AGENDA
CITY OF PATTERSON

CITY COUNCIL REGULAR MEETING
May 3, 2016
7:00 p.m.

City Council Chambers
1 Plaza
Patterson, California

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Clerk at (209) 895-8014. Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting. [28 CFR 35.102-35.104 ADA Title II]

The agenda and supporting public documents are available for viewing in City Hall, Administration Department, 1 Plaza, 2nd Floor, Patterson, California. The agenda and supporting public documents are also available online on our City web site www.ci.patterson.ca.us listed under Popular Links "Agenda Center" and listed under the "Upcoming Events Calendar" under the date of the meeting or please call or email the City Clerk at (209) 895-8014 or cityclerk@ci.patterson.ca.us

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1. Call to Order

2. Pledge of Allegiance

3. Statements of Conflict

4. Items from the Public

Any member of the audience desiring to address the Council regarding a matter on the agenda, please raise your hand or step to the podium at the time the item is announced by the Mayor. The public wishing to address the Council on items that do not appear on the agenda may do so; however, Council will take no action other than referring the item to staff for study and analysis and shall place item on a future agenda (Resolution 92-25)

In order that all interested parties have an opportunity to speak, any person addressing the Council will be limited to a maximum of five (5) minutes unless the Mayor grants a longer period of time (Resolution 92-25)

5. Consent Calendar

All items are approved by a single action. Any item may be removed from the Consent Calendar for separate discussion upon request from a member of the Public, Staff and/or Councilmember.

5.1 Motion to Waive Readings - All Readings of Ordinances and Resolutions, Except by Title are hereby waived.

5.2 Approval of City Council Meeting Minutes of April 5, 2016 and April 9, 2016 (View Report)

5.3 Approve Resolution No. 2016-31, Authorization to File an Application for Grant Funds from the State of California, Department of Water Resources for Aquatic Adventure Camp (View Report)

5.4 Approve Staff to Submit Application for the Beverage Container Recycling City/County Payment Program (Resolution No. 2016-32) (View Report)

5.5 Approve Resolution No. 2015-33, for the Adoption of National Public Works Week (NPWW) May 15 - 21, 2016 (View Report)

5.6 Award a Five Year Contract to Aramark Uniform Services for Uniform Service and Authorize the City Manager to Execute the Contract (View Report)

5.7 Approve Resolution No. 2016-34, Rejecting the Claim of Shirley Collins In An Amount of $2,000 for Alleged Damages (View Report)

6. Presentations and Public Hearings

6.1 Presentation:

a. Proclamation – Mental Health Awareness Month "May 2016" (Mayor Molina)

b. Proclamation – Older Americans Month "May 2016" (Mayor Molina)

c. Presentation by Hammon Senior Center – Programs Shellini Singh, Recreation Coordinator (Seniors)

(Proclamations to be made available at the meeting)

6.2 Public Comment/ Action Item:

Authorize Staff to Abate Public Nuisance, by Removing Weeds, Dirt, Rubbish, and/or Rank Growth Pursuant to the Provisions of Ordinance No. 243 and Ordinance No. 704, as defined in Chapter 6.16 of the Patterson Municipal Code - Property Maintenance; Authorize Staff to Begin Bid Process (Resolution No. 2016-35) (View Report)

Mayor: **Open/Close Item to Public Comments**
Council: **Motion to Approve Reso. No. 2016-35**

6.3 Public Hearing: (Continued Public Hearing from April 19, 2016)

Consider Adoption of Wastewater Master Plan

Wastewater Master Plan - the City of Patterson has undertaken preparation of a series of Master Plans addressing infrastructure and public service needs. One of these Master Plans, for Wastewater, has been completed by City consultants, and will be presented to the City Council for adoption. The Wastewater Master Plan addresses wastewater infrastructure needs based on long-term plans for City development under its adopted General Plan, including plans for sewer conveyance and wastewater treatment through community buildout. As part of this action, the City has also prepared an Addendum to the 2010 General Plan Environmental Impact Report pursuant to the provisions of CEQA (View Report)

Staff Report: **City Planner Andrews**
Mayor: **Open/Close Public Hearing**
Council: **Motion to Adopt the Wastewater Master Plan**

6.4 Public Hearing: Motion to Approve Second Reading and Adoption of Ordinance No. 795.

Ordinance 795, An Ordinance of the City Council of the City of Patterson, California, Amending Title II, Administration and Personnel, Adding Chapter 2.10: Council Member Elections By-District, to the Patterson Municipal Code, to Establish that Election of Council Members Shall be By District (View Report)

Staff Report: **City Attorney Hallinan,**
Douglas Johnson, National Demographics Corp.

Mayor: **Open/Close Public Hearing**

Council: **Read Ordinance No. 795,**
Title Only As Listed Above

Council: **Motion to Approve Second Reading of Ordinance No. 795, Reading by Title Only, Waiving Further Reading**

Council: **Motion to Adopt Ordinance No. 795, Reading by Title Only, Waiving Further Reading**

7. City Staff Reports

Public Works Department

Award Contract to RMC Water and Environmental for Preparation of the Chromium 6 Feasibility Study (View Report)

8. Council Items

8.1 City Council Reports

Mayor Molina:

- StanCOG (Councilmember McCord Alternate)
- Stanislaus County Mayors Dinner
- Patterson/West Stanislaus Fire Services Committee (Councilmember Farinha 1st Alternate, Councilmember Novelli 2nd Alternate)
- Stanislaus County Disaster Council (Councilmember McCord Alternate)

Mayor Pro Tem Novelli:

- Patterson Representative – League of California Cities (LOCC) (Councilmember Lustgarten Alternate)
- Stanislaus County Economic Development & Workforce "Alliance" (Councilmember Novelli Alternate)
- Economic Development Action Committee (EDAC) (Councilmember Novelli Alternate)

Councilmember Farinha:

- San Joaquin Air Pollution Control District – Valley-wide Special City Selection Committee (Councilmember Novelli Alternate)
- Stanislaus County Hazardous Waste Advisory Committee (Councilmember McCord Alternate)

Councilmember McCord:

- Westside Health Care Task Force

Councilmember Lustgarten:

8.2 Other Matters

9. Adjournment

5. CONSENT CALENDAR

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Maricela Vela, City Clerk

MEETING DATE: May 3, 2016

ITEM NO: 5.2

SUBJECT: Approve City Council Meeting Minutes of April 5, 2016 and April 9, 2016

RECOMMENDATION

Motion to approve the City Council Meeting Minutes of April 5, 2016 and April 9, 2016.

City of Patterson
City Council Special Meeting
April 5, 2016
(Closed Session at 6:00 p.m.)
Minutes

1. Call to Order

The special (Closed Session) meeting of the City Council of the City of Patterson was called to order in City Hall, City Council Chambers, 1 Plaza, Patterson at 6:02 p.m. by Mayor Molina.

Present: Councilmembers McCord, Novelli, Farinha and Mayor Molina (4)

Staff: City Manager Irwin, City Attorney Hallinan (2)

Excused: Councilmember Lustgarten (1)

At this time, Mayor Molina announced the items to be discussed in Closed Session and opened the items to public comments.

The City Council will adjourn to Closed Session to address the following:

- Conference with Legal Counsel, Anticipated Litigation – Significant Exposure to Litigation Pursuant to Paragraph (2) of Subsection (d) of California Government Code Section 54956.9. (1 case)

2. Statements of Conflict – none.

3. Items from the Public

Terry McWilliams, 632 Kinshire Way, Patterson – addressed the City Council on the item of having a tree planted in front of her house. Ms. McWilliams submitted an appeal letter to Public Works Director Mike Willett. Also emailed City Councilmembers. Ms. McWilliams requested to not receive, have a tree planted in front of her house.

City Manager Irwin addressed Ms. McWilliams concerns. Ms. McWilliams to be notified when tree report will come before the City Council for review. Any written documentation provided by Ms. McWilliams to be forward to the City Clerk and City Clerk to email to City Council and staff.

Ms. McWilliams was assured by City Council and staff that a tree would not be placed/planted in front of her house until the item was addressed by City Council at a City Council meeting first.

4. Adjourn to Closed Session

At 6:04 p.m. there being no further public comments, the Patterson City Council adjourned to Closed Session.

5. Report from Closed Session (if any)

There was nothing to report out from Closed Session.

6. Adjournment

There being no further business, the special (Closed Session) meeting of the City Council of the City of Patterson of April 5, 2016 was adjourned at 6:32 p.m.

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Maricela Vela, City Clerk of the City of Patterson

City of Patterson
City Council Special Meeting
April 5, 2016
(Open Session at 6:30 p.m.)
Minutes

1. Call to Order

The special meeting of the City Council of the City of Patterson was called to order in City Hall, City Council Chambers, 1 Plaza, Patterson at 6:33 p.m. by Mayor Molina.

Present: Councilmembers McCord, Novelli, Farinha and Mayor Molina (4)

Staff: City Attorney Hallinan, City Manager Irwin, Police Chief Dirkse, Interim Fire Chief Gregory, City Planner Andrews and City Clerk Vela (6)

Excused: Councilmember Lustgarten (1)

2. Pledge of Allegiance

3. Statements of Conflict – none.

4. Items from the Public

Larry Buehner, Patterson – addressed the City Council thanking the Patterson Soroptimist Club for all the decorations, purple ribbons around town.

5. Discussion Item: Informational Report Regarding Councilmember Sheree Lustgarten's Potential Abandonment of Office.

City Attorney Hallinan reviewed his staff report.

Councilmember McCord addressed the process of moving the item forward. Councilmember Farinha addressed the date of Friday, April 8, 2016 to hold a Special City Council meeting to addressed the item.

Councilmember McCord moved to schedule a Special City Council meeting on Friday, April 8, 2016 at 6 p.m. in City Hall, City Council Chambers, 1 Plaza to address/move forward on the Item. The motion was seconded by Councilmember Farinha and approved by a 4-0 roll call vote.

6. Council / Public Comments - none.

7. Adjournment

There being no further business, the special meeting of the City Council of the City of Patterson of April 5, 2016 was adjourned at 6:40 p.m.

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Maricela Vela, City Clerk of the City of Patterson

City of Patterson
City Council Regular Meeting
April 5, 2016
Minutes

1. Call to Order

The regular meeting of the City Council of the City of Patterson was called to order in City Hall, City Council Chambers, 1 Plaza, Patterson at 7:05 p.m. by Mayor Molina.

Present: Councilmembers McCord, Novelli, Farinha and Mayor Molina (4)

Staff: City Manager Irwin, City Attorney Hallinan, Police Chief Dirkse, Interim Fire Chief Gregory, City Planner Andrews, Public Works Director Willett, Finance Director Ryan, City Engineer Ulloa, Recreation & Community Services Director Flanders and City Clerk Vela (10)

Excused: Councilmember Lustgarten (1)

2. Pledge of Allegiance

3. Statements of Conflict – none.

4. Items from the Public

Amy Hussar, Patterson (American Legion Post 168) - addressed the City Council on upcoming events; hosting a Candidate's forum on the Board of Supervisors Candidates, Wednesday, May 4, 2016 at the Hammon Senior Center, planning this year's 4th of July Celebration from 9 a.m. to 1 p.m. at North Park, planning a series of dancing in the park Event(s), Fridays once a month at North Park.

Ron West, Patterson – addressed the City Council on the item of Redistricting of the City Council.

Mayor Molina addressed that item was on the agenda for discussion later on the agenda.

Eileen Wyatt-Stokman, Ceres – addressed the City Council introducing herself as a candidate for the Stanislaus County Board of Supervisors, District 5 seat. Mrs. Wyatt-Stokman addressed the City Council on the item of the City's entrance signs.

5. Consent Calendar

All items are approved by a single action. Any item may be removed from the Consent Calendar for separate discussion upon request from a member of the Public, Staff and/or Councilmember.

5.1 Motion to Waive Readings - All Readings of Ordinances and Resolutions, Except by Title are hereby waived.

5.2 Approve City Council Meeting Minutes of March 1, 2016.

5.3 Approve the Resolutions Declaring the City Council's Intention to Initiate Proceedings for the Annual Levy of Assessments and Ordering the Preparation of Engineer's Reports for the Landscape Maintenance Districts (LMDs) and County Service Area (CSA) No. 15 for FY 2016/17 (Resolution Nos. 2016-26 and 2016-27)

Councilmember McCord moved to approve Consent Calendar Item 5.1 through 5.3. The motion was seconded by Mayor Pro Tem Novelli and unanimously approved by a 4-0 roll call vote.

6. Presentations and Public Hearings

6.1 Presentation: National Library Week – Proclamation
Xia Headrick, Branch Supervisor,
Stanislaus County Library (Mayor Molina)

Mayor Molina presented Xia Headrick with a Proclamation.

6.2 Presentation: Pet Expo – Westside Pet Awareness Partners
Presentation and Proclamation, Augusta Farley
(Councilmember Farinha, Mayor Molina)

Councilmember Farinha presented August Farley with a Proclamation.

6.3 Presentation: Draft South County Corridor Feasibility Study (StanCOG)

City Manager Irwin reviewed his staff report.

Keith D. Rhodes, P.E., with T.Y.LIN International reviewed his report – power point presentation.

At 7:38 p.m. Mayor Molina opened the item to public comments.

Joe Hollowell, Patterson – addressed the City Council speaking in support of the south county corridor stating his support for moving forward along the Zachariah road route. Mr. Hollowell asked about who had prepared the cost estimate for all segments and if it was available to the public. Mr. Hollowell stated he was not in support of the Crows Landing route.

Keith D. Rhodes, P.E., with T.Y.LIN International stated Segments were part of the Feasibility Study and available for public review.

Pat Maisetti, Patterson (Past President of StanCOG and the State COG) – addressed the City Council suggesting for City Council to look at development in the future, look at expenditures that are coming in and for the City to fights for the gas dollars. Mrs. Maisetti suggested for City Council to look at viable items for the Westside.

Ron West, Patterson – addressed the City Council on Patterson's General Plan. Mr. West envisioned Zachariah Road route. Mr. West addressed the history of south county corridor discussions.

Armin Arambide, Patterson – addressed the City Council on the item of safety and priority. Mr. Arambide stated his support for Zachariah road route.

Larry Buehner, Patterson – addressed the City Council suggesting for Council to think ahead, figure out the route and design ahead of time. Mr. Buehner stated his support for the Zachariah road route.

Amy Hussar, Patterson – addressed the City Council on the Zachariah Road route, stating that a Patterson High School was being planned in the area. Mrs. Hussar suggested for City Council to keep in mind the safety of the students when choosing a route.

At 8:00 p.m. there being no further public comments, Mayor Molina closed the item from further public comments.

6.4 Public Hearing: Motion to Approve First Reading and Introduction of Ordinance No. 794, An Ordinance of the City Council of the City of Patterson, Amending Section 18.82.070(D) "Freeway Oriented Signs" of the Patterson Municipal Code.

City Planner Andrews reviewed his staff report – power point presentation.

The City Council addressed the following:

- Width of the Signs
- Villa del Lago Sign
- Adding language to D. 2. Draft Freeway Oriented Signage Ordinance; In no case, shall signs more than 30 feet tall be located within one-quarter mile of any residentially designated area.

At 8:21 p.m. Mayor Molina opened the Public Hearing to public comments. There were no public comments.

Councilmember Farinha Read Ordinance No. 794, reading by title only, waiving further reading.

Councilmember Farinha moved to approve First Reading and Introduction of Ordinance No. 794, reading by title only, waiving further reading. The motion was seconded by Councilmember McCord and approved by a 4-0 roll call vote.

6.5 Public Hearing: Second Public Hearing and City Council Recommendation of Preferred By-District Election Boundary Plan

City Attorney Hallinan reviewed his staff report – history of why Patterson was moving to district elections.

Douglas Johnson with National Demographics Corporation reviewed his report – power point presentation.

The City Council addressed the following:

- District 5 maps
  - If the City was to annex additional property, City Council would update the district lines.

At 8:45 p.m. Mayor Molina opened the Public Hearing to public comments.

Amy Hussar, Patterson (former School Board Trustee) – addressed the City Council on the item of school districting elections. Mrs. Hussar stated she was not in support of district elections but it was the law. Mrs. Hussar addressed the item of lack of candidates. Mrs. Hussar addressed the item of from district elections instead of by district elections. Mrs. Hussar encourage a five district map and rotating the Mayor's seat.

Ron West, Patterson – addressed the City Council asking for City Council to stand up against district elections. Mr. West stated he was not in support of district elections. Mr. West stated district elections would divide the City. Mr. West submitted a petition to the City.

Heather Nosek, Patterson – addressed the City Council stating her disagreement with district elections. Ms. Nosek stated she was not in support of district elections.

Ron Swift, Patterson – addressed the City Council stating he was not in support of district elections. Mr. Swift addressed the history of City elections. Mr. Swift suggested for the City to get the word out to the public in regards to districting elections.

Larry Buehner, Patterson – addressed the City Council on the item of uniting the City instead of dividing. Mr. Buehner suggested for the City to place item on the ballot for Patterson voters.

Mayor Pro Tem Novelli asked for staff to change district areas to alphabetical instead of numerical.

Jim DeMartini, Stanislaus County Board of Supervisors, Supervisor – addressed the City Council on the item of his preference of the City not to go to district elections until the City was bigger such as 75,000 population. Mr. DeMartini stated he did not agree with district elections for small cities.

Amy Hussar, Patterson – addressed the City Council on the item of the people that are doing the suing were involved in the authoring of the bill in 2001, which came in late at the end of the year. Mrs. Hussar encourage the community that if this didn't seem right, for the community to add language such as a (population) cap, the need to work towards making item more reasonable for a diversity in service.

Heather Nosek, Patterson – addressed the City Council stating the City had choices. It may not be the choice that they wanted, but that the City Council had choices. Ms. Nosek stated she would like to see this energy to be put towards a defense of a lawsuit, put towards education and getting people out to the polls. Ms. Nosek addressed the Recall Committee, they were doing their best whether for or against the recall petition, they were getting people registered to vote.

Councilmember Farinha addressed the item of if no one stepped up to fill a district seat, how would seat be filled.

City Attorney Hallinan addressed the item on how a vacancy in a district would be filled, stating seat being a vacancy and that City Council would appoint a member from the public that lives in that district. City Attorney Hallinan stated there could not be three appointed Councilmembers.

Amy Hussar, Patterson – addressed the City Council on the School's process when they went to district elections. Mrs. Hussar addressed the item of public participation in the school's districting process. Mrs. Hussar addressed the City Council asking questions about write in ballots.

City Council suggested for the public to write letter to their state representatives of their concerns with regards to forcing their City to go into district elections.

Elias Funez, Patterson – addressed the City Council on the item of a cut off (cap) population wise in regards to districting elections.

At 9:22 p.m. there being no further public comments, Mayor Molina closed the Public Hearing from further public comments.

Mayor Molina stated his support for a 4 District Map Draft 2 and allow citizens to vote for their Mayor at Large.

Mayor Pro Tem Novelli stated her support for a 5 District Map Draft 2, with a rotating Mayor seat.

Councilmember Farinha stated his support for a 5 District Map Draft 1 or 2, with a rotating Mayor seat.

Councilmember McCord stated his support for a 5 District Map Draft 2, with a rotating Mayor seat.

Councilmember McCord motioned to recommend 5 District Draft 2 Map, putting Jake Creek back with its neighbors, item to be brought back to the next City Council meeting and get further input from the citizens (moving the north side of Jake Creek from District 1 to District 2). The motion was seconded by Councilmember Farinha and approved by a 3-1 roll call vote. Mayor Molina voted no.

Mayor Pro Tem Novelli and Councilmember Farinha but no more than two Councilmembers at one time to work with Douglas Johnson of National Demographics Corporation to resolve district lines before the next City Council meeting. City Manager Irwin to coordinate meeting(s) between Council and Douglas Johnson of National Demographics Corporation.

7. City Staff Reports

Ordinances (Second Reading and Adoption)

a. Ordinance No. 792, An Ordinance of the City Council of the City of Patterson Amending Chapters 1.36 and 1.44 of the Patterson Municipal Code to establish Procedures for Issuing Administrative Citations.

Mayor Molina Read Ordinance No. 792, reading by title only, waiving further reading.

At 9:34 p.m. Mayor Molina opened the item to public comments. There were no public comments.

Councilmember McCord moved to approve Second Reading of Ordinance No. 792, reading by title only, waiving further reading. The motion was seconded by Mayor Pro Tem Novelli and approved by a 3-0 roll call vote. Councilmember Farinha was excused.

Mayor Molina moved to Adopt Ordinance No. 792, reading by title only, waiving further reading. The motion was seconded by Councilmember McCord and approved by a 3-0 roll call vote. Councilmember Farinha was excused.

b. Ordinance No. 793, An Ordinance of the City Council of the City of Patterson to Add Chapter 10.42 to City of Patterson Municipal Code Regarding Funeral Procession Escorts.

Mayor Molina Read Ordinance No. 793, reading by title only, waiving further reading.

Mayor Molina moved to approve Second Reading of Ordinance No. 793, reading by title only, waiving further reading. The motion was seconded by Mayor Pro Tem Novelli and approved by a 4-0 roll call vote.

Mayor Molina moved to Adopt Ordinance No. 793, reading by title only, waiving further reading. The motion was seconded by Mayor Pro Tem Novelli and approved by a 4-0 roll call vote.

8. Council Items

8.1 Approve the Appointment or Reappointment of two (2) Planning Commission Members for the Term of February 2016 to February 2018 (Councilmember Farinha, Mayor Pro Tem Novelli)

- Bryan Bingham
- Ana Andrade
- Ronald West
- Zach Keller

Councilmember Farinha moved to reappoint Bryan Bingham and Ron West to the Patterson Planning Commission. The motion was seconded by Mayor Pro Tem Novelli and approved by a 4-0 roll call vote.

