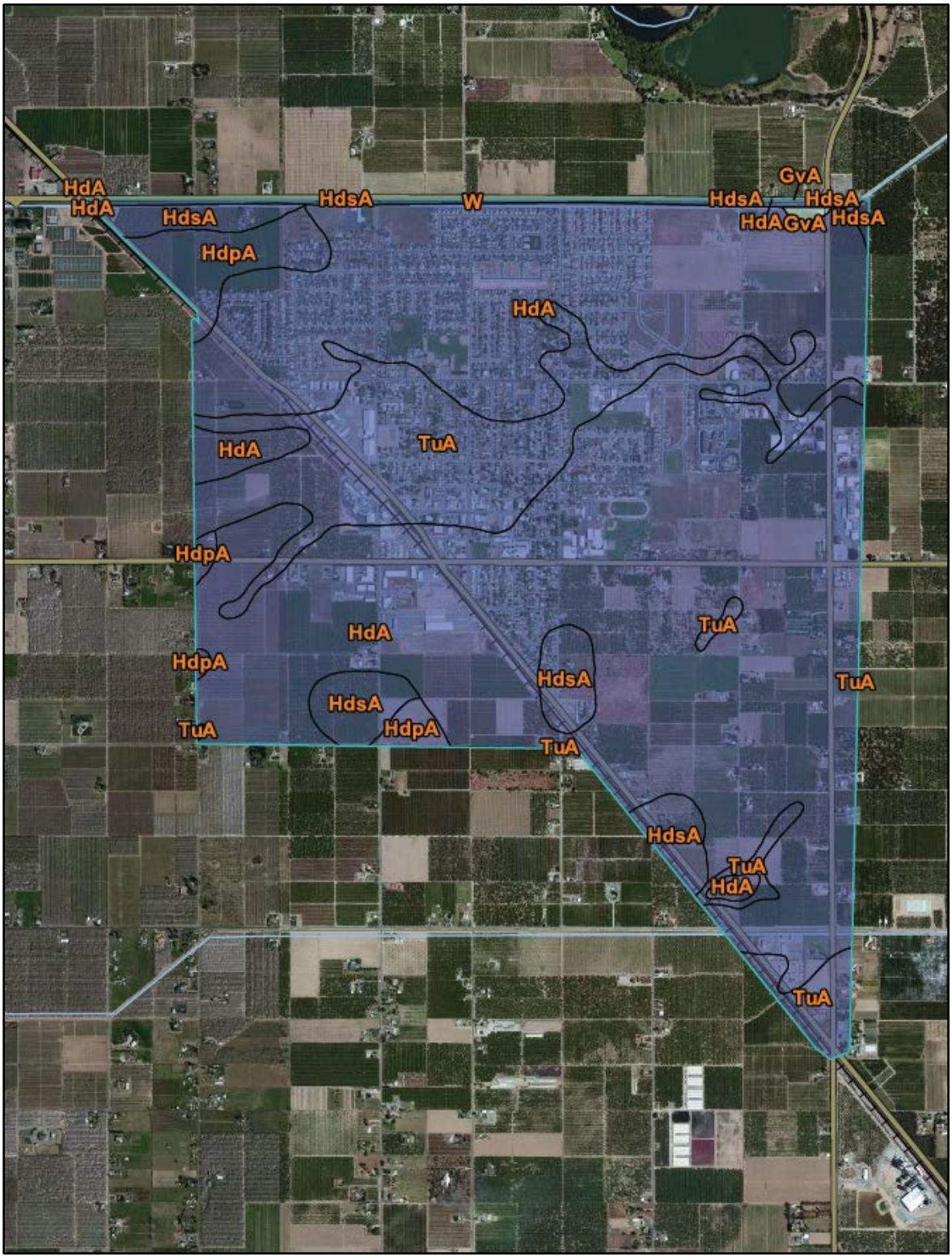


Figure C2: Soils Map (Source: NRCS 2011)



DEPTH TO HARDPAN

> 200 **(Centimeters)**

CITY OF HUGHSON

Figure C3: Depth to Hardpan Layer Map (Source: NRCS 2011)

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Part II: How to Stop Digging the Legacy City Hole Deeper

By The Economic Development Curmudgeon
From Volume 11 Feb 2014 Issue of the Journal

Print

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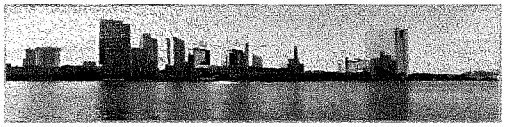


Part II

A few weeks ago we published Part I of our commentary on the **Lincoln Institute of Land Policy** report, Regenerating America's Legacy Cities by **Alan Mallach** and **Lavea Brachman**. To refresh the reader, the Lincoln Institute report defines and identifies eighteen "legacy cities" as central cities with a minimum population of 50,000 (2010) who have suffered more than a twenty per cent loss in peak population. These cities are Akron, Baltimore, Birmingham, Buffalo, Camden, Canton, Cincinnati, Cleveland, Dayton, Detroit, Flint, Milwaukee, Newark, Philadelphia, Pittsburgh, St. Louis, Syracuse and Youngstown. Each legacy city was ranked on fifteen indicators, Based on these variables, they constructed an index and ranking order from which the top three cities were: Philadelphia, Pittsburgh and Baltimore; and the bottom three cities were: Flint, Detroit, and Youngstown (see Table 3, p. 20 of the actual report). The indicators and the rankings guided the analysis of the Lincoln Institute report and informed its conclusions. But, the crux of the report is based more on its prescriptions and theoretical framework of the authors rather than drawn from the index and its rankings.

Part I discussed our assessment of the contents and framework of the Lincoln Institute Report. For the reader who has not yet taken a gander at that issue, we found several outstanding contributions worth the reader's attention, but we also identified a few, frankly serious, concerns with the policy perspective and policy prescriptions included in the report. Because we wanted to discuss these issues more deeply, and also to better present our sense of how a legacy city can stop digging its legacy hole deeper, we decided to construct Part II which would be devoted to these more serious concerns and our policy prescription for legacy city revitalization. If the reader wants to first understand the report itself, we refer the reader to Part I.

Finally, we note that one excellent reason to read the Lincoln Institute Report is that, in our opinion, it is the best commentary in recent years which reflects the "conventional wisdom" of the profession and academia concerning the causes and the policy prescriptions relevant to legacy city revitalization. The Lincoln Institute Report is a "mainstream", dare we say paradigmatic, presentation of how legacy cities dug (or got dug by others) their present hole of a seemingly bottomless economic, social, fiscal, and political decline. Detroit is the cutting edge of this decline, but by no means is it alone out there on the precipice. Our concern is that conventional wisdom includes a couple of serious miss-directions which essentially, in the minds of critically important constituencies, creates an image that the legacy city is still digging its hole deeper–or worse is defining legacy city success/revitalization in a zero-sum manner, thereby alienating essential partners to their revitalization effort.

The Centrality of a Particular Form of Regionalism to Legacy City Revitalization

Interwoven throughout the Lincoln Institute Report, and central to many previous articles and books reflecting the legacy city conventional wisdom on legacy city revitalization is the key, indeed, essential role of regionalism. The Curmudgeon does not think he is exaggerating when he assets that for the conventional wisdom regionalism is the core policy solution to legacy city revitalization. Also, as explained in Part I, suburbanization is the prime cause of legacy central city decline. Suburbs captured former residents of the central city, fragmented the metropolitan policy-making process, attracted manufacturing and other jobs, and garnered control over important regional functions which formerly were controlled by the central city.

According to the conventional wisdom, suburbs left the central city as a hollowed out shell, a demographic and social dumping ground without sufficient resources and governance capacity to sustain effective service delivery. Additionally, it left

them unable to pay for the services needed by their disproportionately distressed residential population (legacy costs). Not surprisingly, central legacy cities are peering over a fiscal cliff, trying to pay off their legacy costs almost by themselves. Enter regionalism!

Regionalism becomes a necessary element to a successful legacy city revitalization; its function is to overcome the "legacy" that the suburbs left behind. We have no problem with THAT. But just what do we mean by regionalism and, more importantly, what does conventional wisdom and the Lincoln Institute Report mean by regionalism? Essentially, our fear is that the definition of regionalism articulated by the conventional wisdom and Lincoln Institute Report is harmful to any potential legacy city revitalization strategy. We think it makes legacy city revitalization unlikely, and worse, it turns potential allies and partners into opponents or at least bystanders. In the below sections we make our case.