For the record Mayor Pro Tem Novelli thanked all the applicants for applying to the Patterson Planning Commission.

8.2 City Council Reports

Mayor Molina:

- StanCOG (Councilmember McCord Alternate) – meeting scheduled for April 20, 2016 at 6 p.m. 1111 I Street, Modesto Offices.
- Stanislaus County Mayors Dinner – Meeting scheduled for April 13, 2016 in Waterford.
- Patterson/West Stanislaus Fire Services Committee – nothing to report. (Councilmember Farinha 1st Alternate, Councilmember Novelli 2nd Alternate)
- Stanislaus County Disaster Council (Councilmember McCord Alternate) – meeting scheduled for May 26, 2016.

Mayor Pro Tem Novelli:

- Patterson Representative – League of California Cities (LOCC) – attending California Action days through the League of California Cities, April 25, 2016.
  (Councilmember Lustgarten Alternate)
- Stanislaus County Economic Development & Workforce "Alliance" – nothing to report.
  (Councilmember Novelli Alternate)
- Economic Development Action Committee (EDAC) – nothing to report.
  (Councilmember Novelli Alternate)

Councilmember Farinha – nothing to report on items.

- San Joaquin Air Pollution Control District – Valley-wide Special City Selection Committee (Councilmember Novelli Alternate)
- Stanislaus County Hazardous Waste Advisory Committee
  (Councilmember McCord Alternate)

Councilmember McCord:

- Westside Health Care Task Force – meeting scheduled for April 7, 2016 at the Hammon Senior Center at 6 p.m.

  Councilmember McCord invited the public to a City Pre-Budget Workshop on Saturday, April 9, 2016 starting at 9 p.m. at the Hammon Senior Center. Discussion items; Enterprise Funds, Mello Roos Funds, Roads in the Area, etc.

Councilmember Lustgarten – nothing to report.

8.3 Other Matters – nothing to report.

Mayor Molina addressed the April 1, 2016 at 7 a.m. Advance Life Support (ALS) Kick Off event at Fire Station 1. Introduction to the community, Channel 40 and the Patterson Irrigator were present.

9. Adjournment

There being no further business, the regular meeting of the City Council of the City of Patterson of April 5, 2016 was adjourned at 9:41 p.m.

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Maricela Vela, City Clerk of the City of Patterson

City of Patterson
City Council Special Meeting
(Pre-Budget Workshop)
Saturday, April 9, 2016
Minutes

1. Call to Order

The special meeting of the City Council of the City of Patterson (started/began) at the Hammon Senior Center, 1033 W. Las Palmas Avenue, Patterson at 9:05 p.m.

Present: Councilmembers McCord, Farinha, Novelli and Mayor Molina (4)

Staff: City Manager Irwin, City Attorney Hallinan, Public Works Director Willett, City Engineer Ulloa, Finance Director Ryan, Interim Fire Chief Gregory, City Accountant Callum, Public Works Management Analyst Basalusalu, Ken Rico with Del Rio Advisors, Dave Fama the City's Bond Attorney and City Clerk Vela (11)

Excused: Councilmember Lustgarten (1)

2. Pledge of Allegiance

3. Statements of Conflict – none.

4. Items from the Public – none.

5. MELLO ROOS / ASSESSMENT DISTRICTS

- What is a Mello Roos/Assessment District?
- Summary of Mello Roos and Assessment District Proceeds

Ken Rico with Del Rio Advisors reviewed his staff report – power point presentation.
City Finance Director Ryan reviewed her staff report – power point presentation.

The City Council/Public discussed the following:

- Heartland Ranch
- Well Drilling
- Cost Benefit Evaluation
- Non Potable Wells
- Debt Services Analysis
- Senior Center Parking Lot Second Entrance
- Sports Complex – when will it be completed
- City's Strategic Plan

ENTERPRISE FUNDS 101

- What is an Enterprise Fund
- Funding Income / Expenditures

City Manager Irwin reviewed his staff report – power point presentation.
Public Works Director Willett reviewed his staff report – power point presentation.

(At 10 a.m. Mayor Molina was excused)

Finance Director Ryan reviewed her staff report – power point presentation.
Ken Rico with Del Rio Advisors reviewed his staff report – power point presentation.

The City Council/Public discussed the following:

- City's A Rating Bond Status
- Recommend Sewer Rate Increases
- Chrome 6

STANISLAUS COUNTY ½ CENT TAX MEASURE

- Expenditure Plan
  - Road Maintenance
  - Traffic Management
  - Bicycle & Pedestrian Improvements

City Manager Irwin reviewed his staff report – power point presentation.

The City Council/Public discussed the following:

- County Tax Measure
- City's Expenditure Plan
- Placing the County's Power Point Presentation on the City's website
- Local scope of Patterson streets
- Slurry seal process; 5 year v. 10 year overlay
- Soil in the City of Patterson
- Community Center Parking Lot
- Pavement Management
- Pavement Management Plan Presentation
- School corridor areas
- Staff to report back on estimates on property owner share to fund the street maintenance within the district assessment.
- Assessment evaluation for overlay; Traffic Patterns and Number of Homes.
- Cost benefit evaluation on non-potable well
- CFD estimates, poll area
- Assessment Districts/Maintenance Districts – majority vote approval
- How much each homeowner is assessed
- Educate the public on the pavement management plan
- Sperry Avenue corridor junction
- Federal funding property

- Local control, local maintenance
- Proposed expenditure plan, traffic management
- County measure process – outreach
- South County corridor project – regional project

6. Public Comments - Questions from the Public – other matters - none.

7. Adjournment

There being no further business, the special meeting of the City Council of the City of Patterson of Saturday, April 9, 2016 held at the Hammon Senior Center, 1033 W. Las Palmas Avenue, Patterson was adjourned at 10:51 p.m.

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Maricela Vela, City Clerk of the City of Patterson

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Juliene Flanders, Director of Recreation and Community Services

MEETING DATE: May 3, 2016

ITEM NO: 5.3

SUBJECT: Approve Resolution No. 2016-31, Authorization to File an Application for Grant Funds from the State of California, Department of Water Resources for Aquatic Adventure Camp

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RECOMMENDATION

Staff recommends that the City Council approve Authorization to File an Application for Grant Funds from the State of California, Department Of Water Resources for an Aquatic Adventure Camp.

BACKGROUND

For the past two years the City of Patterson Recreation & Community Services Department has worked with the Department of Water Resources to provide an Aquatic Adventure Camp for the youth of Patterson. This program has been very successful in educating youth on aquatic safety and developing skills in the water to prevent drowning. It is now time to renew the grant for a two year period. This partnership has assisted Patterson in providing the aquatic camp opportunity for Patterson youth.

ANALYSIS

The Aquatic Adventure Camp provides Water Safety Training to all children and youth – especially ethnic minorities and those children who would most benefit from this positive youth development. This program will be offered to approximately 25 – 30, 5th – 8th grade youth. By providing children water safety education, The City of Patterson hopes to address that drowning is the second leading cause of unintentional injury/death among children 1-14 years of age according to the Center for Disease Control, and a leading cause of death among California children. For every drowning that occurs, there are five nonfatal submersion injuries. This program will also introduce youth to the potential job opportunities such as lifeguarding and swim instruction.

The City of Patterson Recreation and Community Services Department will conduct a two week Aquatic Adventure Camps during the summers of 2016 and 2017. Each camp will be scheduled for ten days, from 9:00 am – 12:00 noon each day, except for the day of the field trip which will be 8:30 am – 4:30 pm. This camp will include five days per week of instruction in water and classroom, including a field trip to be held at O'Neill Forebay.

FISCAL IMPACT

Fiscal Impact: the grant will provide funding for all program staff, supplies and bus Transportation with a total grant funding of $2,972.00

CITY OF PATTERSON

BEFORE THE CITY COUNCIL OF THE CITY OF PATTERSON

In the Matter of:

Authorization to File an Application for Grant)	RESOLUTION NO. 2016-31
Funds from the State of California, Department)	
Of Water Resources for Aquatic Adventure Camp)	

The Patterson City Council DOES RESOLVE as follows:

WHEREAS, the City desires to deliver the highest quality of water safety programming and instruction for the safety of visitors engaged in aquatic activities; and

WHEREAS, the City's recreational goals call for recreational activities that will add to enjoyment and quality of life by establishing programs to assist individuals and groups of all ages; and

WHEREAS, the State of California, Department of Water Resources and the State Water Project Recreation Coordinating Committee has expressed concern about the number of drowning along the State Water Parks.

NOW, THEREFORE, the City Council finds and determines as follows:

Section 1. The Department of Water Resources has partnered with California State youth organizations to provide funds, develop and offer an Aquatic Adventure Camp to youth designed to reduce drowning.

Section 2. The City will enter into a contract with the State of California, Department of Water Resources, to conduct an Aquatic Adventure Camp.

Section 3. The City certifies that it will have or will sufficiently develop, staff and And operate the Aquatic Adventure Camp.

Section 4. The City will review, understand and agree to the General Provisions Contained in the contract from the Department of Water Resources; and Certifies that the Aquatic Adventure Camp conforms to the recreation Element of any applicable city plan.

Section 5. The procedures established by the Department of Water Resources requires that the City Council certifies by resolution the approval of the Application before submission of said Application to the State.

PASSED AND ADOPTED by the City Council of the City of Patterson at a regular meeting on the 3rd day of May 2016, by the following roll call vote:

AYES:
NOES:
ABSTAINED:
EXCUSED:

APPROVED:

_____
Luis I. Molina, Mayor
City of Patterson

ATTEST:

_____
Maricela L. Vela, City Clerk
City of Patterson

I hereby certify that the foregoing is a full, correct and true copy of a resolution passed by the City Council of the City of Patterson, a Municipal Corporation of the County of Stanislaus, State of California, at a regular meeting held on the 3rd day of May 2016, and I further certify that said resolution is in full force and effect and has never been rescinded or modified.

DATED:

_____
City Clerk of the City of Patterson

STATE OF CALIFORNIA
STANDARD AGREEMENT
STD 213 (Rev 06/03)

AGREEMENT NUMBER
4600011250
REGISTRATION NUMBER

1. This Agreement is entered into between the State Agency and the Contractor named below:

STATE AGENCY'S NAME
Department of Water Resources

CONTRACTOR'S NAME
City of Patterson

2. The term of this Agreement is: July 1, 2016 through August 31, 2017
This agreement shall not become effective until approved by the Department of Water Resources.

3. The maximum amount of this Agreement is: $ 7,000.00
Seven Thousand Dollars and Zero Cents.

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement.

Exhibit A – Scope of Work	3 pages
Attachment 1 - 10 Day Program Agenda	1 page
Attachment 2 – Aquatic Adventure Camp Written Recap Sample	1 page
Exhibit B – Budget Detail and Payment Provisions (Rev. 02/13)	1 page
Attachment 1 – Cost Sheet	1 page
Exhibit C* – General Terms and Conditions	GTC 610
Exhibit D - Special Terms and Conditions for Department of Water Resources (Local Public Entities - Payable), DWR 9546 (Rev. 3/14)	3 pages
Attachment 1 – Recycled Content Certification Form (DWR 9557, Rev. 02/14)	2 pages
Exhibit E – Additional Provisions	2 pages

Items shown with an Asterisk (*), are hereby incorporated by reference and made part of this agreement as if attached hereto. These documents can be viewed at www.dgs.ca.gov/ols/Resources/StandardContractLanguage.aspx

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

CONTRACTOR

CONTRACTOR'S NAME *(If other than an individual, state whether a corporation, partnership, etc.)*
City of Patterson

BY *(Authorized Signature)* ✍ | DATE SIGNED *(Do not type)*

PRINTED NAME AND TITLE OF PERSON SIGNING
Juliene Flanders, Recreation & Community Services Director

ADDRESS
1033 W. Las Palmas Avenue, Patterson, California 95363

STATE OF CALIFORNIA

AGENCY NAME
Department of Water Resources

BY *(Authorized Signature)* ✍ | DATE SIGNED *(Do not type)*

PRINTED NAME AND TITLE OF PERSON SIGNING
Ed Wilson, Assistant Director, Public Affairs Office

ADDRESS
1416 Ninth Street, Room 204-6, Sacramento, California 95814

California Department of General Services Use Only

DGS Approval Not Required

☒ Exempt per: SCM 4.04.A.2

EXHIBIT A
SCOPE OF WORK

1. Introduction

The Patterson Aquatic Adventure Camp will provide Water Safety Training to children and youth on the West side of Stanislaus County. The program will encourage youth who are ethnic minorities and those children who would most benefit from this positive educational safety program. This program will be offered to approximately twenty-five to thirty 5th grade to 8th grade youth. By providing children water safety education, The City of Patterson hopes to address that drowning is the second leading cause of unintentional injury death among children 1-14 years of age. According to the Center for Disease Control, drowning is a leading cause of death among California children.

This program will also introduce youth to the potential job opportunities such as lifeguarding and swim instruction. Recruitment for lifeguards and swim instructors is always a challenge as Patterson is a rural community with a high population of Hispanic youth that many times do not take swim lessons. This not only leads to a need for drowning education, but provides a challenge for the City of Patterson to hire enough lifeguarding staff to manage the aquatic facilities. The program will provide an educational tool to encourage youth to seek aquatic employment and hopefully be a feeder program into Lifeguard training.

The City of Patterson Recreation and Community Services Department will conduct one two-week Aquatic Adventure Camps during the summers of 2016 and 2017. Each camp will be scheduled for ten days, from 9:00 am – 12:00 noon each day, except for the day of the field trip, which will be 8:30 am – 4:30 pm. This camp will include five days per week of instruction in water and classroom, including a field trip to be held at O'Neill Forebay.

With the activity books, documents and video's provided from the California Department of Water Resources, the course will also foster an understanding of California Water History, the drought and the importance of the preservation of our natural water resources. The students will learn about water conservation, water safety, and tips for safety in recreational activities around waterways. With the California Aqueduct, Delta Mendota Canal and San Joaquin River all located in Patterson it is important that water safety is a focus in our Aquatic Adventure Camp. The City of Patterson will focus on recreational activities along waterways, especially , fishing and will review the "Fishing along the State Water Project Brochure" - The SWP's lakes, reservoirs, and the California Aqueduct are popular fishing spots. The brochure explains basic safety tips and safety features of the canal.

The camps will be held during the following weeks:

Summer 2016: July 25 – August 5, 2016
Summer 2017: Dates to be finalized by April 1, 2017

2. Location of Services

The services shall be performed at:

Patterson Aquatic Center
1025 W Las Palmas Ave.
Patterson, California 95363

Patterson Teen Center
1040 W Las Palmas, Suite B
Patterson, CA 95363

And O'Neill Forebay at San Luis Reservoir

3. Contract Representatives

The project representatives during the term of this agreement will be:

Department of Water Resources	City of Patterson
Name: Dorothy Benjamin	Name: Juliene Flanders
Phone: (916) 653-9285	Phone: 209-895-8085
Fax: (916) 653-3310	Fax: 209-895-8189
Email: Dorothy.Benjamin@water.ca.gov	Email: jflanders@ci.patterson.ca.us

Name: Reyna Reyes
Phone: (916) 653-9794
Email: Reynalou.Reyes@water.ca.gov

Contract Representative: Maryanne Ciaraglia
(916) 653-4879
Maryanne.Ciaraglia@water.ca.gov

Project representatives may be changed by written notice to the other party.

4. Contractor's Tasks and Responsibilities

All staff will maintain all required permits, licenses and certifications to perform duties, as listed in Exhibit A, Attachment 1. The students participating in the Aquatic Adventure Camp Program will be taught by Outdoor Recreation Certified Staff and American Red Cross Certified Lifeguards. American Red Cross Water Safety program is a nationally recognized training program that provides the opportunity to teach students and adults to swim and help them be safe when they are in, on or around the water.

5. Contractor's Deliverables

The participants will go through a 10 day camp with an emphasis on Water Safety and outdoor safety and exploration. A field trip day will be included with a visit to the O'Neill Forebay. Students will tour the Romero Visitors Center, along with a guest guide to gain an orientation to the Lake Environment, history, recreational opportunities. Participants will review skills learned at the pool setting and implement them at a lake setting.

A. Program Goals:

i. Teach youth how to rescue themselves and/or rescue someone else from various aquatic environments

ii. Provide education and skills so that Patterson youth know that swim lessons, Jr. Lifeguard, Lifeguard Training are potential job opportunities.

iii. Promote water safety skills

iv. Introduce youth to natural environment and recreation areas in our region at local, State and Federal parks.

Participants will have an opportunity to meet five of the ten activities listed in the "California Outdoor Children's Bill of Rights."

i. Splash in the Water
ii. Play in a safe place
iii. Explore Nature
iv. Learn to swim
v. Go Fishing
vi. Kayaking
vii. Hiking and Map Reading
viii. Canal Safety
ix. Go Boating
x. Follow a Trail

B. Additional Program Details:

i. Exhibit A, Attachment 1 lists the 10 day agenda that the Contractor will follow. Adjustment to daily activity schedule may be made upon written notice to DWR.

ii. The Contractor shall prepare a written recap with photographs of the Program included. The recap must be submitted to DWR within 45 days of the camp conclusion. The written recap must follow the sample recap as shown in Exhibit A, Attachment 2.

6. Acceptance Criteria

i. 90 Percent of participants in the camp program attend 100% of the 10 day camp.

ii. Educate the students on water safety while removing fear and anxiety of being in, on, or near the water, and in nature, all while developing a healthy awareness of waterways.

iii. The students must show signs of developing positive attitudes and safe practice around the water.

iv. All students must be given the opportunity for success with fundamental aquatic and outdoor skills to develop interest in future water safety job opportunities.

7. State Responsibilities

Department of Water Resources will provide access to business and technical documents as necessary for the Contractor to complete the task identified under this agreement.

EXHIBIT A, ATTACHMENT 1
10 DAY PROGRAM AGENDA

Monday, July 25, 2016	Tuesday, July 26, 2016	Wednesday, July 27, 2016	Thursday, July 28, 2016	Friday, July 29, 2016
-Introductions Swim test & skills -Survival Strokes Elementary Stroke Side Stroke Swim challenge games -Competitive Stroke Freestyle Breast Stroke Back Stroke -Life Jacket fitting & safety discussion -Jumps and Entries- demonstration and practice -Passive & Active Drowning -Drowning Video And discussion	-CPR skills Infant, child, adult - rescue breathing -Obstructed airway - Discuss Albert and Einstein's 10 Most Important Water Safety Tips - Watch Water Safety for Life on water.ca.gov	-Active Victim Rescue Front drive Rear huggy Reach assist demo -Passive Victim Rescue Passive on surface Passive midway submerged (duck pluck) Passive submerged Discussion: What would be different about these rescues in waterways	-Kayaking skills training Practice kayaking in the pool -Swimming clothed -Using clothes as flotation devices Water hazards -water clarity - Emergency Situations Guest Speaker on water awareness	•Review: Depth Awareness Active victim rescue Passive victim rescue - In water rescue breathing Sealing the airway Airway management: head position Extrication Demonstration Practice Spinal Injury Back boarding demonstration Lifeguard games competitions
Monday, August 1, 2016	**Tuesday, August 2, 2016**	**Wednesday, August 3, 2016**	**Thursday, August 4, 2016**	**Friday, August 5, 2016**
-First Aid Training Bleeding, cuts Sun Burns Burns Bites & Stings Shock Broken Bones Heat/cold emergencies Moving a victim Student practice on first aid - Watch Captain Hydro on water.ca.gov	Completion of CPR skills review Test Water games Water rescues Backboard skills Team building - Watch Stay Alive Read the Signs from water.ca.gov - Review Fishing along the State Water Project Brochure The SWP's lakes, reservoirs, and the California Aqueduct & features of the canal.	-Lifeguarding skills Rotations Whistles Emergency procedures Crowd Management Lifeguard Video Shadow with actual guards, review -Watch California Water Story on water.ca.gov	8:30 am – 4:30 pm Trip: O'Neil Forebay -San Luis State Recreation Area Romero Visitors Center tour - Students will learn about California history and water conservation. -LUNCH -kayaking - swimming , Fishing, hiking	Program Review Camp games Water races Lifeguard skills games Lunch Awards Program completion

Location: City of Patterson Aquatic Complex will be used for all pool use and the Patterson Teen Center will be used for all classroom work.

Time: 9:00am – 12:00 pm, except for Thursday August 4, 8:30 am – 4:30 pm

EXHIBIT B
BUDGET DETAIL AND PAYMENT PROVISIONS
PUBLIC ENTITIES

A. INVOICING AND PAYMENT

Contractor shall submit three copies of the invoice to the State only after receiving written notice of satisfactory completion or acceptance of work by the DWR Contract Manager. **The State will not accept an invoice for work that has not been approved and will return the invoice as a disputed invoice to the Contractor.**

Invoices shall be submitted no more often than monthly in arrears, bearing the contract number.

Contractor must submit three copies of each invoice to the following address in order to expedite approval and payment:

DWR Accounting Office
Contracts Payable Unit
P.O. Box 942836
Sacramento, California 94236-0001

Undisputed invoices shall be **paid** within 45 days of the date received by the DWR Accounting Office.

B. BUDGET CONTINGENCY CLAUSE

It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, the State shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement and Contractor shall not be obligated to perform any provisions of this Agreement.

If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, the State shall have the option to either: cancel this Agreement with no liability occurring to the State, or offer an Agreement Amendment to Contractor to reflect the reduced amount.