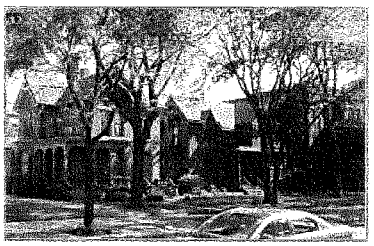
A Particular Kind of Regionalism: What is this "functions and social equity stuff"?

The Lincoln Institute embraces a complicated perspective on regionalism. Unspoken and seldom made obvious, the conventional wisdom asserts a primacy of central city over the suburbs and assumes as natural that the central legacy city should be the preferred location for residency and industry. Legacy cities have had their "functions" torn from them, mostly by the suburbs and the goal seems to be to get suburbs back into central city control. Indeed, the "legacy" of legacy cities is that all that remains of their historical and functional greatness is a memory, the legacy of what they once were.

"The way they were" is chiefly drawn from their "golden years" or peak years of population and jobs. During these legacy years the central city occupied the primary (we prefer hegemonic) position in its metropolitan hierarchy of cities. This hegemonic position is described in statements by the Lincoln Institute Report such as:

> *In their heyday, legacy cities were hubs of business, retail, and services for their regions, which often encompassed hundreds of square miles around the city. While factories provided the greatest number of jobs, the downtown areas contained department stores, professional offices and financial institutions that served the entire region". (p.4)*

This natural and desirable regional hegemony, however, was disturbed by:



> *Municipal fragmentation [in the Curmudgeon's opinion a code word for suburbanization], economic and racial conflicts, and dependence on local property taxes created a climate in which regional considerations were given low priority, fostered exclusionary zoning and pushed growth to the periphery. In slow-growing areas suburban development cannibalized central cities and inner-ring suburbs, further undermining their vitality" (p.6) and "State governments must bear much responsibility for the fragmentation of local government, the dysfunctional systems of financing [?] local government, and the absence of larger regional frameworks". (p. 7)*

In our words the report is saying these disruptive forces and negative dynamics screwed up this natural order of central city primacy over the metropolitan "hinterland". During these golden years the central city performed the key, critical functions associated with metropolitan growth and prosperity. The logic of any current legacy city revitalization initiative, drawn from this conventional wisdom, asserts that the hegemonic position of the central legacy city should be restored to the greatest extent possible.

> *The loss of central retail and service functions paralleled the loss of manufacturing. Department stores closed or moved to the suburbs, while one after another locally owned banks were absorbed by anonymous global institutions. Today the only central functions that remain in many legacy city downtowns are those of city and county government, along with a growing social service sector. (p.4)*

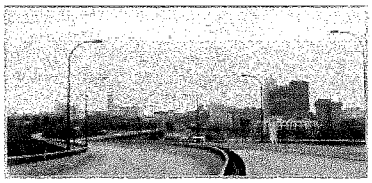
To accomplish this function-restoration task, however, we need to find the hidden list of all these lost metropolitan "functions", so that we can evaluate what functions went where. This is pretty fuzzy ground in that we wonder if over the years various scholars and commentators have more or less invented functions as they went along. Central city primacy based on "functional performance" is a pretty fuzzy, or shall we say, flexible foundation. We don't think foundations should be all that flexible: and why can't functions evolve as everything else must evolve? Figuring out how to relocate this fuzzy assemblage of time-honored functions back into the central city doesn't sound like a particularly attractive agenda to drum up allies, partners and resources in the revitalization initiative. Once one leaves the classroom or think tank there is little to no consensus that any particular function exists at all. Restoring downtown retail by relocating suburban malls to the CBD, for example, seems a bit much for any mayor or governor to embrace. For most, the Curmudgeon would wager, this retail train has long left the station. We suspect that might be true of any functions that conventional wisdom wants returned to the central legacy city. One wonders if one should give up on the "functions stuff" and move on. For better or worse, our contemporary urban areas are, more or less, multi-nodal and let's deal with it!

Legacy Costs and Social Equity

Our concern with regionalism is further intensified when we next wander into why the Lincoln Institute report believes regional involvement is necessary. They believe local government costs in legacy cities are increasing faster than population growth (duh–they have lost about half of their peak population), driven by rising infrastructure-related expenditures, and pension costs–also referred to as legacy costs–while revenue sources decrease. (p. 14) The Curmudgeon cannot see the suburban and hinterland voters, and their suburban state representatives joyfully lining up to vote in favor of increased taxes and state bailouts of unfunded central city pension and healthcare liabilities, and for perceived ineffective (arguably overwhelmed) bureaucracies. To us they will never join in a central city revitalization effort if they believe that their money and effort will not be wasted or abused.

Like it or not, if central city advocates want legacy costs to be addressed, they had better first prove to the suburbanites that the central city is not a bottomless pit. What's more they need to distinguish legacy costs which are shared with the suburbs (area-wide infrastructure and shared regional services such as museums and cultural institutions) and those legacy costs which the legacy city itself incurred. In the current environment, pension and health benefit costs are especially vulnerable. We will argue shortly that before any redefined regionalism will be successful, the legacy city must resolve the pension and health care costs. This is the first step in not digging the legacy hole deeper.

On top of legacy costs The Lincoln Report asserts that "social equity is yet another critical consideration in regeneration and plans MUST [our emphasis] be put in place to ensure that lower income and minority residents benefit from rising demand and economic growth." (p. 3). What is this social equity stuff? It seems to us there are two levels of social equity built into the conventional wisdom. The first notion behind suburban-legacy city social equity is that the legacy city in earlier periods of time supported, if not subsidized, institutions, services, infrastructure and what have you for the entire metropolitan region. Now it is payback time. The legacy city needs help and the suburbs should step up to the plate. This notion is conflicted if the legacy city is as a first order priority trying to reassert its primacy over the region. Until we jettison this "functions" element of legacy city revitalization, the legacy city is vulnerable to the all-too-reasonable counter that if the legacy city wants functional leadership, it had best be willing to pay for it. This notion of social equity is a non-starter. Legacy city "glory days" matter not in any metropolitan area's future.



The second level of social equity is much tougher and that is the level on which the Lincoln Report concentrates. The obvious reality is that most legacy cities are baskets of poverty, have the most one head of households, the least educated, the most unemployed, the most deteriorated housing and neighborhoods, and are disproportionately composed of racial minorities. These are truly the region's hard luck areas and those who are more affluent and successful ought morally to step to the plate and help. Having said this, no one, least of all the Lincoln Report, frames this level of social equity in terms of moral obligation. Rather, the argument advanced is that these concentrations of poor and disadvantage impose costs of the affluent regions and it is in the self-interest of the affluent regions to address these geographies of desperation. The Lincoln Report, for example, asserts "that these regions [the suburbs] will need to address such issues [associated with the clusters of poverty/deterioration] in order to sustain economic vibrancy" (p.16). This "economic sustainability" argument, however, is an attempt to appeal to rational self-interest, because pure morality won't play to the suburbs.

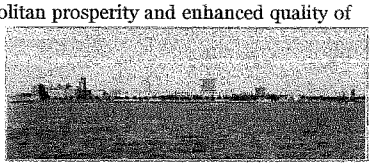
> *It is essential to address equity issues in order to promote sustainable business and economic growth; ignoring them is ultimately counterproductive for economic expansion. Regions cannot rely solely on recruiting talent from outside the area. Social and economic costs are associated with high levels of inequality and poverty. Additionally, under-and unemployment reduce regional growth.... Regional solutions must be engineered to compensate when inequality on a variety of economic indicators (such as income and business creation) acts as a drag on growth. (pp. 16-17)*

At some level these assertions may be correct–but most folk don't climb to that level. Maybe a certain kind of political leader can articulate the rhetoric that can forge the degree of understanding and compassion among suburbanites to make this argument persuasive, but from our perspective it is one more "moving part" that can divide as much as its motivates. From the perspective of conventional wisdom, the addition of social equity means that it is not sufficient to simply drop another economic engine into the central city economy–that engine must produce social and economic justice. Those so inclined may feel better to link social equity into a legacy city revitalization package, but, the Curmudgeon believes that social equity is "one bridge too far".

Suburban Reaction to "This Particular Form of Regionalism": First Step in Stopping Digging the Hole Deeper!