EXHIBIT B, ATTACHMENT 1
COST SHEET

Table A

Number of Staff		Hourly Rate		Hours per Day		Number of Days		Total
4 (includes 2 lifeguards and 2 outdoor specialists)	x	$14.00	x	3	x	9	=	$1,512.00
6 (includes 2 lifeguards, 2 outdoor specialists and 2 recreation leaders)	x	$14.00	x	8	x	1	=	$672.00
1 (includes 1 specialist)	x	$14.00	x	8	x	1	=	$112.00
						SUBTOTAL		$2,296.00

Table B

Additional Requirements	Total
Fieldtrip Transportation by Bus*	$900.00
Safety Supplies Including: American Red Cross CPR face mask and gloves, lifejackets, whistles and swim fins	$300.00
SUBTOTAL	$1,200.00

*Funding adjustment can be made due to high transportation costs and enrollment. Vans may be used if enrollment is less.

Summary of Costs	
Table A	$2,296.00
Table B	$1,200.00
TOTAL	$3,496.00

Fiscal Year 2016/2017 = $3,496.00
Fiscal Year 2017/2018 = $3,496.00
Total Budget = $6,992.00

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Mike Willett, Director of Public Works

BY: Peni Basalusalu, Management Analyst

MEETING DATE: May 3, 2016

ITEM NO: 5.4

SUBJECT: Approve Staff to Submit Application for the Beverage Container Recycling City/County Payment Program (Resolution No. 2016-32)

RECOMMENDATION

Approve Staff to submit application for the Beverage Container Recycling City/County Payment Program (Resolution No. 2016-32)

BACKGROUND

Pursuant to Public Resources Code (PRC) section 14581(a)(3)(A) of the California Beverage Container Recycling and Litter Reduction Act, the Department of Resources Recycling and Recovery (CalRecycle) is distributing $10,500,000 in fiscal year (FY) 2015–16 to eligible cities and counties specifically for beverage container recycling and litter cleanup activities.

The goal of CalRecycle's beverage container recycling program is to reach and maintain an 80 percent recycling rate for all California Refund Value beverage containers - aluminum, glass, plastic and bi-metal. Projects implemented by cities and counties will assist in reaching and maintaining this goal.

ANALYSIS

Eligible applicants include cities, counties, or cities and counties in California, as identified by the California Department of Finance, unless otherwise determined by CalRecycle. California Labor Code section 1782 prohibits a charter city from receiving state funding or financial assistance for construction projects if that charter city does not comply with Labor Code sections 1770-1782. If it is determined after award that a participating jurisdiction is a charter city prohibited from receiving state funds for their project, the award will be terminated and any disbursed funds shall be returned to CalRecycle.

FUNDING

- $10,500,000 is available for fiscal year 2015–16, subject to funding availability.
- Each city is eligible to receive $5,000 or an amount calculated by CalRecycle, on a per capita basis, whichever is greater.

- Each county is eligible to receive $10,000 or an amount calculated by CalRecycle, on a per capita basis, whichever is greater.

The calculation, is based upon the population as of January 1, 2015, in the incorporated areas of a city, or a city and county, or the unincorporated area of a county, as stated in the annual *E1 Cities, Counties and the State Population Estimates with Annual Percentage Change–January 1, 2014 and 2015* report submitted to the governor by the California Department of Finance.

TERM
The term begins from the date of award and ends on June 29, 2018. Program expenditures may start no earlier than the date of award. Eligible costs must be incurred no later than June 29, 2018. Recipients will be notified by email once the awards are approved and will be provided the listing of the awarded amounts.

FISCAL IMPACT

If awarded, the funds received from this program will help in the outreach efforts to educate the community, students and businesses about the importance of recycling beverage containers and how recycling could have a positive fiscal impact on those who recycle.

City of Patterson
City Manager's Office

1 Plaza
P.O. Box 667
Patterson, California 95363
Phone (209) 895-8000 Fax (209) 895-8019

May 5, 2016

State of California
Department of Resources Recycling and Recovery
1001 I Street - PO Box 4025
Sacramento, CA 95812

RE: Letter of Designation

Pursuant to the Resolution authorizing an application for the Beverage Container Recycling City/County Payment Program, I am the designated Signature Authority for City of Patterson. I am authorized by the Resolution to execute on behalf of the City of Patterson all documents, including but not limited to, applications, agreements, amendments and requests for payment, necessary to secure funds and implement the approved project. The Resolution also authorizes me to delegate this authority. Accordingly, I hereby delegate this authority to the Director of Public Works.

This delegation is effective until rescinded by me or my successor.

Sincerely,

Ken Irwin, City Manager
1 Plaza
Patterson, CA 95363
209-895-8015

RESOLUTION NO. 2016-32

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PATTERSON, AUTHORIZING SUBMITTAL OF APPLICATION FOR PAYMENT PROGRAMS AND RELATED AUTHORIZATIONS

WHEREAS, pursuant to Public Resources Code section 48000 et seq. the Department of Resources Recycling and Recovery (CalRecycle) has established various payment programs to make payments to qualifying jurisdictions; and

WHEREAS, in furtherance of this authority CalRecycle is required to establish procedures governing the administration of the payment programs; and

WHEREAS, CalRecycle's procedures for administering payment programs require, among other things, an applicant's governing body to declare by resolution certain authorizations related to the administration of the payment program.

NOW, THEREFORE, BE IT RESOLVED that City of Patterson is authorized to submit an application to CalRecycle for any and all payment programs offered; and

BE IT FURTHER RESOLVED that the City Manager, or his/her designee, is hereby authorized as Signature Authority to execute all documents necessary to implement and secure payment; and

BE IT FURTHER RESOLVED that this authorization is effective until rescinded by the Signature Authority or this Governing Body.

The foregoing resolution was passed by the City Council at a regular meeting held on the 3rd day of May, 2016 and the resolution adopted by the following roll call vote:

AYES:

NOES:

ABSTAINED:

EXCUSED:

APPROVED:

_____

Luis I. Molina, Mayor of the City of Patterson

ATTEST:

_____

Maricela L. Vela, City Clerk of the City of Patterson

I, _____, City Clerk of the City of Patterson, County of Stanislaus, State of California do hereby certify that the foregoing Resolution No. 2016-32 is a full, correct, and true copy of a resolution passed by the City Council of said City of Patterson, a Municipal Corporation of the County of Stanislaus, State of California, at a regular meeting held on the 3rd day of May, 2016 and I further certify that said resolution is in full force and effect and has never been rescinded or modified.

DATED:

_____

City Clerk of the City of Patterson

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Mike Willett, Public Works Director

MEETING DATE: May 3, 2016

ITEM NO: 5.5

SUBJECT: Approve Resolution No. 2016-33, for the Adoption of National Public Works Week (NPWW) May 15 - May 21, 2016

RECOMMENDATION

Staff recommends that the City Council approve Resolution No. 2016-33 for National Public Works Week (NPWW) May 15 - May 21, 2016.

BACKGROUND

National Public Works Week (NPWW) is a celebration of the many men and women in North America who provide and maintain the infrastructure and services collectively known as public works.

Instituted as a public education campaign by the American Public Works Association (APWA) in 1960, NPWW calls attention to the importance of public works in community life. The Week seeks to enhance the prestige of the often–unsung heroes of our society–the professionals who serve the public good every day with quiet dedication.

National Public Works Week is observed each year during May. This year's week is May 15 – 21, 2016. Through NPWW and other efforts, APWA seeks to raise the public's awareness of public works issues and to increase confidence in public works employees who are dedicated to improving the quality of life for present and future generations.

ANALYSIS

This year, the City will be holding education / outreach events at various Elementary schools (Del Porto High School, Apricot Valley, and Northmead). Students will be able to obtain further information about the various services offered by Public Works as well as education regarding the various environmental programs. Educational material will be available on the City's Recycling, Water Conservation, Fats, Oils, and Grease (FOG), and Storm Water Management

Programs. Additionally, staff will be setting up an information table at City Hall which will also provide information to the public regarding the various programs, contact information, and resources about the services that Public Works handles. The goal is to educate the community about Public Works.

FISCAL IMPACT

Costs include purchasing promotional items for the various environmental programs (FOG, Water Conservation, Recycling, and Stormwater Pollution Prevention). The costs for this item have been budgeted for and therefore there is no budget impact at this time.

RESOLUTION NO. 2016-33

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PATTERSON, APPROVING ADOPTION OF NATIONAL PUBLIC WORKS WEEK (NPWW) CELEBRATION ON MAY 15th – May 21st 2016 FOR THE CITY OF PATTERSON

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Patterson as follows:

WHEREAS, the City Council has reviewed and hereby approves National Public Works Week within the City of Patterson. National Public Works Week (NPWW) is a celebration of the tens of thousands of men and women in North America who provide and maintain the infrastructure and services collectively known as "Public Works." This celebration serves as an educational campaign and calls the attention to the importance of Public Works in community life.

WHEREAS, the City Council acknowledges National Public Works Week (NPWW) from May 15th through May 21st 2016; and,

WHEREAS, the City Council acknowledges the hard work and dedication of the City's Public Works Department.

NOW, THEREFORE BE IT RESOLVED that the City Council of the City of Patterson hereby adopts "National Public Works Week" (NPWW).

The foregoing resolution was introduced at a regular meeting of the City Council of the City of Patterson held on the 3rd day of May 2016, by _____, who moved its adoption, which motion was duly seconded by _____, and it was upon roll call carried and the resolution adopted by the following vote:

AYES:

NOES:

EXCUSED:

APPROVED:

_____

Luis I. Molina, Mayor of the City of Patterson

ATTEST:

_____

Maricela L. Vela, City Clerk of the City of Patterson

I hereby certify that the foregoing is a full, correct and true copy of a resolution passed by the City Council of the City of Patterson, a Municipal Corporation of the County of Stanislaus, State of California, at a regular meeting held on the 3rd day of May 2016, and I further certify that said resolution is in full force and effect and has never been rescinded or modified.

DATED:

_____

City Clerk of the City of Patterson

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Mike Willett, Director of Public Works

MEETING DATE: May 3, 2016

ITEM NO: 5.6

SUBJECT: Award a Five Year Contract to Aramark Uniform Services for Uniform Service and Authorize the City Manager to Execute the Contract.

RECOMMENDATION

Award a Five Year Contract to Aramark Uniform Services for Uniform Service and Authorize the City Manager to Execute the Contract.

BACKGROUND

The City currently receives uniform services from AmeriPride Uniforms for Public Works Department and Cintas provides the service to Recreation & Parks personnel. Both contracts are due to expire at the end of the current fiscal year (June 30, 2016).

The City issued a Request for Proposal (RFP) for uniform services on March 3, 2016. The following three proposals were received on March 31, 2016.

Company Name	Yearly RFP Bid Amount
Aramark Uniform Services	$16,121.04
Cintas	$21,750.25
Mission Uniforms	$27,276.60

The RFPs were reviewed and were scored by the following RFP criteria (Qualifications, Experience, and Cost) with Cost weighted at 70 points of the total score; 10 for Qualifications; and 20 for Experience. The company with the highest overall score was Aramark Uniform Services.

Aramark Uniform Services has extensive experience, extensive qualifications, and was the lowest bidder overall. The new contract would provide the same service level or better to approximately 34 full-time or part-time employees; include fire resistant clothing, which currently not included in current contract; provide safety compliance clothing; and provided single purchase item pricing for items such as rain gear, polo shirts for supervisory

personnel, and janitorial supplies (scraper mats, shop towels, mops, towel bar, and toilet seat covers).

ANALYSIS

The City currently pays out to two different uniform service companies. The annual uniform costs average about $21,600 for the two current uniform contracts. The new contract will generate an approximately 25% savings over the existing contract. City staff is recommending the award of a five year contract to Aramark Uniform Services. If awarded, the new contract term would be July 1, 2016 through June 30, 2021.

FISCAL IMPACT

The new uniform costs will be budgeted in the new FY 2016/17 budget in various General Fund and Enterprise Funds. The total cost is $16,121.04 per year. The contract will be on a fixed annual rate for the next five years, providing a significant (-25%) savings to the City's uniform services expense budget. Additional savings on the one-time single purchase items and janitorial supplies will also be obtained through this RFP/Contract.

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Maricela Vela, City Clerk

MEETING DATE: May 3, 2016

ITEM NO: 5.7

SUBJECT: Approve Resolution No. 2016-34, Rejecting the Claim of Shirley Collins In An Amount of $2,000 for Alleged Damages.

RECOMMENDATION

Motion to approve Resolution No. 2016-34, rejecting the claim of Shirley Collins in an Amount of $2,000 for alleged damages.

FISCAL IMPACT

None.

RESOLUTION NO. 2016-34

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PATTERSON, CALIFORNIA, REJECTING THE CLAIM OF SHIRLEY COLLINS IN AN AMOUNT OF $2,000 FOR ALLEGED DAMAGES

WHEREAS, a claim submitted by Shirley Collins in an amount of $2,000 was received against the City of Patterson on March 2, 2016 for alleged damages.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Patterson that it hereby rejects the claim for damages in an amount of $2,000 against the City of Patterson for alleged damages.

The foregoing resolution was introduced at a regular meeting of the City Council of the City of Patterson held on the 3rd day of May 2016, by , who moved its adoption, which motion was duly seconded by , and it was upon roll call carried and the resolution adopted by the following roll call vote:

AYES:

NOES:

EXCUSED:

APPROVED:

Luis I. Molina, Mayor of the City of Patterson

ATTEST:

Maricela L. Vela, City Clerk of the City of Patterson

I hereby certify that the foregoing is a full, correct, and true copy of a resolution passed by the City Council of the City of Patterson, a Municipal Corporation of the County of Stanislaus, State of California, at a regular meeting held on the 3rd day of May 2016, and I further certify that said resolution is in full force and effect and has never been rescinded or modified.

DATED:

_____

City Clerk of the City of Patterson

Amended

RECEIVED
MAR 2 2016
CITY OF
PATTERSON

CENTRAL SAN JOAQUIN VALLEY RISK MANAGEMENT AUTHORITY

CLAIM FORM

RECEIVED
FEB 19 2016
BY: ARC

(Please Type Or Print)

CLAIM AGAINST _____
(Name of Entity)

Claimant's name: Shirley Coffin

DOB: 08/26/1956 Gender: Male _____ Female ✓

Claimant's address: 215 N 1st Street Telephone: (209) 622-5855

Address where notices about claim are to be sent, if different from above: _____

Date of incident/accident: 02/14/2016 / Valentine's Day

Date injuries, damages, or losses were discovered: Sunday

Location of incident/accident: On North 1st Street Coming home from Church / 501 N 1st Street

What did entity or employee do to cause this loss, damage, or injury? _____

(Use back of this form or separate sheet if necessary to answer this question in detail.)

What are the names of the entity's employees who caused this injury, damage, or loss (if known)? NONE

What specific injuries, damages, or losses did claimant receive? Left my Knee Ended up Wrist I have Photographs of this

(Use back of this form or separate sheet if necessary to answer this question in detail.)

What amount of money is claimant seeking or, if the amount is in excess of $10,000, which is the appropriate court of jurisdiction. Note: If Superior and Municipal Courts are consolidated, you must represent whether it is a "limited civil case" [see Government Code 910(f)]

$2,000 I am not trying to get rich off it

How was this amount calculated (please itemize)? Because I have told the worker about that before and Now I have hurt myself on the same sidwalk that coming up this is how I come up From the ground with this much.

(Use back of this form or separate sheet if necessary to answer this question in detail.)

Date Signed: 02/19/2016 Signature: Shirley Coffin

If signed by representative:

Representative's Name _____ Address _____

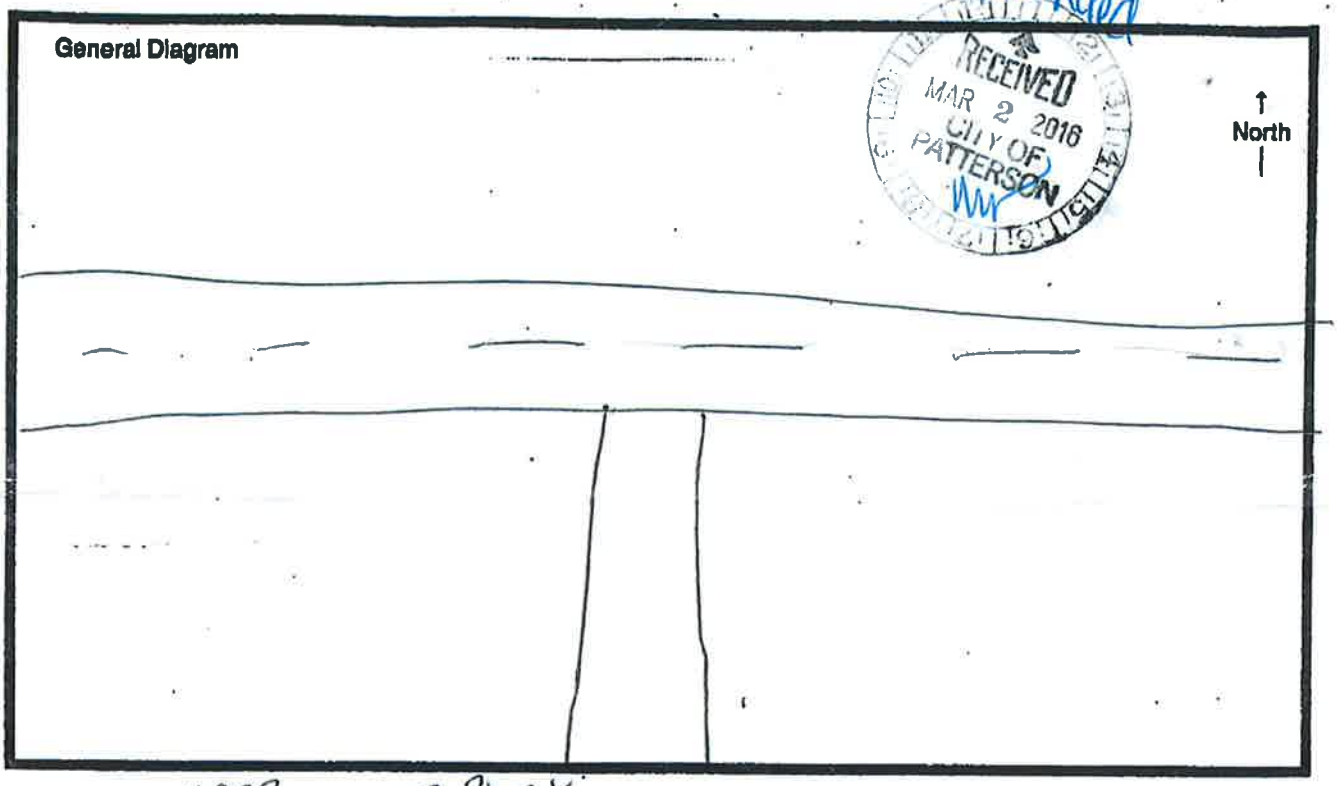
Telephone # _____

Relationship to Claimant _____

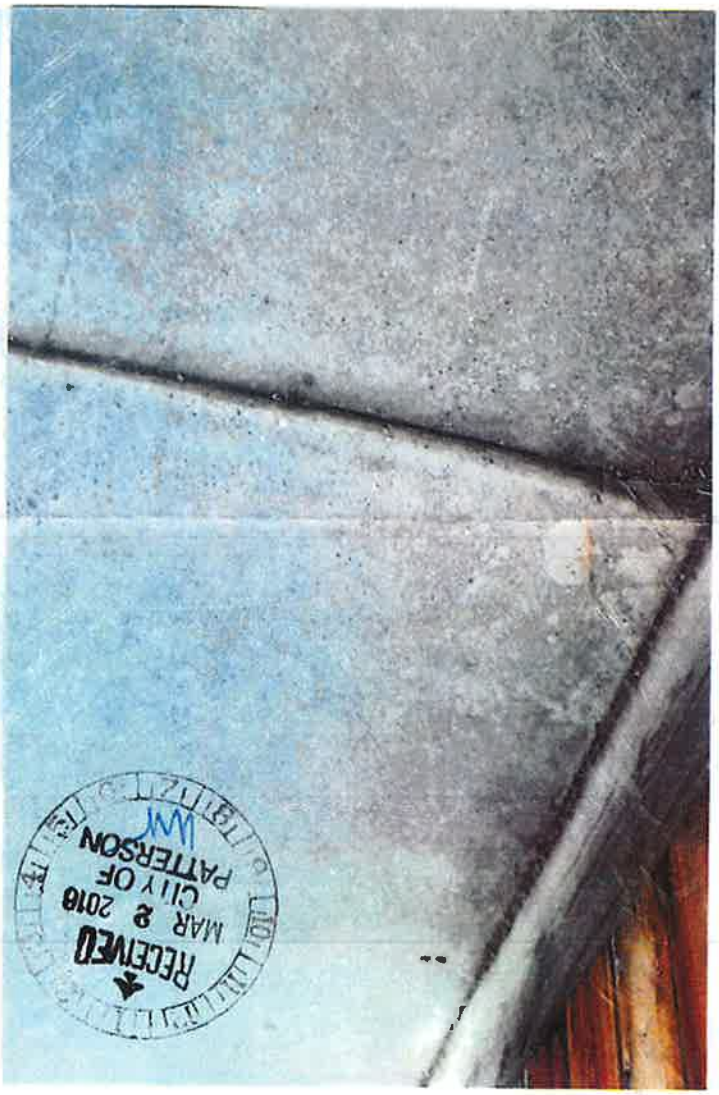
DIAGRAMS

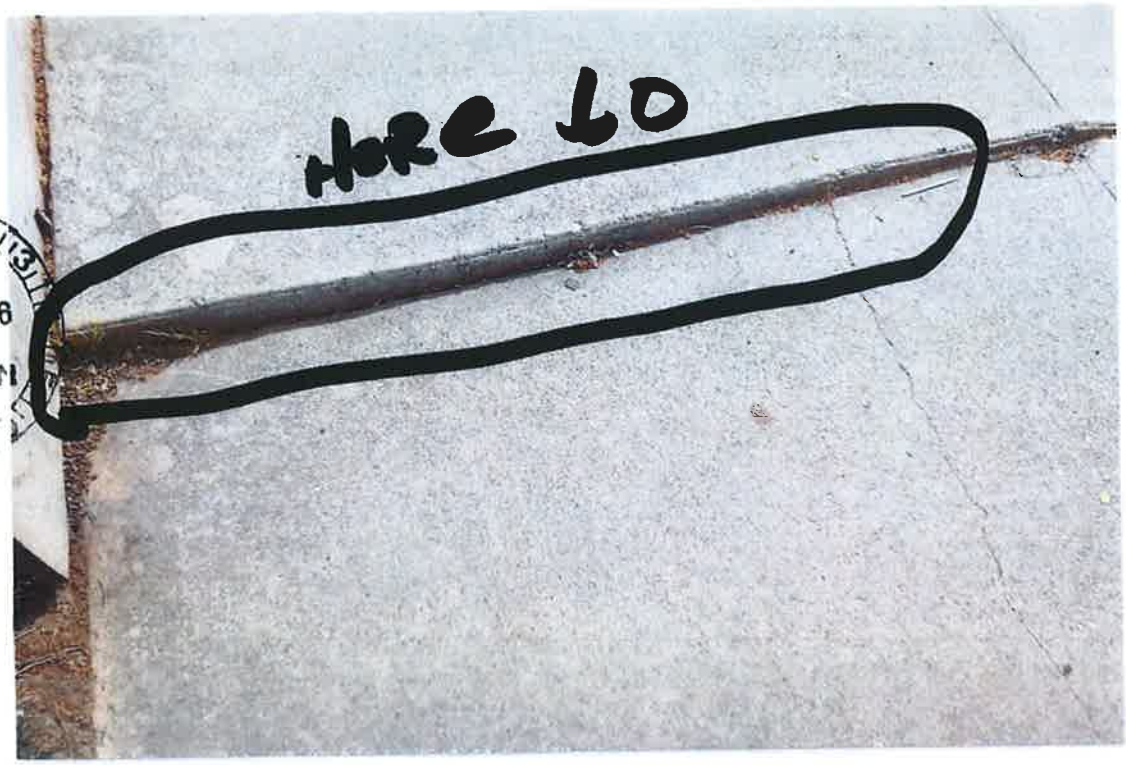
Amended

General Diagram



JUAEZ 300 BLOCK
1ST Street Incidents COLLS





Shirley Collins
215 N 1st
Patterson Calif
95363

RECEIVED
MAR 02 2016
BY: MK

Hi:

Araceli

RECEIVED
MAR 2 2016
CITY OF
PATTERSON

6. PRESENTATIONS AND PUBLIC HEARINGS

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the Council

FROM: Ken Irwin, City Manager

BY: Jeff Gregory, Interim Fire Chief

MEETING DATE: May 3, 2016

PUBLIC COMMENT/ ACTION ITEM: 6.2

SUBJECT: Authorize Staff to Abate Public Nuisance, by Removing Weeds, Dirt, Rubbish, and/or Rank Growth Pursuant to the Provisions of Ordinance No. 243 and Ordinance No. 704, as defined in Chapter 6.16 of the Patterson Municipal Code - Property Maintenance; Authorize Staff to Begin Bid Process (Resolution No. 2016-35)

RECOMMENDATION

Authorize Staff to abate Public Nuisance, by removing Weeds, Dirt, Rubbish, and/or Rank Growth as pursuant to the provisions of Ordinance No. 243 and Ordinance No.704, as defined in Chapter 6.16 of the Patterson Municipal Code (Resolution No. 2016-35)

Authorize Staff to begin the bid process utilizing licensed contractors.

BACKGROUND

The abatement of Weeds, Dirt, Rubbish and/or Rank Growth is a process the City of Patterson Fire Department conducts annually, per Ordinance, in an effort to reduce the aforementioned which may endanger or injure, or be detrimental to, or which cause substantial diminution in the value of neighboring property or endanger or injure the welfare of the residents in the vicinity of such property, or which may become a fire hazard.

This process is conducted year-round, with greater emphasis placed on abating such nuisances between May and October, where hotter, dryer conditions create a greater potential for ignition of combustible materials.

ANALYSIS

Notice has been issued to the addresses listed (see Exhibit "A") in accordance with the City Of Patterson Municipal Code, Chapter 6.16.050, which states:

6.16.050 Service of notice.

Such notices shall be given in the manner set forth in this section:

A. The director, or such other official as may be designated by the city council, shall cause a notice or notices to be mailed by United States mail, to the owner of the subject property as shown upon any city record, or upon the last equalized assessment roll or at his last known address, whichever he shall determine to be the best means of serving notice upon the actual owner. Additionally, if the subject property address and the subject property owner's address are different, the director or other designated official shall cause a notice or notices to be mailed by United States mail to the property address. The failure of the owner to receive such notice shall not affect the power of the city or of its officers or employees to proceed as provided in this chapter.

B. Such notice shall be mailed not less than ten days prior to the date set for a hearing upon objections as provided in Section 6.16.060 of this chapter. (Ord. 704 § 1 (part), 2008: Ord. 243 § 5, 1974).

A revised list will be provided at the City Council Meeting.

Staff is requesting approval from the City Council for the abatement. Once approved, Staff will obtain bids from licensed contractors for the removal and proceed with award of the contract to the lowest responsible bidder and bill costs occurred to the property owners.

FISCAL IMPACT

The recommended action would not directly result in an impact to the City's funds, with the exception of staff time spent on surveying the properties. All costs incurred will be recouped by the City as per the Patterson Municipal Code, Chapter 6.16.190; Assessment of costs against property-Lien.

RESOLUTION NO. 2016-35

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PATTERSON, DECLARING THE EXISTENCE OF A PUBLIC NUISANCE UNDER ORDINANCE NOS. 243 AND 704

WHEREAS, the Fire Chief of the City of Patterson has reported weeds, rubbish, dirt, rank growth and/or mistletoe located and existing on properties in the City of Patterson in violation of Ordinance Nos. 243 and 704 of the City of Patterson, a description of said properties being hereto attached as "Exhibit A"; and

WHEREAS, the Fire Chief of the City of Patterson caused Notice to be mailed to the owner(s) of subject properties as in said ordinance provided, said notice giving notice to abate said nuisance and setting a time and place for hearing objections to the proposed abatement; and

WHEREAS, said hearing, public comment/action item was held on the 3rd day of May 2016 as in said Notice(s) provided; and

WHEREAS, no objections to the proposed abatement were received at said hearing.

WHEREAS, the City of Patterson has determined and certifies that the charges are either exempt from or in compliance with all the provision of Proposition 218, which was passed by the voters in November 1996. The City of Patterson has further determined the charges are in compliance with all laws pertaining to the levy of such charges.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Patterson that said City Council finds that a condition exists with regard to the properties in said City which is dangerous to life, limb and property, and to the public health, safety, morals in that weeds, rubbish, dirt, rank growth and/or mistletoe are growing, located, and existing upon said properties in violation of Ordinance Nos. 243 and 704 of the City of Patterson, which endanger and may injure neighboring properties and endangers and may injure the welfare of residents in the vicinity of said properties, and which is a hazard; that of said properties hereto attached as "Exhibit A".

The foregoing resolution was passed by the City Council at a regular meeting held on the 3rd day of May 2016, by , who moved its adoption, which motion was duly seconded by

, and the resolution adopted by the following roll call vote:

AYES:

NOES:

EXCUSED:

APPROVED:

_____

Luis I. Molina, Mayor, City of Patterson

ATTEST:

_____

Maricela L. Vela, City Clerk, City of Patterson

I hereby certify that the foregoing is a full, correct, and true copy of a resolution passed by the City Council of the City of Patterson, a Municipal Corporation of the County of Stanislaus, State of California, at a regular meeting held on the 3rd day of May, 2016, and I further certify that said resolution is in full force and effect and has never been rescinded or modified.

DATE:

_____

City Clerk of the City of Patterson

Exhibit A
May 3, 2016

	APN	Street Address		APN	Street Address
1	021-043-019	729 Skimmer Dr.	16	047-057-063	419 E Las Palmas Ave.
2	021-043-037	707 Roadrunner Dr.	17	048-048-001	15349 9th St.
3	021-053-084	1348 Beaver Creek Dr.	18	048-054-019	104 Hartley St.
4	021-055-039	1412 Henley Pkwy.	19	048-054-043	0 E Las Palmas Ave.
5	021-063-060	469 Squash Creek Ln.	20	048-057-054	522 Tuscany Ct.
6	021-065-016	1433 Jake Creek Dr.	21	131-006-016	420 S 3rd St.
7	021-067-048	1304 Shasta Creek Ct.	22	131-011-026	0 L St.
8	021-067-061	419 Creekside Dr.	23	131-014-033	120 Salado Ave.
9	021-085-014	2065 Keystone Pacific Pkwy.	24	131-016-008	315 D St.
10	047-022-035	Hwy 33	25	131-016-026	331 D St.
11	047-022-036	Hwy 33	26	131-017-026	0 S 4th St.
12	047-023-012	720 N 2nd St.	27	131-018-037	310 Del Puerto Ave.
13	047-038-029	1st St.	28	131-019-007	19 S 5th St.
14	047-044-044	948 Arambel Dr.	29	131-006-057	320 C St.
15	047-048-019	Lilac Ave.			

Property Address: 729 Skimmer Dr., Patterson, CA 95363
A.P.N: 021-043-019
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 729 Skimmer Dr., Patterson, CA 95363
A.P.N: 021-043-019

Property Address: 707 Roadrunner Dr., Patterson, CA 95363
A.P.N: 021-043-037
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 1348 Beaver Creek Dr., Patterson, CA 95363
A.P.N: 021-053-084
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 1412 Henley Pkwy., Patterson, CA 95363
A.P.N: 021-055-039
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 1412 Henley Pkwy., Patterson, CA 95363
A.P.N: 021-055-039

Property Address: 469 Squash Creek Ln., Patterson, CA 95363
A.P.N: 021-063-060
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 469 Squash Creek Ln., Patterson, CA 95363
A.P.N: 021-063-060

Property Address: 1433 Jake Creek Dr., Patterson, CA 95363
A.P.N: 021-065-016
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 1304 Shasta Creek Ct., Patterson, CA 95363
A.P.N: 021-067-048
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 419 Creekside Dr., Patterson, CA 95363
A.P.N: 021-067-061
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 2065 Keystone Pacific Pkwy., Patterson, CA 95363
A.P.N: 021-085-014
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: Hwy 33, Patterson, CA 95363
A.P.N: 047-022-035
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: Hwy 33, Patterson, CA 95363
A.P.N: 047-022-036
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 720 N 2nd St., CA 95363
A.P.N: 047-023-012
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: N 1st St., Patterson, CA 95363
A.P.N: 047-038-029
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 948 Arambel Dr., Patterson, CA 95363
A.P.N: 047-044-044
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: Lilac Ave., Patterson, CA 95363
A.P.N: 047-048-019
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 419 E Las Palmas Ave., Patterson, CA 95363
A.P.N: 047-057-063
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 15349 9th St., Patterson, CA 95363
A.P.N: 048-048-001
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 104 Hartley St., Patterson, CA 95363
A.P.N: 048-054-019
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 104 Hartley St., Patterson, CA 95363
A.P.N: 048-054-019

Property Address: 0 E Las Palmas Ave., Patterson, CA 95363
A.P.N: 048-054-043
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 522 Tuscany Ct., Patterson, CA 95363
A.P.N: 048-057-054
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 420 S 3rd St., Patterson, CA 95363
A.P.N: 131-006-016
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 0 L St., Patterson, CA 95363
A.P.N: 131-011-026
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 120 Salado Ave., Patterson, CA 95363
A.P.N: 131-014-033
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 315 D St., Patterson, CA 95363
A.P.N: 131-016-008
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 331 D St., Patterson, CA 95363
A.P.N: 131-016-026
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 0 S 4th St., Patterson, CA 95363
A.P.N: 131-017-026
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 310 Del Puerto Ave., Patterson, CA 95363
A.P.N: 131-018-037
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 310 Del Puerto Ave., Patterson, CA 95363
A.P.N: 131-018-037

Property Address: 19 S 5th St., Patterson, CA 95363
A.P.N: 131-019-007
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

Property Address: 320 C St., Patterson, CA 95363
A.P.N: 131-006-057
Date Notified: 4/20/16
Violation: Remove Tall Grass, Weeds, and any Debris from Property

City of Patterson
Fire Department

344 West Las Palmas Avenue
Patterson, California 95363
(209) 895-8130

NOTICE TO ABATE PUBLIC NUISANCE

April 20, 2016

Property Owner(s): Occupant
720 N 2nd St.
Patterson, CA 95363

Violation Address: 720 N 2nd St., Patterson, CA 95363

Assessor's Parcel Number: 047-023-012

A visual inspection of your property was made and as a result of said inspection, the property has been identified as having overgrown weeds, rubbish, dirt and rank growth and other nuisances as defined in Patterson Municipal Code § 6.16.020. Property owners, agents or tenants have the responsibility to maintain properties under their control in compliance with Local and State Ordinances.

Therefore, notice is hereby given that:

Pursuant to the provisions of Ordinance No. 243 and Ordinance No. 704 of the City of Patterson, all weeds, rubbish, dirt and rank growth and other nuisances as defined in Patterson Municipal Code § 6.16.020 of said Ordinance, growing or existing on private property on this street or in any street or alley abutting any such property constitute a public nuisance which must be abated by the destruction or removal thereof.

All persons owning, managing or having control or charge or occupancy of any such private property shall, without delay, destroy or remove all such weeds, rubbish, dirt and/or rank growth from their property and from their half of the abutting street and alley between the lot lines, as extended, or such weeds, rubbish, dirt and/or rank growth will be destroyed or removed and such nuisance abated by city authorities, in which case the cost of destruction or removal will be assessed upon the lots and lands, from, or on which, or abutting the streets and alleys from, or on which, such nuisance was abated, and such costs will constitute a lien upon the lots or parcels until paid and will be collected on the next tax roll upon which municipal taxes are collected.

*All property owners having objections to the proposed abatement of the nuisance are hereby notified to attend a meeting of the City Council of the City of Patterson to be held on **May 3, 2016 @ 7 pm** or as soon as possible thereafter, at which time and place all objections will be heard and given due consideration.*

Please remove any and all overgrown weeds or vegetation, rubbish, dirt and or rank growth from the property before May 3, 2016. Failure to do so will result in City Council considering your property for abatement by private contractor. Any fees incurred will be billed to the property owner or a lien will be placed on the property. If you have any question regarding this matter, please call (209) 895-8130.

Jeff Gregory
Interim Fire Chief
Patterson Fire Department

NOTICE DATE:4/20/2016
(ORD. 704 1(part), 2008: ORD. 243 4, 1974)

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Joel Andrews, City Planner
Brian Millar, AICP, Planning Consultant

MEETING DATE: May 3, 2016

ITEM NO: 6.3

SUBJECT: Consider Adoption of Wastewater Master Plan

RECOMMENDATION

Staff recommends that the Council adopt the Wastewater Master Plan.

BACKGROUND

In 2011, the City embarked on a process of updating existing Master Plans and creation of new Master Plans that would help guide how and where necessary facilities could be built in response to planned future growth. Master Plans will address public safety, parks and recreation, roadways and circulation, water, wastewater and storm drainage. Work on the Master Plans was temporarily placed on hold, allowing additional focus on how the Master Plans might be structured, including their program elements and overall costs to implement them. Work commenced again in 2014 on the Master Plans, and the first of these Master Plans, addressing Public Safety facility needs, has been completed.

The City's consultant on the Wastewater Master Plan, Black Water Consulting Engineers, has completed work on the Draft of the Master Plan, and recently presented key findings and recommendations to Council. The Master Plan has now been completed and is ready for adoption by City Council.

DISCUSSION

Key issues previously presented to Council on the Wastewater Master Plan, and addressed in the Master Plan now before the Council for adoption, include:

- Overview of Wastewater Master Plan objectives.
- Summary of existing conditions, including wastewater system conveyance and treatment capacities.
- System needs to accommodate planned future growth, through General Plan buildout. This includes identification of what new sewer conveyance lines and related system improvements would be needed over time and in response to planned future development.
- Estimated costs for system improvements.

Additionally, as part of this infrastructure master plan process, a CEQA document has been prepared identifying use of an Addendum to the General Plan EIR supporting the Wastewater Master Plan.

RECOMMENDATION

Staff recommends that the City Council adopt the Addendum to the 2010 General Plan EIR and adopt the Wastewater Master Plan.

Attachments

Patterson Wastewater Master Plan
CEQA Addendum to 2010 General Plan EIR for Wastewater Master Plan

Wastewater Master Plan

Patterson

April 2016

City of Patterson
Engineering, Building, and Capital Projects Department
1 Plaza
Patterson, California 95363

Prepared by:
BLACKWATER CONSULTING ENGINEERS, INC.
NV5

City of Patterson
Wastewater Master Plan

April 2016

Prepared for:
CITY OF PATTERSON
1 PLAZA CIRCLE
PATTERSON, CA 95363
(209) 895-8065

Prepared by:
BLACK WATER CONSULTING ENGINEERS, INC.
605 STANDIFORD AVENUE, SUITE N
MODESTO, CA 95350
(209) 322-1817

NV5, INC.
1215 WEST CENTER STREET, SUITE 201
MANTECA, CA 95337
(209) 239-9080

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Acknowledgements

The 2016 City of Patterson Wastewater Master Plan represents a collaborative effort between Black Water Consulting Engineers, NV5, North Star Engineering Group, and the City of Patterson. Among the many measures of City staff who assisted with this effort, we would like to acknowledge the following key personnel from the City whose knowledge and experience were invaluable and instrumental in development of this Master Plan.

Ken Irwin – City Manager

Mike Willett – Public Works Director

Victorio Tostado – Chief Plant Operator

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Acronyms

ac	Acre
ADWF	Average Dry Weather Flow. The average flow between June - August.
AIPS	Advanced Integrated Pond System
AWWA	American Water Works Association
BOD	5-day Biochemical Oxygen Demand
CCI	Construction Cost Index
CIP	Capital Improvement Project
City	City of Patterson
County	Stanislaus County
CTS	Central Trunk Sewer
d/D	Depth to Diameter Ratio
DGWWTP	Diablo Grande Wastewater Treatment Plant
DO	Dissolved Oxygen
DPF	Diurnal Peaking Factor
DU	Dwelling Unit
ENR	Engineering News Record
FOG	Fat, Oil, and Grease
ft	Feet
ft/s	Feet Per Second
GIS	Geographic Information System
gpcd	Gallons Per Capita Per Day
gpd	Gallons Per Day
gpm	Gallons Per Minute
HP	Horsepower
I/I	Inflow And Infiltration
in	Inch
IPS	Influent Pump Station
LCCA	Life Cycle Cost Analysis
MG	Million Gallons
MGD	Million Gallons Per Day
MPN	Most Probable Number
NASTS	North Activated Sludge Treatment System
NPTS	North Patterson Trunk Sewer
NWRI	National Water Research Institute
OAES	Orange Avenue Extension Sewer
PDWF	Peak Dry Weather Flow
PVC	Polyvinyl Chloride Pipe
PWWF	Peak Wet Weather Flow
RAS	Return Activated Sludge
RCP	Reinforced Concrete Pipe
SASTS	South Activated Sludge Treatment System
SPTS	South Patterson Trunk Sewer

SR	State Route
SOI	Sphere of Influence
SSOs	Sanitary Sewer Overflows
SSMP	Sanitary Sewer Management Plan
SSTL	South Sperry Trunk Line
State Water Board	State Water Resources Control Board
TAZ	Traffic Analysis Zone
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
TM	Technical Memorandum
TSS	Total Suspended Solids
VCP	Vitrified Clay Pipe
VFD	Variable Frequency Drive
WAS	Waste Activated Sludge
WDR	Waste Discharge Requirements
WGF	Wastewater Generation Factor
WQCF	Water Quality Control Facility
WRC	Water Recycling Criteria
WHWD	Western Hills Water District

1 Introduction

This Wastewater Master Plan (Master Plan) was prepared for the City of Patterson (City). The City updated its General Plan in 2010 [1] and a wastewater study was completed as a part of the update. The last formal wastewater master plan commissioned by the City was completed in 1992. This Master Plan studies the City's collection, treatment, and disposal systems to ensure that the City has adequate facilities to support future growth, as well as meet current and future regulatory requirements.