Backing up a bit, the Curmudgeon believes that the politics of regionalism as defined by the conventional wisdom creates an impossible burden upon legacy city revitalization–especially when regionalism is equated with central city hegemony, suburbs responsible for central city legacy costs and a perceived need to address social equity issues. Why? Because the average suburbanite will perceive this form of regionalism as an unwanted and unwelcome relationship with the central city and will to some degree resist what they regard as an unfair and invasive intrusion into their wallet and fiscal independence–not to mention their residential identity. To say it another way, this form of regionalism will be perceived by suburbanites as a one-sided "sharing of fiscal resources". Also, equating suburbia as little more than an anti-environmental sprawl puts the conventional wisdom legacy city advocates on the defensive. Someone's sprawl is someone else's home. If the suburbs are a vital and necessary part of legacy city revitalization, this is not a way to appeal to their "better angels".

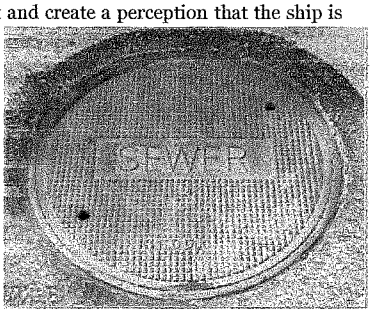
If this perception of suburban reaction is relatively accurate, why wouldn't a more effective central city revitalization strategy be to forge helpful, symbiotic relationships and programs with suburbs. Why try to "rein in" perceived suburban competition in business location and attack suburban autonomy by asserting central city functional leadership? Why expect the suburbs and the state to pay for costs and deficits not of their making? Instead why not attract suburban fiscal and economic resources in a voluntary effort of each party to achieve a desired and shared goals for metropolitan prosperity and enhanced quality of life.



Many of the vehicles discussed in the Lincoln Institute Report could serve very well in this differently articulated regionalism component to legacy city revitalization. Everything from intermunicipal service agreements, regional service districts and regional entities are excellent vehicles to address legacy city needs. Consolidation gets more dicey, and its track record supports that observation. Would city-county consolidation be helpful? Of course, but the path to consolidate is complicated, time-consuming and very fragile–and consolidation itself is only the first step to being able to focus attention of legacy "county" needs. Having the county itself step up to the plate and start taking over local functions might be a more acceptable approach. The key to all of these regional solutions is to stress partnership and mutuality and "we are all in the same boat"–not the themes and rhetoric to which conventional wisdom so easily shifts us.

The First Step in Stop Digging

Perhaps then, as we suggested in our earlier article on Detroit, some effective resolution of legacy costs is a precondition to central city revitalization? It doesn't have to be bankruptcy, but, the most basic first step to central city revitalization is stop digging a deeper hole. Until the perception exists that ship won't sink and take everybody with it, why will people work together to repair the ship! That's why the airline steward's instruction says "In case of emergency, put the oxygen mask on yourself before you help somebody else". Legacy cities must first bail themselves out and create a perception that the ship is no longer sinking.



There is a genuine criticism or counter to the Curmudgeon's critique of Lincoln Institute's regionalism. A number of the regional solutions advocated by the Lincoln Institute Report are endorsed and presented as regionalist solutions by the Report (cost-sharing through metropolitan service districts-public authorities and transfer to county of some services). The issue which separates us from the Lincoln Institute and the legacy city conventional wisdom regionalist solutions is "the packaging" and the rationale behind the purpose of regionalist initiatives. These solutions as a "right-sizing" strategy–allowing the legacy city to adjust and resize to more realistic population levels and fiscal resources. Moreover, we assert that in most legacy city metropolitan areas there exists a multi-nodal hierarchy. City-suburban relationships are not, in our mind, redistributive nor zero-sum. They are true regional partnerships reflecting the interests of all parties.

This fiscal and pension reform is the first, and best start to forging an effective regional partnership with communities and jurisdictions in the metropolitan area. From this various structural reforms can result in "right-sizing" the obligations and responsibilities of the central city. The issues, however, associated with the concentration of poverty and neighborhood deterioration, however, are, without any question more intractable–at the very least they require more time and equally without doubt are the responsibilities of higher levels of government than municipal. To address these issues it would be more

than preferable, it would be necessary for the communities of the entire metropolitan area to join together in a common mo... This unity of advocacy would be more likely if regionalism were based on partnerships than any effort by the central city to go it alone and attempt to restore its metropolitan leaderships and functional primacy. This shift from hegemony and functional restoration are also other ways in which a legacy city can stop digging the hole deeper.

Optional Reading: This "Particular Form of Regionalism" and Central Place Theory

What is this natural order, the desirable primacy of a central city over a hinterland upon which conventional wisdom rests? To us the legitimacy of a hegemonic central city best rests on single (mono) node central place theory (dig up your urban geography text book for that one). Suburbs, especially larger diverse suburbs we see in the Western states in particular, do not square very well with single node central place theory. We think it reasonable to wonder if it fits the contemporary Eastern, Great Lakes metropolitan regions as well. We sense that nation-wide the US metropolitan regions have, or are, evolving into a multi-nodal regional hierarchy of cities. To us, the conventional wisdom questions whether this evolution is, or was, a natural movement from one phase of urban development to another. Rather, conventional wisdom strongly suggests it's a movement caused by pernicious forces. [we think otherwise!]. More critically, the conventional wisdom links the restoration of hegemonic primacy of the central city with its prescriptions for legacy city revitalization. Sometimes, given the stress and centrality of restoring hegemonic central city primary in the conventional wisdom we wonder if its real goal is less legacy city revitalization than the restoration of central city functional primacy in the metropolitan regional hierarchy.

Rather, the Curmudgeon wonders if the single node metropolitan region is (1) as relevant today as it was in the 1950's, and (2) whether it needs to be "the natural order" governing city-suburban relationships. Indeed, single node metropolitan areas no longer are an exclusive characteristic of the American metropolitan system. Sun Belt city-suburbs are not, in general, carbon copies of their Northeastern and Midwestern counterparts. In the East, central cities, more or less arrived on the scene first and suburbs are their demographic-economic descendants. That may well be more a function of history, a phase, a period of evolution than the natural order of things. Sun Belt central cities and suburbs, again more or less, grew up together and simultaneously. Also, many first and second generation Western suburban residents spent their childhood in Eastern suburbs and directly moved to Western suburbs. Suburban living is a residential choice today. That choice may be a choice which many prefer not to exist–but it does. The contemporary urban landscape has trended for decades in a multi-nodal direction and while it may ebb and flow, we are not going back to the central city golden years. The suburbs are here to stay..

We question this linkage of central city single node metropolitan primacy with legacy city revitalization strategy. We strongly believe that any attempt to restore central city functional primacy will increase the likelihood of failure in returning the central city to some reasonable level of economic and social vigor. To us linking central city revitalization to some form of aggressive regionalism whose core purpose is restoring central city hegemony is, at best, making the revitalization task way more complicated and time consuming than it needs to be. At worst, this concept of regionalism invites suburban counter reaction and outright opposition. Also the linkage distracts central city reformers from more essential tasks more directly related to dealing with serious central city problems. Delinking this form of regionalism from central legacy city revitalization is an significantly important element of our "if you are deep in a hole, the first step to getting out is stop digging deeper", argument. The very first step in our stop digging strategy is to deemphasize this aggressive conventional wisdom definition of regionalism and substitute a form of regionalism which stress partnership and mutual advantage for the metropolitan region as whole.

Forgetting for the moment the "functions stuff", there is a larger issue with the conventional wisdom's definition of regionalism. If the central city is to be the primary place that will drive future metropolitan economy growth and administer/lead/dominate metropolitan social, economic and political life, then suburban-sprawled decentralization must in some way be countered, minimized if not eliminated. This task is, to us, the task left to conventional wisdom "regionalism". If so, one wonders where the "allies" are in this endeavor–they certainly won't be the suburbs and suburban state legislators

The term region obscures the complex web of hinterland jurisdictions (school systems, special districts, regional authorities usually within the orbit of state politics, cities, towns, villages, unincorporated areas--and regional governments called counties). Each of these entities enjoy their own governance and exist in a world of picket-fence fiscal federalism. The regional zoo includes a lot of critters that no smart strategist would want to lasso–or be able to lasso. There is a reason why there are few concrete instances of anything approaching a regional government other than a city-county consolidation Linking central city revitalization to this jurisdictional maze of infighting, impotence, theoretical-ideological babble and conflicting political constituencies is, in the Curmudgeon's opinion, sentencing central city revitalization to a near- certain death.

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