1.1 Scope and Purpose

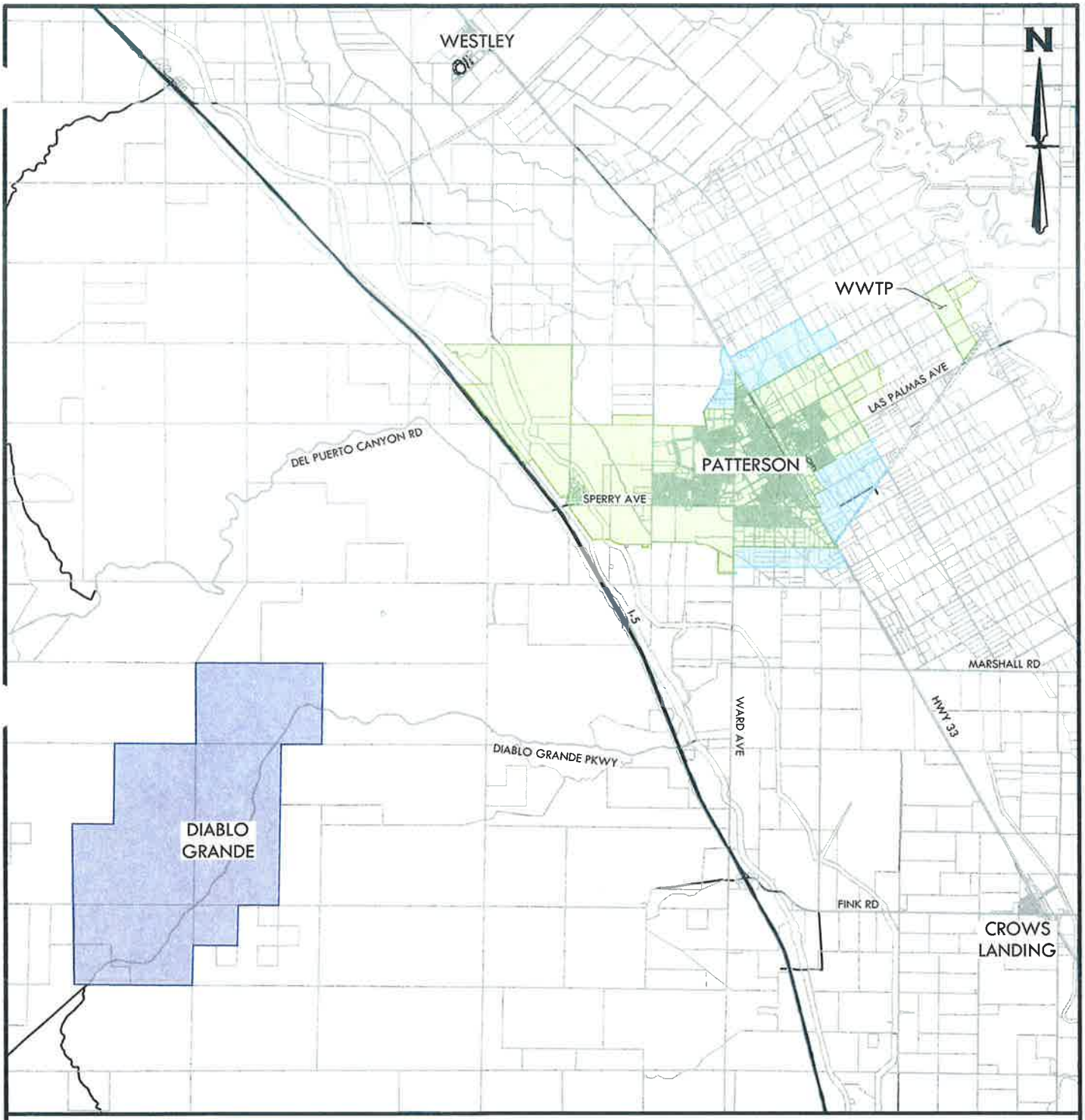
The City has commissioned the current master plan update to include the following items:

- A detailed review of the existing wastewater system.
- Identification of existing system deficiencies and recommended mitigations.
- An evaluation of wastewater flow routing alternatives within the collection system and capacity evaluation.
- Evaluation of wastewater treatment alternatives.
- Identification of the most cost effective and logical method of collection and treatment of the City's current and future wastewater.
- A 10-year planning horizon Capital Improvement Plan (CIP) to address identified deficiencies, including prioritization, schedules and estimated costs.
- Compilation of relevant wastewater data for the development of an AB 1600 nexus study.

1.2 Service Area

The City of Patterson provides wastewater collection and treatment services for residents, commercial businesses and industries within the City's service area. The City's current wastewater service area includes flows from Patterson, Diablo Grande's residential and golf course resort community, and unincorporated County areas that lie within the City's sphere of influence. Diablo Grande is approximately five miles southwest of the City of Patterson. Though the Diablo Grande community is outside the City's sphere of influence, the City has an agreement with Western Hills Water District (WHWD), which serves water to Diablo Grande, to treat and dispose of Diablo Grande's wastewater. The Patterson and WHWD service areas are shown in Figure 1-1.

Patterson's existing Wastewater Quality Control Facility (WQCF) is located at the easterly end of Walnut Avenue, approximately 1.5 miles east of the City. The City owns approximately 350 acres of land, which borders the Tuolumne River, on which the plant is situated along with several groundwater recharge fields. The City of Patterson service area and WQCF, excluding WHWD, is provided in Figure 1-2.



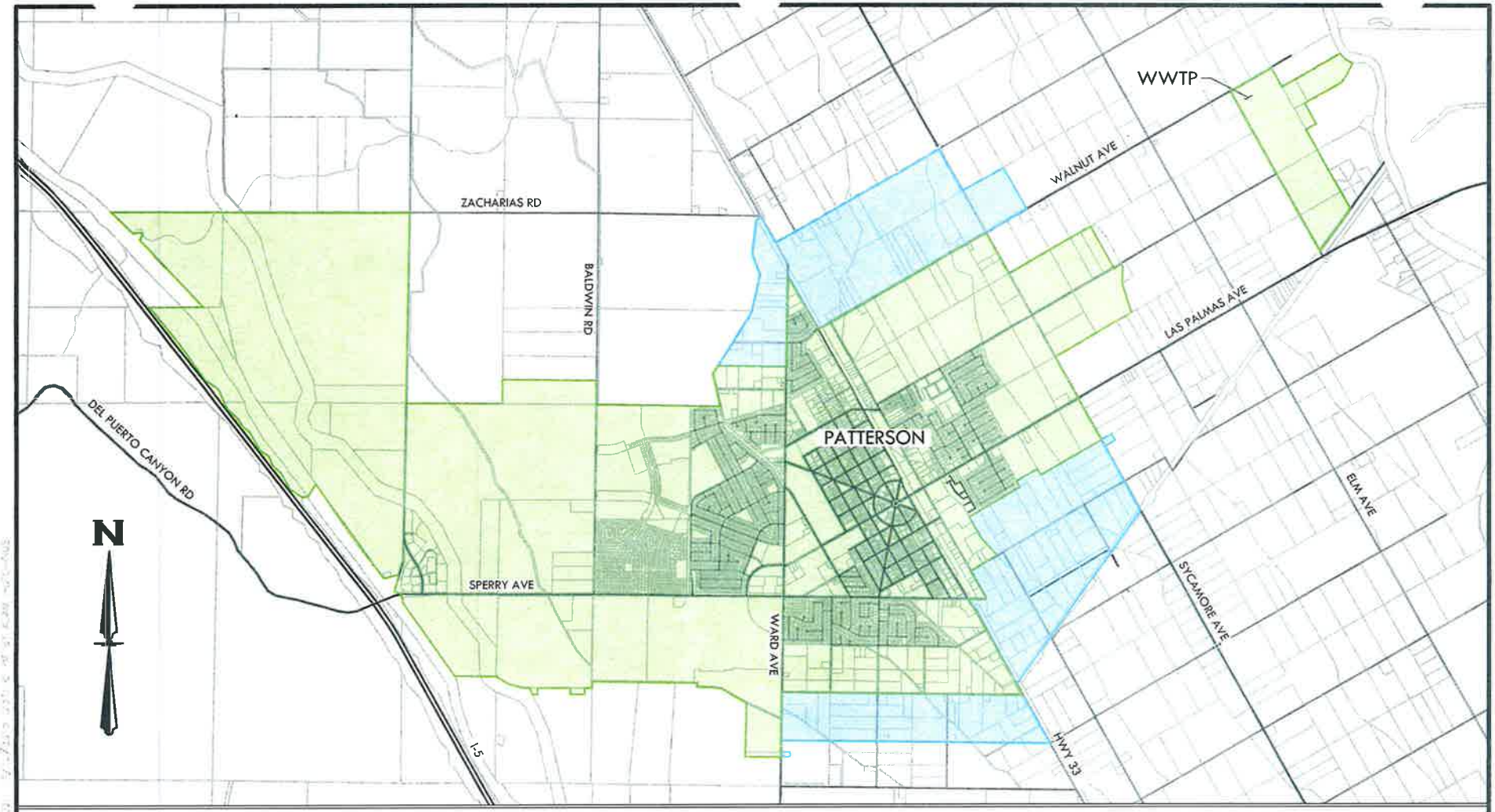
LEGEND

- SERVICE AREA - WHWD
- SERVICE AREA - PATTERSON
- SPHERE OF INFLUENCE - PATTERSON

FIGURE 1-1

CITY OF PATTERSON
WASTEWATER MASTER PLAN
PATTERSON AND WHWD SERVICE AREA

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH. 209.322.1820



LEGEND

- SERVICE AREA - PATTERSON
- SPHERE OF INFLUENCE - PATTERSON

FIGURE 1-2

CITY OF PATTERSON
WASTEWATER MASTER PLAN
SERVICE AREA

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH. 209.322.1820

1.3 Current Population and Flows

According to Census data, the 2010 population of Patterson was 20,413. Current population is estimated at 21,099 and is predicted to more than triple to 66,283 at buildout conditions, based on the General Plan [1]. Average annual wastewater flows to the WQCF are currently1.391 MGD, which includes flows from Patterson and Diablo Grande (WHWD) service areas.

1.4 Master Plan Goals and Objectives

The Master Plan project goals were established as follows:

- Provide a 10-year plan that is flexible in meeting current treatment requirements and future regulations.
- Define and prioritize the capital improvement projects that are anticipated to be constructed in the next 10 years.
- Develop cost obligations to assist the City in updating rates and developing impact fees.
- Ensure that the direction and recommendations of the Wastewater Master Plan conform to the most recent General Plan.

1.5 Regulatory Setting

Existing and projected regulatory requirements related to the City wastewater facilities are discussed in this section.

1.5.1 Existing Collection System Regulatory Requirements

To provide a consistent, statewide regulatory approach towards addressing sanitary sewer overflows (SSOs), the State Water Resources Control Board (State Water Board) adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003 (Sanitary Sewer Systems WDR). The Sanitary Sewer Systems WDR requires public agencies that own or operate a sanitary sewer system comprised of more than one mile of pipes which convey wastewater to a publicly owned treatment facility to develop and implement sewer system management plans (SSMPs) and report all SSOs to the State Water Board's online SSO database. The SSMP is required to be audited internally every two years.

1.5.2 Existing Waste Discharge Requirements

The City WQCF is regulated by the Regional Water Quality Control Board (Regional Board) Order R5-2007-0147, Waste Discharge Requirements (WDRs). The WDRs establish discharge prohibitions, flow limitations, effluent limitations, solids disposal requirements, groundwater limitations, discharge specifications, solids disposal specifications, and provisions for the WQCF. Table 1-1 summarizes the major flow and effluent limitations listed in the WDRs. Additional limitations are included in the WDRs.

Table 1-1 City of Patterson WQCF Summary of Waste Discharge Requirements

Parameter	Requirement
Maximum Monthly Average Flow	2.45 MGD
Effluent BOD	NASTS and SASTS: Monthly average limit of 20 mg/L
	AIPS: Monthly average limit of 40 mg/L
Effluent Total Suspended Solids (TSS)	NASTS and SASTS: Monthly average limit of 20 mg/L
	AIPS: Monthly average limit of 40 mg/L
Effluent Total Nitrogen (as N)	NASTS: Monthly average limit of 10 mg/L
	SASTS and AIPS: Monthly maximum limit of 8 mg/L
pH	Wastewater stored shall not have a pH less than 6.5, or greater than 10.0
Dissolved oxygen (DO)	> 1.0 mg/L in the upper foot of any wastewater pond
Freeboard	Minimum of 2 feet in any pond

The WDRs also include groundwater limitations. The release of the waste constituents from any portion of the WQCF shall not cause the groundwater to have waste constituents in concentrations greater than those shown in Table 1-2.

Table 1-2 City of Patterson WQCF Summary of Groundwater Limitations

Constituent	Units	Limitation
Boron	mg/l	0.7
Chloride	mg/l	106
Iron	mg/l	0.3
Manganese	mg/l	0.05
Sodium	mg/l	69
Total Coliform Organisms	MPN/100 ml	<2.2
Electrical Conductivity	umhos/cm	700
Total Dissolved Solids	mg/l	450
Nitrite (as N)	mg/l	1
Nitrate	mg/l	10
Ammonia (as NH_4)	mg/l	1.5
Bromoform	µg/l	4
Bromodichloromethane	µg/l	0.27
Chloroform	µg/l	1.1
Dibromochloromethane	µg/l	0.37

1.5.3 Potential Regulatory Requirements for Other Disposal Options

The City is planning to construct the Phase III Wastewater Treatment Plant Expansion Project (Phase III WQCF Project), which will expand the treatment capacity of the WQCF by 1.25 MGD. Following completion of this project, the overall capacity of the WQCF will be limited by the disposal capacity of the percolation ponds. As such, the City has expressed interest in exploring other alternative disposal options. Alternative effluent disposal options include surface water discharge or recycled water use for irrigation.

Although the WQCF is located adjacent to the San Joaquin River, surface water discharge of treated effluent is not a recommended option for the following reasons:

1. The Regional Board has adopted Resolution No. R5-2009-0028, in support of Regionalization, Reclamation, Recycling, and Conservation for Wastewater Treatment Plants, which encourages reclamation, reuse, and water conservation. With the recent drought, the Regional Board will discourage discharge of wastewater effluent to surface water bodies if water recycling alternatives are feasible.
2. A significant increase in sampling requirements, including the addition of metals and toxicity testing.
3. More stringent permit requirements.
4. Any permit violations would be subject to Mandatory Minimum Penalties of $3,000 per day.
5. National Pollutant Discharge Elimination System (NPDES) permits, which are required for surface water discharges, are more expensive than WDR permits.
6. Increased potential for lawsuits from environmental organizations.

Regulatory requirements pertaining to water recycling options are contained in Title 22 of the California Code of Regulations, Division 4, Chapter 3 (commonly referred to as the Water Recycling Criteria [WRC] or Title 22). The WRC specifies requirements related to levels of treatment, use areas, dual plumbed systems, indirect potable reuse via groundwater replenishment, sampling analysis, reporting, operations, and design and reliability of treatment processes for recycled water.

Current WRC treatment requirements for various recycled water uses are summarized in Table 1-3. In general, the treatment levels correspond to typical terminology for secondary and tertiary wastewater treatment processes. For the specific definitions, refer to the WRC.

Table 1-3 Title 22 Water Recycling Criteria Treatment Level Requirements for Acceptable Recycled Water Uses

Treatment Level	Acceptable Recycled Water Use
Undisinfected secondary	Orchards where the recycled water does not come into contact with the edible portion of the crop Vineyards where the recycled water does not come into contact with the edible portion of the crop Non-food-bearing trees Fodder and fiber crops and pasture for animals not producing milk for human consumptions Seed crops not eaten by humans Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public. Flushing sanitary sewers
Disinfected secondary-2.2	Surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water Restricted recreational impoundments and any publicly accessible impoundments at fish hatcheries
Disinfected secondary-23	Surface irrigation of cemeteries, freeway landscaping, restricted access golf courses, ornamental nursery stock and sod farms with restricted access, pasture for animals producing milk for human consumptions, and any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard.

Treatment Level	Acceptable Recycled Water Use
Disinfected tertiary, with < 2.2 MPN/mL Total Coliform 7-day median concentration and < 23 MPN/100 mL 30-day maximum	Surface irrigation of food crops, parks and playgrounds, school yards, residential landscaping, unrestricted access golf courses Nonrestricted recreational impoundments Industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist. Flushing toilets and urinals Priming drain taps, Industrial process water that may come into contact with workers Structural fire fighting Decorative fountains Commercial laundries Consolidation of backfill around potable water pipelines Artificial snow making for commercial outdoor use Commercial car washes where the general public is excluded from the washing process

2 Existing Collection System

2.1 Description of Existing Collection System

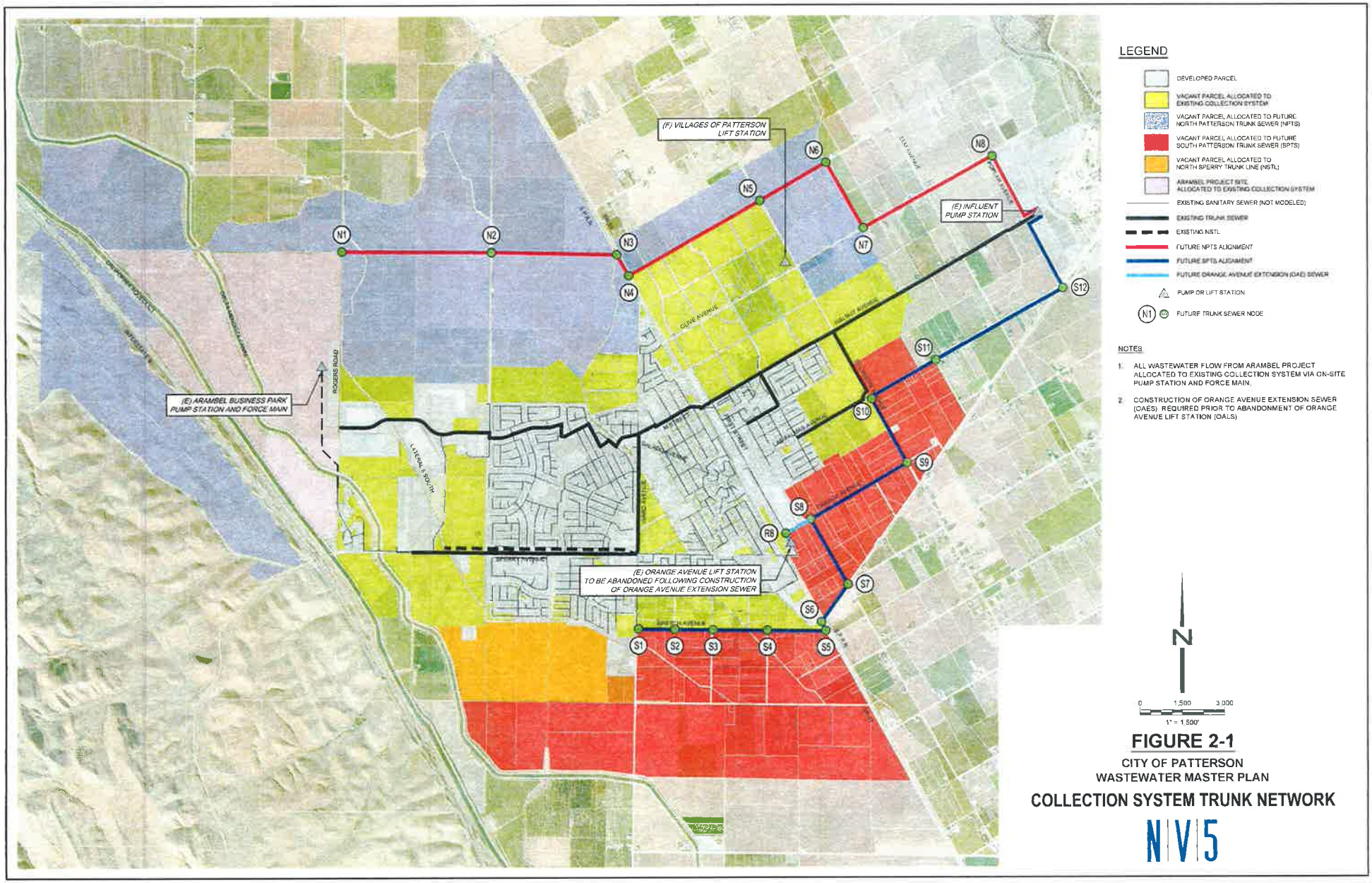
The City provides wastewater collection, treatment, and disposal services to a developed area of approximately 3.0 square miles in Patterson, California. Present City limits encompass a total area of approximately 6.0 square miles.

The existing wastewater collection system serves approximately 21,099 residents within 6,035 dwelling units (DU) and 508 acres (ac) of industrial and commercial use. The system consists of three lift stations, one 4-inch force main approximately 160 feet in length, and 8.5 miles of gravity sewers ranging in diameter from 4- to 33-inches. Parallel sewers exist along Sperry Avenue (Sperry North Trunk and Sperry South Trunk Lines), Ward Avenue, and the State Route (SR) 33 crossing at Walnut Avenue. A flow split occurs on North First Street, approximately 500 feet south of Washburn Street. In 2010, a 12-inch bypass line was installed from the Sperry North Trunk Line to the Sperry South Trunk Line, approximately 450 feet east of Park Center Drive. Lift station data is summarized in Table 2-1.

Table 2-1 Lift Station Summary

Location	Pump	Rated Horsepower	Level Setpoints	High Water Alarm	Discharge Diameter (in)
Ward Avenue & Vicki Lynn Lane	Pump 1	3 HP	On: 8.0 ft/Off 3.0 ft	10.0 ft	12
	Pump 2	3 HP	On: 9.5 ft/Off 4.0 ft	10.0 ft	12
Orange Avenue & South First Street	Pump 1	3 HP	On: 4.5 ft/Off 1.0 ft	7.0 ft	4
	Pump 2	3 HP	On: 5.5 ft/Off 1.5 ft	7.0 ft	4
Rogers Road	Pump 1	25 HP	On: 6.0 ft/Off 3.0 ft	7.0 ft	4
	Pump 2	25 HP	On: 6.0 ft/Off 3.0 ft	7.0 ft	4
	Pump 3	25 HP	On: 6.0 ft/Off 3.0 ft	7.0 ft	4

The City's wastewater collection system trunk network, comprised primarily of sewers 12-inches and larger, is provided in Figure 2-1. Some sewers with diameters less than 12-inches where future improvements are known to be necessary are included as part of the trunk network. Record drawings, provided by the City, were reviewed to determine collection system information pertinent to hydraulic analysis including pipe diameter, pipe slope, and invert elevations.



NOTES

1. ALL WASTEWATER FLOW FROM ARAMBEL PROJECT ALLOCATED TO EXISTING COLLECTION SYSTEM VIA ON-SITE PUMP STATION AND FORCE MAIN.
2. CONSTRUCTION OF ORANGE AVENUE EXTENSION SEWER (OAES) REQUIRED PRIOR TO ABANDONMENT OF ORANGE AVENUE LIFT STATION (OALS)

FIGURE 2-1

CITY OF PATTERSON
WASTEWATER MASTER PLAN

COLLECTION SYSTEM TRUNK NETWORK

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2.2 West Patterson Business Park Expansion Project

The West Patterson Business Park Expansion Project (Arambel Development) is an 1,100-ac development in the northwest region of the City. The development is currently designated primarily as Light Industrial use and is expected to generate approximately 500,000 gpd of wastewater based on prior discussions with the City. The hydraulic model will include the Sperry South Trunk Line and an analysis of available capacity to serve the Arambel Development will be provided with the Master Plan.

2.3 Agreement with Western Hills Water District

The City of Patterson has a Memorandum of Understanding [2] with WHWD to accept sewer flows up to 750,000 gpd from the Diablo Grande Community. The agreement specifies collection system improvements required, at the partial expense of WHWD, along Sperry Avenue, Ward Avenue, M Street, and Walnut Avenue. All required improvements appear to have been completed. Provisions limiting peak flows from Diablo Grande are not included in the agreement. A copy of the agreement is provided in Appendix A.

An ADWF point load of 750,000 gpd will be included in the model at the southern end of the collection system along Ward Avenue for the buildout flow scenario.

2.4 Collection System Maintenance Issues and Concerns

A meeting was conducted with City staff on March 19, 2012 to discuss known system deficiencies and maintenance concerns. Comments received during that meeting are summarized below.

1. Known cross-connections between storms drains and the sanitary sewer collection system exist at parking lots on First Street and at the Housing Authority on Walnut Avenue. Other cross-connections may exist, but have yet to be identified.
2. The City does not have a Fat, Oil, and Grease (FOG) elimination program.
3. The lift station on First Street and Orange Avenue is planned to be eliminated with the construction of a new trunk sewer on Orange Avenue identified in the 1992 Wastewater System Master Plan [3].
4. Sewer gases accumulate in the Sperry North Trunk Line due to flat installation. The specific area of concern is between the Delta Mendota Canal and American Eagle Lane.
5. Wastewater is diverted from the North Line to Sperry South (Diablo Grande) Line near the airport.
6. Diablo Grande siphons are flushed monthly with approximately 100,000 gallons of water.
7. A sewer trunk extension is required at the south side of the SR-33 commercial area.
8. 8-inch sewers, parallel to Third Street between Salado Creek and M Street, are installed within easements, and access is difficult.
9. A steep 18-inch sewer has been installed along Walnut Avenue upstream of the Influent Pump Station, between two 33-inch sewers. Hydraulic impacts of this segment will be considered in the modeling analysis.

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3 Discussion of Design Criteria

The use of gravity sewers for the collection system is the preferred method of conveyance. Although initially more expensive due to larger size and depth of installation, gravity sewers tend to have lower operation and maintenance costs and a reduced risk of failure. Pump stations, lift stations, and force mains will be selected for conditions where the topography, geology, or constraints in the existing system inhibits the use of gravity sewers. Design and evaluation criteria for gravity pipelines, lift stations, pump stations, and force mains are summarized below in Table 3-1.

Table 3-1 Collection System Design and Analysis Criteria Summary

Parameter	Value
Maximum d/D, existing gravity sewers	0.8
Maximum d/D, proposed gravity sewers	0.5
Minimum depth, proposed trunk sewers	9 ft
Minimum freeboard in manholes	3 ft
Manning's n	0.013
Hazen-Williams' C	130
Velocity, gravity sewers	Minimum 2 ft/s
Velocity, force mains	2 ft/s - 8 ft/s

3.1 Gravity Pipelines

The following criteria will be used in the design of gravity sewers:

1. New gravity sewer pipelines should be 8-inch or larger in nominal diameter. Terminal runs that have no potential for further extension, such as cul-de-sacs, may be 6-inch diameter. City Standard Specifications [4] allow for additional sewer pipelines to be 6-inches in diameter; however, pipes of this size can be difficult to maintain.
2. The minimum depth of cover is 3.5 feet (ft).
3. The maximum depth of cover is 30 ft.
4. Manholes are assumed at maximum intervals of 350 ft for 6-inch and 8-inch mains. Manholes for 10-inch and larger mains will be set at maximum intervals of 450 ft. Manholes are also assumed at junctions, angle points, change in pipe diameter or gradient, and at the termination of sewer lines.
5. For analytical purposes, a Manning's "n" of 0.013 will be assumed for all sewer pipelines.
6. Velocities will range from 2-10 feet per second (ft/s).

The primary evaluation criterion for hydraulic deficiency in gravity sewers is the ratio of normal flow depth to pipe diameter (d/D ratio). New sewers are typically designed for d/D ratios ranging from 0.50 to 0.75, depending on diameter. Higher d/D ratios, up to 1.00, are accepted for existing sewers. For the purposes of the Master Plan, any gravity segment with a d/D ratio greater than 0.80 (80% full by depth) will be deemed hydraulically deficient. Proposed gravity sewers will be sized for a d/D ratio less than or equal to 0.50 (50% full by depth).

3.2 Lift Stations and Pump Stations

As stated above, lift stations and pump stations are less desirable than gravity conveyance, though may be necessary components of collection system improvement alternatives depending on system constraints. Lift stations and pump stations will be comparable in design, except lift stations will discharge to a gravity sewer and pump stations will discharge to a force main. Lift and pump stations will be evaluated based on the following criteria. Additional design criteria such as wet well sizing, flow metering, remote monitoring capabilities, and housing of electrical equipment in a building or weatherproof enclosure will be established as needed.

1. Triplex stations will be used when necessary if a single pump capable of meeting the anticipated range of flows is not available.
2. Lift/pump stations will be furnished with submersible pumps and are to include one stand-by pump.
3. Each pump in a duplex lift/pump station will be designed to meet 100 percent of the peak wet weather flow (PWWF)
4. Triplex lift/pump stations are designed to meet 100 percent of the PWWF with the largest pump out of service.
5. Pump and impeller sizes will be selected with operating points within 60-115 percent of the pump's best efficiency point.
6. Pump drives will be either constant speed or variable frequency drive (VFD).

3.3 Force Mains

The following criteria will be used in the design and analysis of force mains:

1. The minimum depth of cover is 3.5 ft.
2. Velocities will range from 2-6 ft/s
3. Force mains will be constructed of PVC, AWWA C900/C905.
4. Air release valves will be provided at high points in the mains.

4 Wastewater Flow and Loads

This chapter presents an analysis of wastewater flow and loading characteristics. Historical flow and loading data are presented, followed by near-term (10 year) and buildout projections of the flows and loads. The flow and load projections will be used as the basis for the design criteria and cost analyses for wastewater improvements. The major topics discussed in this chapter include:

- Historic Domestic Wastewater Flow
- Historic Domestic Wastewater Characteristics
- Projected Domestic Wastewater Flows and Loads

4.1 Land Use Data Analysis

With the exception of the Diablo Grande community, the current service area consists of 2,603 acres. Approximately 1,900 acres are currently developed. As established by the General Plan, it is expected that the City's service area will encompass approximately 3,500 acres in near-term projections.

Geographic Information System (GIS) files provided by the City identify the current land use and development status (developed or vacant) of parcels within the planning area, the development status of parcels at a 10-year horizon, and land uses for buildout (final) conditions based on the General Plan. Existing and buildout land uses are summarized by area in Table 4-1. Development extents and land uses for the existing and buildout scenarios are presented in Figures 4-1 and 4-2.

Table 4-1 Land Use Summary by Area

Land Use	Abbreviation	Developed Area (ac)		
		Existing[a]	10-year Projection[a]	Buildout
Residential				
Low Density Residential	LDR	793.8	1000.4	3915.2
Medium Density Residential	MDR	14.4	337.8	337.8
High Density Residential	HDR	24.4	45.6	45.6
Estate Residential	ER	0.0	0.0	911.7
Downtown Residential	DR	127.8	127.8	128.3
Commercial				
Highway Service Commercial	HSC	20.2	22.9	91.0
Downtown Core	DC	22.1	40.0	40.0
General Commercial	GC	115.7	167.5	680.9
Mixed Use	MU	0.0	0.0	575.4
Medical/Professional Office	MP	5.0	30.5	30.5
Industrial				
Heavy Industrial	HI	93.5	93.5	451.8
Light Industrial	LI	252.2	681.3	1639.7
Public				
Public/Quasi-Public	P/QP	328.0	581.6	1,177.5
Parks/Open Space	P/OS	102.6	140.9	403.2
Total Developed Area (ac)		1,899.7	3,269.8	10,428.6

[a] Provided via email by City of Patterson, 3/20/12 [6]

Additional residential development data, including population and total dwelling units (DU), are summarized in Table 4-2.

Table 4-2 Residential Data Summary

Item	Value
Current population (2015)	21,099
Existing DUs	6,035
Average persons per household	3.5

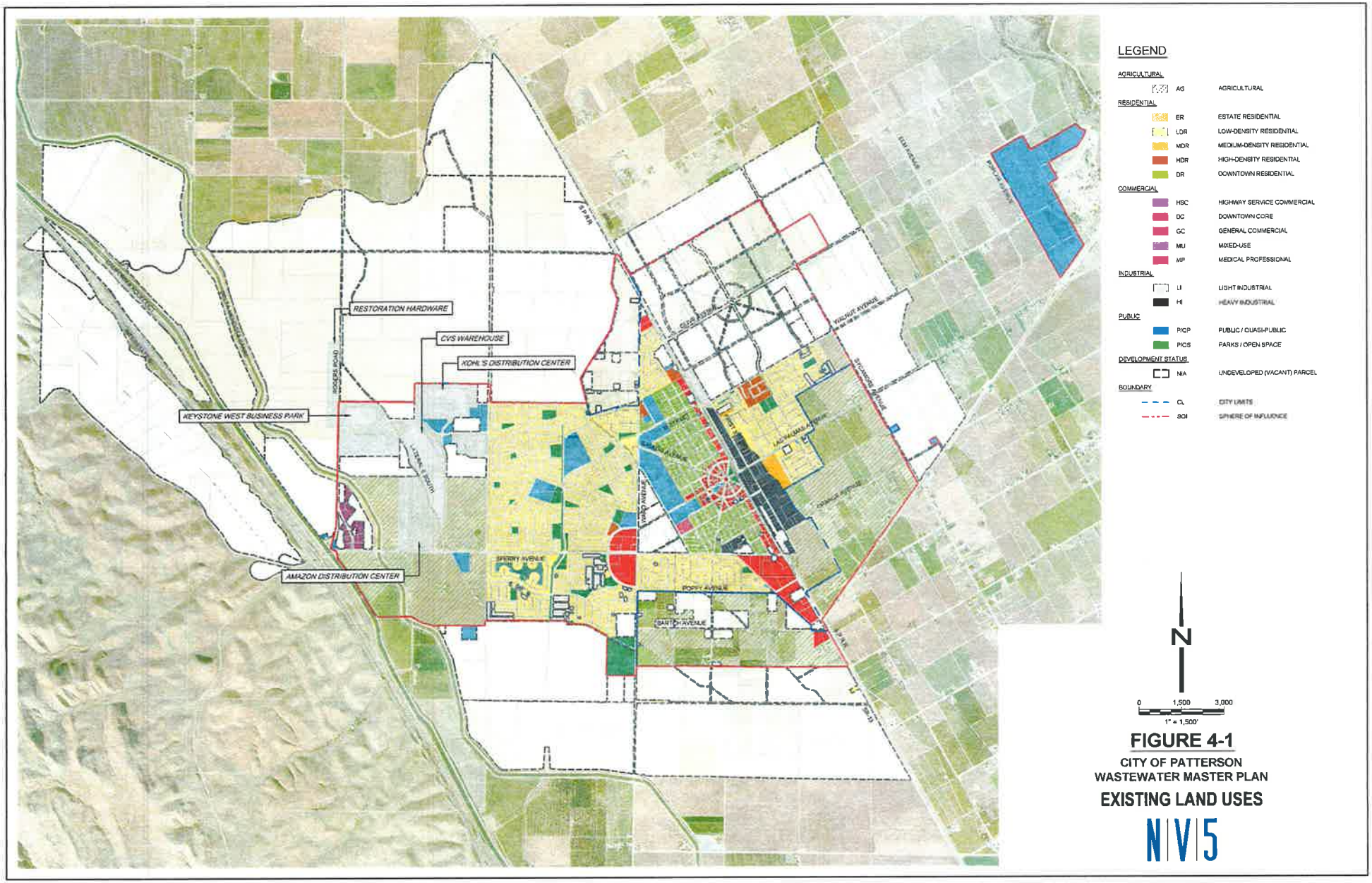

FIGURE 4-1

CITY OF PATTERSON
WASTEWATER MASTER PLAN

EXISTING LAND USES

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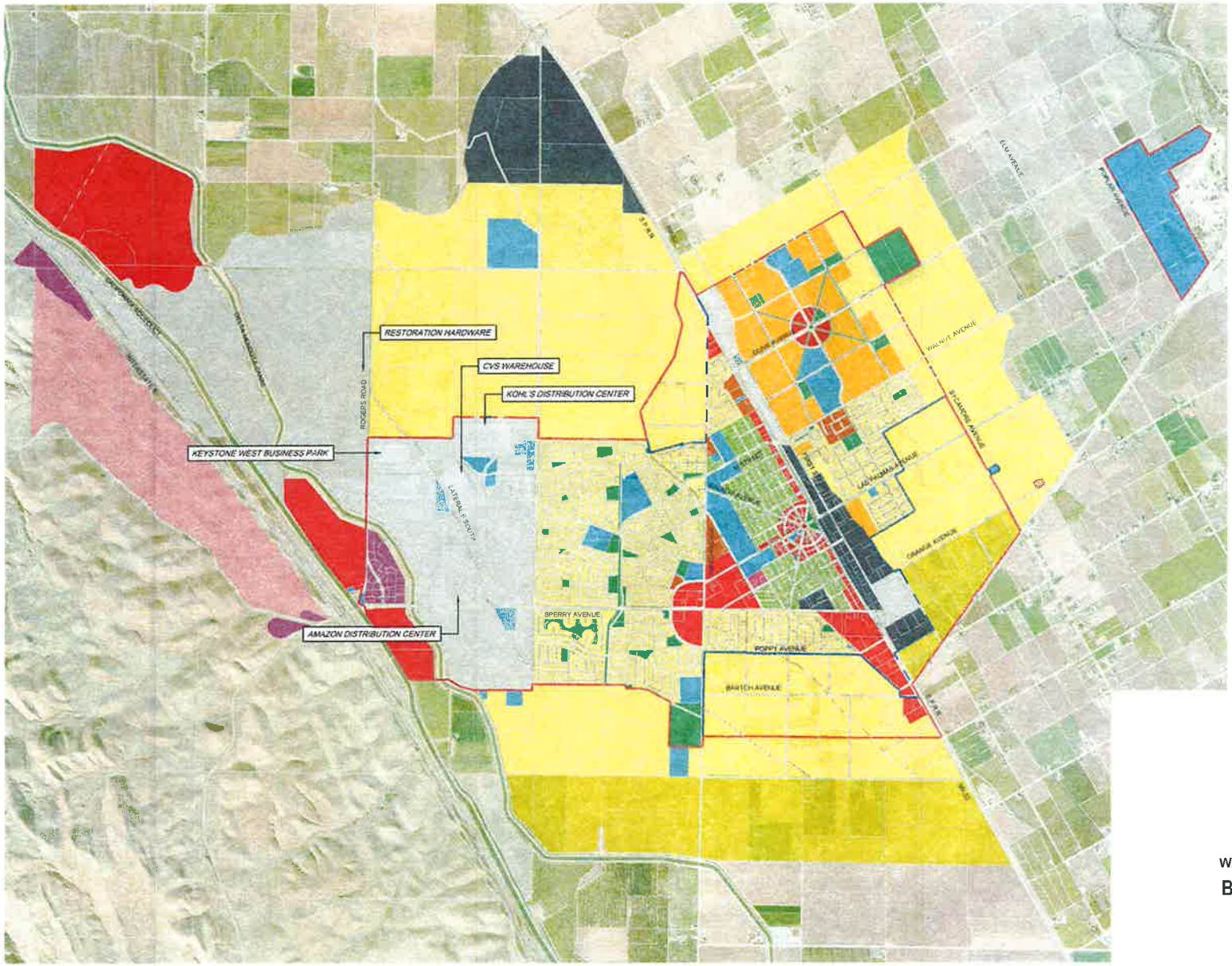

FIGURE 4-2

CITY OF PATTERSON
WASTEWATER MASTER PLAN

BUILDOUT LAND USES

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4.2 Historic Domestic Wastewater Flows

Calibration of the hydraulic model for existing flows is a critical component in projecting future wastewater flows. The City has provided daily influent flow data at the City of Patterson WQCF for use in analyzing existing flows.

The WQCF also receives flow from Diablo Grande, which is served by the WHWD. Flow data for Diablo Grande were provided by the City and will be compared with overall WQCF flows to determine wastewater generation specific to the City.

4.2.1 Water Quality Control Facility and Diablo Grande Flow Data

The sewers within the collection system should be sized to accommodate the projected peak wet weather flow (PWWF) without surcharging. PWWF is typically defined as the average hour peak flow measured during a storm event and is a combination of the wastewater flow contributed during dry weather conditions (PDWF) and I/I for a design storm event. PDWF is obtained through multiplying the average dry weather flow (ADWF) by a diurnal peaking factor (DPF).

WQCF flow data were provided by City staff for 2009 through 2011, 2014, and 2015. ADWF was estimated by averaging the total daily WQCF influent flow for June through August of the years reviewed. Flow data for June, July, and August 2015 were not available at the time of this analysis. An existing ADWF of 1.391 MGD was calculated and will be used for model calibration for average flows.

Similarly, Diablo Grande flow data were analyzed for June through August of 2009 and 2010. Diablo Grande flow data for 2011 through 2015 were not available. ADWF data are summarized in Table 4-3. A Diablo Grande ADWF of approximately 0.032 MGD is included in the model as a point load at the southern end of the collection system along Ward Avenue. WGFs for the City will be calibrated using a flow of 1.360 MGD (City only).

Table 4-3 Average Dry Weather Flow Summary

Month	ADWF by Year (MGD)					
	WQCF[a]				Diablo Grande[b]	
	2009	2010	2011	2014	2009	2010
June	1.373	1.40	1.33	1.45	0.0284	0.0330
July	1.395	1.29	1.39	1.48	0.0294	0.0298
August	1.432	1.30	1.37	1.48	0.0309	0.0375
Average	**1.391**				**0.032**	
City of Patterson[c]	**1.360**					

[a] City of Patterson data not available for 2012 or 2013.

[b] Diablo Grande data not available for 2011 through 2015.

[c] City of Patterson ADWF equals WQCF Flow less Diablo Grande.

4.3 Water Use Data

Projected WQCF flows will be calculated using criteria established from Wastewater Generation Factors (WGFs), diurnal peaking factors, and inflow/infiltration (I/I) allowances, along with the estimates for developed acres of land.

Water demand rates (duty factors) from the City of Patterson Water Master Plan (WMP), currently in development by RMC Water and Environment (RMC), were provided for use in the development of WGFs. To determine the relationship between residential and commercial or industrial wastewater generation rates, potable water demands have been reviewed for all land uses. Due to anticipated reductions in future water use, separate demand rates were provided for existing and future development conditions. Recommended water demand factors from the WMP and associated indoor use rates are presented in Table 4-4.

Table 4-4 Water Demand Factors

Land Use	Total Water Demand (ac-ft/ac/yr)[a, b]		Indoor Water Use Factor[c]	Indoor Water Demand (ac-ft/ac/yr)[d]	
	Existing	Future		Existing	Future
Residential					
Low Density Residential	3.15	1.95	0.40	1.26	0.78
Medium Density Residential	1.44	1.12	0.40	0.58	0.45
High Density Residential	3.12	2.50	0.40	1.25	1.00
Estate Residential	-	0.98	0.40	-	0.39
Downtown Residential	2.65	2.60	0.45	1.19	1.17
Commercial					
Highway Service Commercial	0.98	0.96	0.70	0.69	0.67
Downtown Core	4.67	4.58	0.55	2.57	2.52
General Commercial	0.79	0.78	0.55	0.43	0.43
Mixed Use	-	2.16	0.40	-	0.86
Medical/Professional Office	0.40	0.40	0.60	0.24	0.24
Industrial					
Heavy Industrial	0.41	0.40	0.70	0.29	0.28
Light Industrial	0.41	0.40	0.50	0.21	0.20
Public					
Public/Quasi-Public	1.15	1.12	0.40	0.46	0.45
Parks/Open Space	2.62	2.57	0.10	0.26	0.26

[a] ac-ft/ac-year = acre-feet per acre per year

[b] Provided by RMC, 10/16/2015; includes indoor and outdoor (irrigation) use

[c] Based on information provided as part of 2012 Wastewater Master Plan; consistent with typical values

[d] Total Water Demand multiplied by Indoor Water Use Factor

4.4 Wastewater Generation Factors (WGFs)

Data presented in Tables 4-1, 4-2, and 4-4 were used to develop WGFs for model calibration and future flow estimates. Existing land use information and potable water demand factors were first used to determine current daily potable water demands in terms of gallons per day per acre (gpd/ac) for each land use. Potable water demand for all non-residential land uses were compared to the average residential potable water demand to determine a ratio of wastewater generation for all non-residential land uses in terms of average residential wastewater generation.

Daily residential potable water demand is summarized in Table 4-5. Estimated ratios of wastewater generation for non-residential uses are presented in Table 4-6.

Table 4-5 Residential Indoor Water Demand Summary

Land Use	Existing Area (ac)	Potable Water Demand		Total Daily Demand (gpd)
		Annual (ac-ft/ac/yr)	Daily (gpd/ac)	
Residential				
Low Density Residential	793.8	1.26	1,120	889,045
Medium Density Residential	14.4	0.58	510	7,324
High Density Residential	24.4	1.25	1,110	27,084
Estate Residential	0.0	-	-	-
Downtown Residential	127.8	1.19	1,060	135,500
Total	960.4			1,058,952
Area-Weighted Average Demand for all Residential Uses (gpd/ac)				**1,103**

Table 4-6 Non-Residential Indoor Water Demand Summary

Land Use	Existing Area (ac)	Potable Water Demand		Ratio of Residential Demand[a]
		Annual (ac-ft/ac/yr)	Daily (gpd/ac)	
Commercial				
Highway Service Commercial	20.2	0.69	610	0.55
Downtown Core	22.1	2.57	2,290	2.08
General Commercial	115.7	0.43	390	0.35
Mixed Use	0.0	-	-	-
Medical/Professional Office	5.0	0.24	210	0.19
Industrial				
Heavy Industrial	93.47	0.29	260	0.24
Light Industrial	252.18	0.21	180	0.16
Public				
Public/Quasi-Public	328.00	0.46	410	0.37
Parks/Open Space	102.61	0.26	230	0.21

[a] Ratio of Residential Demand based on area-weighted average Residential Demand from Table 4-4.

Using information from Tables 4-5 and 4-6, an iterative process was used to determine an appropriate residential WGF and corresponding non-residential WGFs with the following steps:

1. Select a residential WGF on a per-capita basis;
2. Convert the per-capita residential WGF into an area-based residential WGF (gpd/ac), and;
3. Multiply the area-based residential WGF by the demand ratios presented in Table 4-6 to obtain area based WGFs (gpd/ac) for all non-residential land uses.

This process resulted in a residential WGF of 50 gallons per day per capita (gpcd), corresponding to approximately 175 gpd per dwelling unit (gpd/DU). A summary of all WGFs is provided in Table 4-7.

Table 4-7 Summary of Wastewater Generation Factors

Land Use	WGF (gpd/ac)	
	Existing	Future
Residential		
Low Density Residential	1,120	700
Medium Density Residential	510	400
High Density Residential	1,110	890
Estate Residential	-	350
Downtown Residential	1,060	1,040
Commercial		
Highway Service Commercial	610	600
Downtown Core	2,290	2,250
General Commercial	390	380
Mixed Use	-	770
Medical/Professional Office	210	210
Industrial		
Heavy Industrial	260	250
Light Industrial	180	180
Public		
Public/Quasi-Public	410	400
Parks/Open Space	230	230

The values provided in Table 4-7, along with the estimated Diablo Grande ADWF, produce a total system ADWF of approximately 1.40 MGD, within 2.6 percent of the City ADWF calibration flow provided in Table 4-3.

4.5 City of Patterson Diurnal Peaking

Hourly flow data are not available from the WQCF. A screenshot of SCADA output over a 24-hour period was provided by WQCF staff in 2012 [7] indicating a PDWF of approximately 2.1 MGD. Average flows to the WQCF have increased by approximately 4.5 percent since the 2012 Master Plan analysis. To provide a conservative estimate of diurnal peaking at the WQCF, a 4.5 Percent increase was applied to the 2.1 MGD value, resulting in a PDWF of 2.2 MGD for use in this analysis. Using the ADWF value of 1.391 MGD (Table 4-3), the Diurnal Peaking Factor (DPF) at the terminus of the collection system (ratio of PDWF to ADWF) is calculated to be approximately 1.58. A typical diurnal pattern for WQCF influent was generated for the collection system using published data and diurnal patterns for collection systems of similar size. The typical WQCF influent diurnal pattern is provided in Figure 4-3.

Generally, collection system peaking factors are inversely proportional to total flow. Universal application of the 1.58 DPF calculated at the collection system terminus (WQCF) would likely underestimate peak flows encountered in upstream reaches of the collection system where actual diurnal peaking is anticipated to be more significant. Because of this, a variable DPF was applied to all sewers in the collection system, using a lower limit of 1.58 as calculated above. The upper limit of the DPF curve (lower flow areas) was established as 3.40 based on the current City population and published engineering data [8]. Straight-line interpolation was used to assign a PF to individual sewer segments based on ADWF. For future planning scenarios, sewer segments with ADWF greater than 1.39 MGD were assigned a DPF of 1.58. A curve representing the DPF as a function of total sewer flow is provided in Figure 4-4.

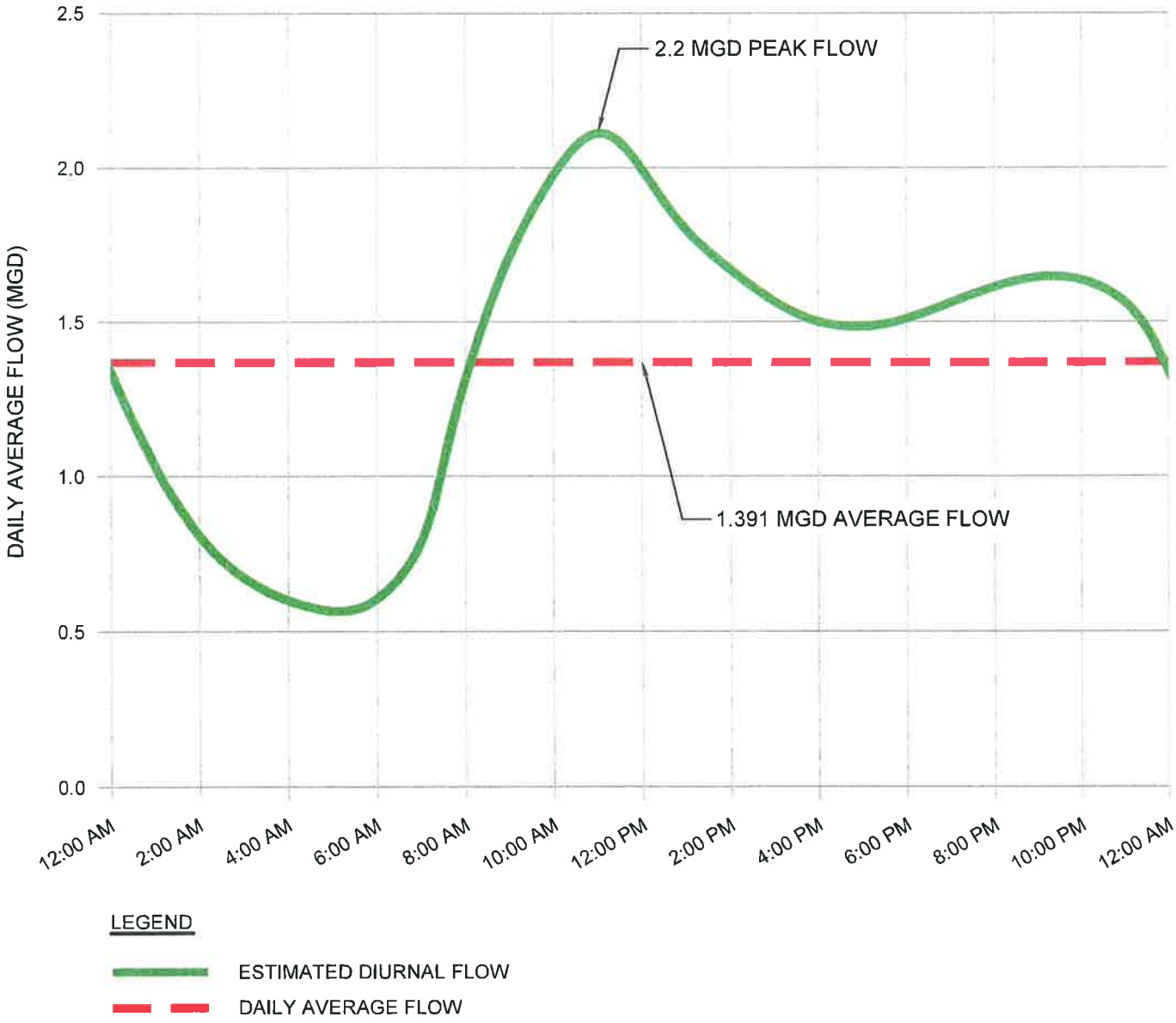

FIGURE 4-3

CITY OF PATTERSON
WASTEWATER MASTER PLAN

TYPICAL WQCF INFLUENT DIURNAL FLOW PATTERN

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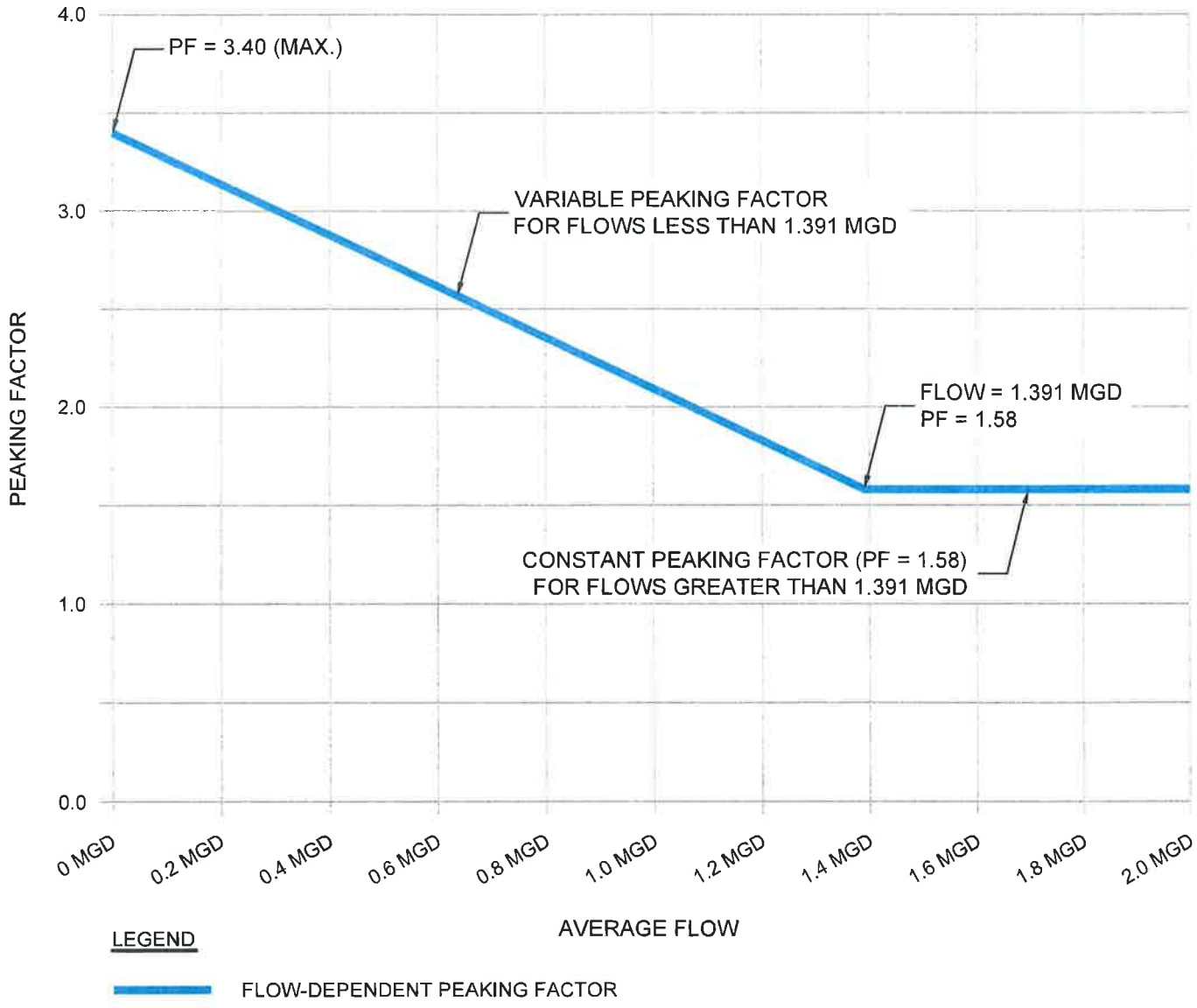

FIGURE 4-4

CITY OF PATTERSON
WASTEWATER MASTER PLAN

COLLECTION SYSTEM DIURNAL PEAKING CURVE

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4.6 Diablo Grande Diurnal Peaking

Daily peak flow data were provided for Diablo Grande and a separate analysis was performed to determine the DPF for that system. The highest peak flow for each month analyzed (June, July, and August of 2009 and 2010) was disregarded under the assumption that these high flows were generated due to the flushing of siphons, which typically requires 100,000 gallons of water and occurs on a monthly basis. The DPF for each available day was calculated by dividing the peak flow by the average flow, and the average of these DPF values was calculated to be the typical DPF for Diablo Grande. A summary of DPF data for Diablo Grande is provided in Table 4-8. A DPF of 3.1 for Diablo Grande is used for modeling purposes.

Table 4-8 Summary of Diurnal Peaking Data for Diablo Grande

Diurnal Peaking Factor (DPF)[a]	2009			2010		
	June	July	August	June	July	August
Maximum Monthly Value	8.19	8.84	9.47	8.68	9.02	6.61
Minimum Monthly Value	1.82	1.74	1.67	1.73	1.69	1.78
Average Monthly Value	3.33	2.93	2.85	3.52	3.38	2.73
Average of All Daily Values	**3.10**					

[a] Values provided do not include the highest monthly value, assumed to be associated with siphon flushing.

4.7 Peak Wet Weather Flow Data

Precipitation data, provided by the City, were analyzed to determine an appropriate design storm event for development of a design I/I allowance. A storm event occurring between October 13 and October 14, 2009, produced approximately 2.4-inches of rainfall and WQCF flows averaging 1.923 MGD over a two-day period. WQCF flows during this period were also the highest observed over the years reviewed. The rainfall produced exceeds the 10-year, 24-hour storm event (2.0-inches) established by National Oceanographic and Atmospheric Administration (NOAA) [9] and approaches the 25-year, 24-hour storm event (2.5-inches). This storm event will be used to calibrate the hydraulic model for PWWF conditions. Design storm data are summarized in Table 4-9. Because the precipitation was experienced on October 13 and October 14, 2009, two days of plant data have been included in the analysis.

Table 4-9 Peak Wet Weather Flow Summary

Parameter	Value
Date	10/13/09 - 10/14/09
Total WQCF flow, 10/13/09 (MGD)	2.294
Total WQCF flow, 10/14/09 (MGD)	1.551
Total WQCF flow, two day period (MGD)	3.845
Average of two day WQCF flow (MGD)	1.923
Estimated total ADWF, two day period (MGD)[a]	2.782
Estimated I/I contribution for storm event (MG)[b]	1.063
Total Precipitation, Two Day Period (inches)	2.4
10-yr, 24-hour precipitation (inches)[c]	2.0
25-yr, 24-hour precipitation (inches)[c]	2.5

[a] Based on estimated ADWF; see Table 4-3

[b] Estimated I/I contribution equals total plant flow less total ADWF

[c] NOAA Precipitation-Frequency Atlas [9]

As stated previously, hourly flow data are not available for the WQCF. In order to determine the peak flow rate associated with this storm event, a synthetic hydrograph of the storm was created using standard Soil Conservation Service rainfall distribution curves and methods. An I/I hydrograph was developed by incrementally reducing the peak flow rate of I/I in the collection system until a total I/I volume of 1.063 MG was observed for the duration of the storm (24 hours). The PWWF hydrograph is provided in Figure 4-5. Data associated with the hydrograph are presented in Table 4-10.

Table 4-10 Inflow/Infiltration Data Summary

Parameter	Value
Estimated Peak Hourly Flow to WQCF (MGD)	5.813
Estimated Time of Peak Hourly Flow to WQCF[a]	10:00 PM
Estimated ADWF component of Peak Hourly Flow (MGD)[b]	1.663
Estimated I/I component of Peak Hourly Flow (MGD)[c]	4.150

[a] Based on a review of local precipitation data and an estimate of a 1-2-hr time of concentration

[b] Based on diurnal flow pattern

[c] Peak Hourly Flow less Estimated ADWF

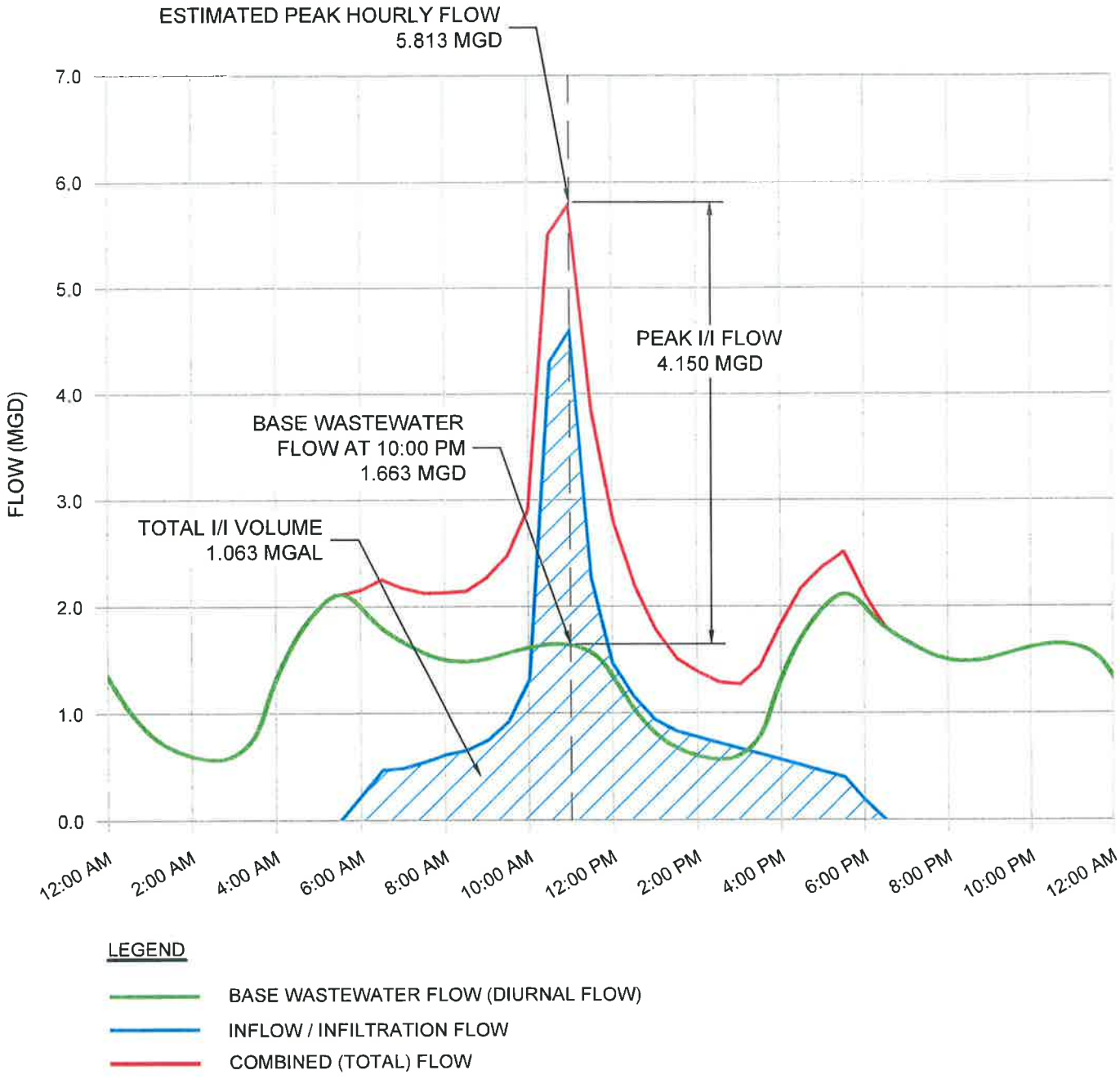

FIGURE 4-5

CITY OF PATTERSON
WASTEWATER MASTER PLAN

PEAK WET WEATHER FLOW HYRDROGRAPH

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4.8 Inflow/Infiltration Allowances

Design I/I allowances for analysis of the collection system have been calculated on an acreage basis using information presented in Tables 4-9 and 4-10. Separate I/I allowances have been developed for Diablo Grande and City flows due to distinct differences in the collection systems such as topography and relative age of sewers.

Hourly data for the Diablo Grande flowmeter at the time of design storm are not available. However, peak Diablo Grande flow data are available for other storms of a lower intensity. The total I/I generated by Diablo Grande during the design storm was estimated using straight-line extrapolation of available data for other storm events. A summary of this data is presented in Table 4-11.

Table 4-11 Summary of Diablo Grande Wet Weather Data

		Diablo Grande Flow			
	Total Precipitation	Peak Flow		ADWF	I/I Flow
Date	(in)[a]	gpm	MGD	(MGD)	(MGD)[b]
2/22/2009	0.85	340.68	0.491	0.0315	0.459
3/2/2010	0.45	181.94	0.262	0.0315	0.230
10/13/2009[c]	2.40	-	-	-	1.398

[a] Precipitation data from WQCF data provided by City

[b] I/I Flow equals Peak Flow less ADWF

[c] I/I Flow for design storm event estimated using straight-line extrapolation based on other values

I/I allowances for Diablo Grande and the City are presented in Table 4-12.

Table 4-12 Inflow/Infiltration Allowances

Parameter	Value
Diablo Grande	
I/I allowance for Diablo Grande, rounded (gpd/ac)	300
Total area (ac)[a]	5,070
Total estimated I/I flow for design storm event (MGD)	1.398
City of Patterson	
Total estimated I/I flow for design storm event (MGD)[b]	2.752
Total developed area (ac)[a]	1,899.7
I/I allowance for City, rounded (gpd/ac)	1,450
Future I/I allowance for City, rounded (gpd/ac)[c]	730

[a] Municipal Service Review and Sphere of Influence Update for the Western Hills Water District [10]

[b] Estimated I/I from City equals total estimated peak hour flow less Diablo Grande I/I flow

[c] Assumes a 50 percent reduction in I/I to account for improved construction methods

The Diablo Grande I/I allowance of 300 gpd/ac is typical of relatively new collection systems. The City I/I allowance of 1,450 is reasonable, given the combination of old and new sewers in the collection system. An assumed 50 percent reduction in the I/I allowance for future development is used to account for improved construction methods and reduced infiltration into the collection system. The I/I allowances provided in Table 4-12 assume the elimination of known storm drain cross-connections.

Actual I/I patterns are not likely to peak as sharply as indicated by Figure 4-5 because I/I flows are likely to be attenuated while progressing through the collection system. If a peak hourly flow value for the storm event is retrieved from the SCADA system, a more accurate description of I/I flows may be developed. The current method produced a conservative estimation of I/I allowances. Design I/I values may be adjusted in the future with analysis of hourly flow data or other flow monitoring studies.

4.9 Comparison with Arambel Project Preliminary Development Plan

Projected flows for the Arambel Project, based on the above Master Plan criteria, are presented in Table 4-13.

Table 4-13 Projected Arambel Project Flows Using Master Plan Design Criteria

Land Use[a]	10-Year Planning Horizon			Buildout		
	Developed Area (ac)	WGF (gpd/ac)	Total Flow (gpd)	Developed Area (ac)	WGF (gpd/ac)	Total Flow (gpd)
GC	13.5	380	5,132	116.3	380	44,183
LI	228.5	180	41,136	724.1	180	130,340
MP	25.5	210	5,357	25.5	210	5,357
Total ADWF (gpd)			**51,625**			**179,880**
Diurnal Peaking Factor			1.58			1.58
Total PDF (gpd)			**81,568**			**284,210**
Inflow/Infiltration Allowance		730	195,307		730	632,098
Total PWWF (gpd)			**276,875**			**916,308**

[a] Development projections provided by the City of Patterson, March 2012 [6]

The Arambel Preliminary Development Plan [11] uses current City Standard Specification [4] design values to project a buildout ADWF of 0.56 MGD and buildout PWWF of 1.64 MGD. This corresponds to approximately 24 percent greater ADWF and 13 percent greater PWWF compared to the Master Plan projections in Table 4-14. Wastewater flows used in the Arambel Preliminary Development Plan are more conservative than projections using Master Plan criteria and do not warrant reassessment.

4.10 Summary of Wastewater Flow Projections

Wastewater flow projections, based on land use projections, WGFs, and I/I allowances are provided in Table 4-14.

Table 4-14 Wastewater Flow Projections

Development Condition	Total Wastewater Flow (MGD)[a]		
	ADWF	PDWF	PWWF[b]
Existing	1.39[c]	2.20	6.57
Near-Term (10-Year)	2.00	3.21	8.34
Buildout	6.29	11.08	21.70

[a] Projected total wastewater flow to WQCF based on WGFs, variable DPF, and I/I allowances

[b] Assumes coincident peaking of PDWF and I/I

[c] Existing ADWF based on flow meter data

5 Collection System Capacity Evaluation

This section will describe the hydraulic modeling software used to analyze the collection system and present the results of the collection system capacity evaluation for flow routing alternatives selected by the City.

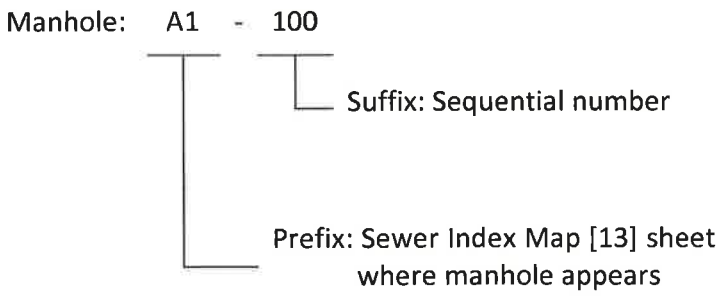
5.1 Hydraulic Model Development

A model of the existing collection system was created using Bentley SewerCAD (Version 8i). The software can analyze the performance of a collection system under various flow conditions such as dry weather, wet weather, steady-state, or extended period (non-steady). For the hydraulic evaluation of the City's collection system, a steady-state model using calculated PWWF was conducted.

5.1.1 Physical Data

GIS files for the existing collection system were provided by the City and imported to the software to build the physical trunk network. Record drawings provided by the City and GDR Engineering were reviewed for data including sewer diameter, length, slope, upstream and downstream invert elevations, manhole rim elevations, and manhole depths. Physical data obtained from records were subsequently entered into the hydraulic model and reviewed for consistency. The extents of the modeled trunk network include Sperry Avenue, Ward Avenue, M Street, Walnut Avenue, Keystone Pacific Parkway, and some portions of First Street, North Hartley Street, Sycamore Avenue, and East Las Palmas Avenue.

To facilitate data input and analysis, unique identifiers were assigned to all modeled manholes based on the following:



Sewer pipes were subsequently labeled based on upstream and downstream manhole identifiers. For example, Pipe A1-100:B1-110 indicates that the pipe flows from Manhole A1-100 to Manhole B1-110.

5.1.2 Flow Inputs

General Plan [1] parcel maps (GIS format) were reviewed to establish sewershed boundaries (catchment areas) for manholes along the existing trunk network. Updated land use data, separated by Traffic Analysis Zone (TAZ), was provided by the City of Patterson [6] for the 2012 Master Plan and incorporated into the GIS data. Parcels within each sewershed boundary were used to establish wastewater loading for the hydraulic model.

Sewershed boundaries for wastewater flow allocation are presented in Figure 5-1. General allocation boundaries for hydraulic model loads are presented in Plate 5-1. Specific parcel allocation is presented in Plate 5-2.

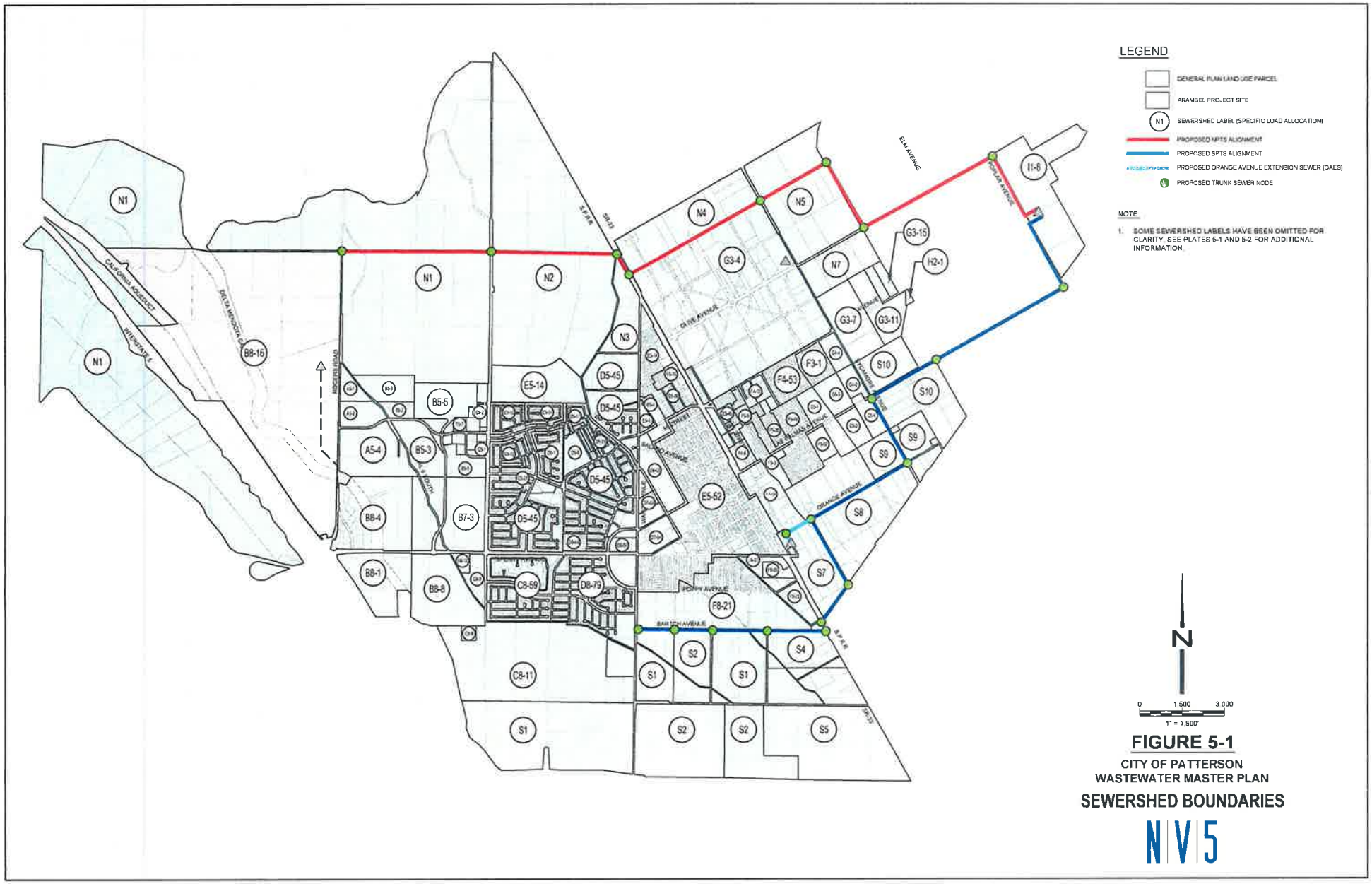


FIGURE 5-1

CITY OF PATTERSON
WASTEWATER MASTER PLAN

SEWERSHED BOUNDARIES

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5.2 Hydraulic Model Scenarios

As previously discussed, all flow from existing and proposed development within the 10-year planning horizon, including all wastewater flow from the Arambel project, will be discharged to the existing collection system. The focus of hydraulic modeling efforts in this analysis is to establish the most cost-effective conveyance strategy for future development requiring construction of the North Patterson Trunk Sewer (NPTS) and South Patterson Trunk Sewer (SPTS). Five flow routing alternatives were considered for buildout conditions and CIP development. Alternative 2 was the City's selected alternative and will be discussed in greater detail in this Master Plan.

Alternative 1. Construct gravity sewers for the full alignment of the NPTS and SPTS, converging at the WQCF IPS. Limited future flows would be allocated to the existing Central Trunk Sewer (CTS) along Walnut Avenue.

Alternative 2. Construct pump stations along the NPTS and SPTS (one each) upstream of the IPS and construct force mains to converge at the IPS. Limited future flows would be allocated to the existing CTS along Walnut Avenue.

Alternative 3. Construct a portion of the NPTS and SPTS alignments as gravity sewers, converging via gravity at the CTS along Walnut Avenue (NPTS) and Sycamore Avenue (SPTS). Existing sewers downstream of the NPTS/SPTS convergence would require replacement.

Alternative 4. Construct a portion of the NPTS and SPTS alignments as gravity sewers, converging at the CTS. Pump stations (one each) would be constructed along the NPTS and SPTS alignments to pump into the central trunk at Walnut Avenue and Sycamore Avenue, respectively. Existing sewers downstream of the NPTS/SPTS convergence would require replacement.

Alternative 5. Construct a portion of the NPTS and SPTS alignments as gravity sewers, converging at the CTS. Pump stations (one each) would be constructed along the NPTS and SPTS alignments with each station pumping to Walnut Avenue. Existing sewers downstream of the NPTS/SPTS convergence would require replacement. Existing sewers along Sycamore Avenue would not require replacement.

Under existing and near-term flow scenarios, flows from Diablo Grande are allocated to the Ward Avenue trunk sewer. Under all buildout scenarios, flows from Diablo Grande were relocated to the SPTS along Bartch Avenue. Additionally, under buildout flow scenarios, the Orange Avenue Lift Station (OALS) is abandoned and all upstream flows are re-routed to the SPTS through the Orange Avenue Extension Sewer (OAES).

5.3 North Sperry Trunk Line

The North Sperry Trunk Line (NSTL) is an abandoned 12-inch diameter sewer on the north side of Sperry Avenue which flows east to Ward Avenue. The NSTL was abandoned due to odor issues and upstream flows were reconnected to the active South Sperry Trunk Line (SSTL) via a bypass

connection approximately 800 feet west of Park Center Drive. The NSTL conduits are assumed to be in serviceable condition, although manholes along the NSTL were partially filled with concrete and aggregate base during abandonment.

Utilization of the NSTL was considered for conveyance of some future development south of Sperry Avenue in order to relieve hydraulic demand on the active 18-inch SSTL and/or reduce the required size of SPTS facilities. A preliminary hydraulic analysis of the NSTL was performed to determine available capacity. Results of the preliminary analysis are summarized in Table 5-1.

Table 5-1 NSTL Hydraulic Summary

Parameter	Value
Physical Data	
Diameter (inch)	12
Manning's n	0.013
Average Slope (ft/ft)	0.0024
Flow Summary (80% Full)	
Capacity (gpd)	1,103,000
Velocity (ft/s)	2.53

Record drawings for the NSTL were not available at the time of this analysis. The average slope of the NSTL was determined using record drawings for the active 18-inch SSTL. As shown in Table 5-1, the capacity of the NSTL is approximately 1.1 MGD. This was used in determining suitable future development areas to allocate to the NSTL.

The buildout model scenario was executed with and without the use of the NSTL for comparison. In scenarios where use of the NSTL was not considered, future parcels were instead allocated to the SPTS. Ultimately, use of the NSTL did not sufficiently reduce flows in the SPTS to reduce recommended pipe size. Therefore, no substantial CIP cost savings are anticipated with the use of the NSTL. However, insufficient capacity exists in the active SSTL to receive flows from the parcels identified for allocation to the NSTL. If development of the parcels identified in Figure 5-1 (or parcels with a similar magnitude of wastewater generation) is anticipated prior to construction of the SPTS, the NSTL could be reinstated to receive these flows. Odor may be problematic, as in the previous period of use. Sufficient capacity is available in sewers downstream of Sperry Avenue (i.e., from Ward Avenue to the WQCF) to receive these flows.

5.4 Results of Hydraulic Model

The following section discusses the hydraulic limitations identified by the computer simulation for each flow routing scenario. Limitations include gravity segments with excessive d/D ratios, surcharging manholes, force mains with excessive peak velocities, and pump stations with insufficient capacities. Results presented below occur under PWWF conditions.

5.4.1 Existing Flow Scenario

The simulation for the existing flow scenario identified one hydraulically limited sewer segment (E5-6:E5-5) and no surcharged manholes. The hydraulic limitation in segment E5-6:E5-5 is the result of a reverse slope installation. Under existing conditions, manhole freeboard for segment E5-6:E5-5 is greater than 8 ft, indicating low risk of overflow.

Results of the existing flow scenario are presented in Figure 5-2.

5.4.2 Near-Term (10-year) Flow Scenario

Results of the near-term (10-year planning horizon) flow scenario closely match the results of the existing flow scenario with a hydraulic limitation in segment E5-6:E5-5 resulting from a reverse slope installation. Manhole freeboard for segment E5-6:E5-5 remains greater than 8 ft, indicating low risk of overflow, though a slight backwater effect is present on two upstream segments (D5-45:E5-1 and E5-1:E5-6), causing these segments to flow approximately 80 percent full. Manhole freeboard in these segments varies from 7.9 ft to 10.3 ft, indicating a low risk of overflow.

Results of the near-term flow scenario are also presented in Figure 5-2.

5.4.3 Buildout Flow Scenario (Existing Sewers)

Generally, existing sewers were found to be of sufficient capacity to convey buildout flows, based on the allocation presented in Figure 5-1 and Plates 5-1 and 5-2. Segment E5-6:E5-5 (at reverse slope) continues to create a backwater with two upstream pipe segments (D5-45:E5-1 and E5-1:E5-6) flowing, though minimum manhole freeboard is approximately 7.8 ft in the vicinity, indicating a low risk of overflow. No substantial hydraulic impacts are present in the steep 18-inch sewer segment along Walnut Avenue, upstream of the Influent Pump Station. However, the City may desire to replace this segment with a 33-inch sewer (matching upstream and downstream diameters) to further enhance the reliability of the CTS.

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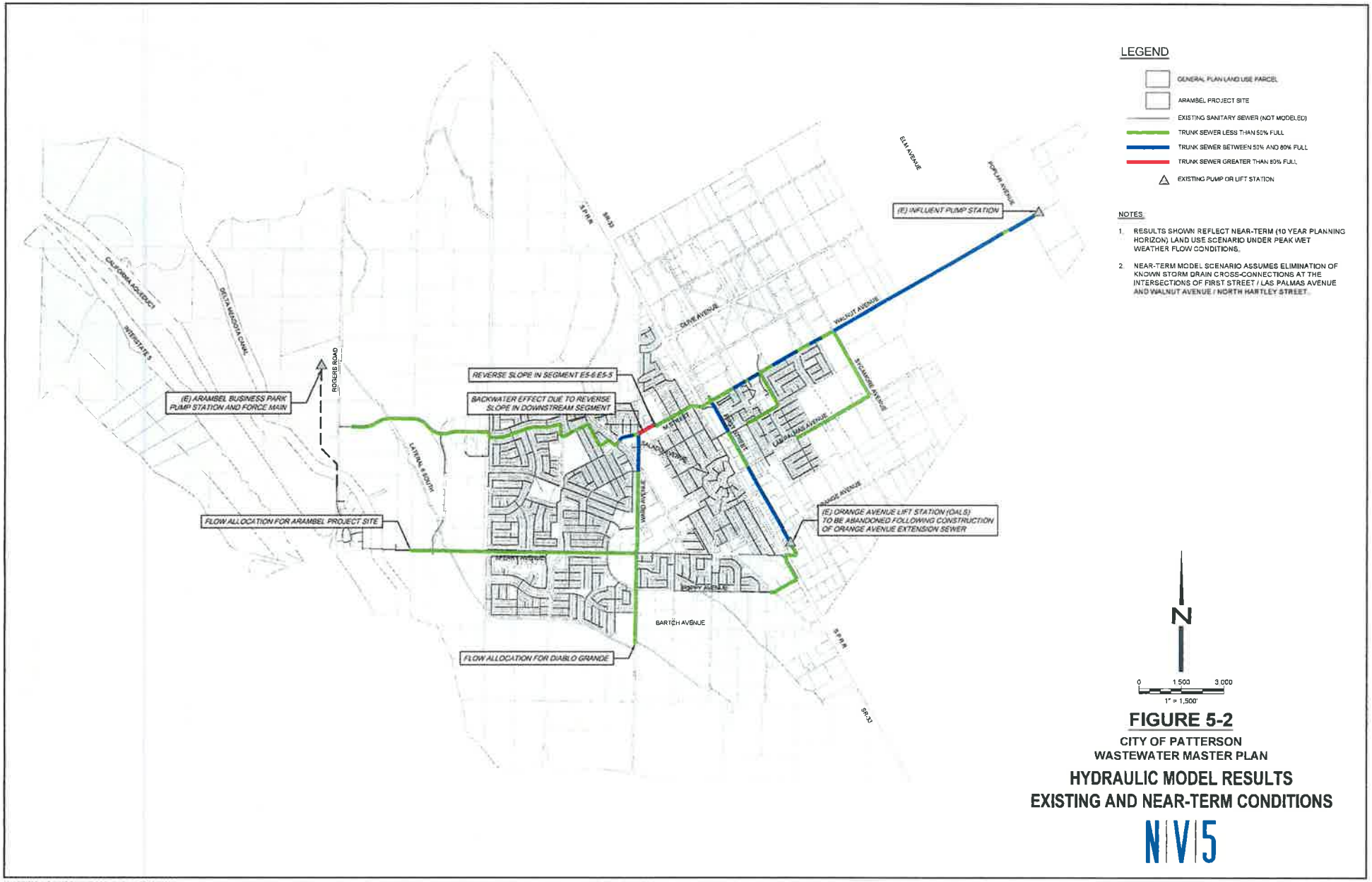

FIGURE 5-2

CITY OF PATTERSON
WASTEWATER MASTER PLAN

HYDRAULIC MODEL RESULTS
EXISTING AND NEAR-TERM CONDITIONS

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Table 5-2 Hydraulically Limited Sewers Under Buildout Conditions

Segment ID	Diameter (in)	Length (ft)	Slope (ft/ft)[a]	Percent Full[b]	Manhole Freeboard (ft)	Location
E5-6:E5-5	27	7	(0.0029)	100	7.8	M Street
E5-1:E5-6	27	318	0.0006	100	8.7	M Street
D5-45:E5-1	27	350	0.0006	100	10.2	M Street

[a] Negative slope values shown in parentheses

[b] Percent Full based on Normal Depth

Hydraulic limitations along M Street and American Eagle Avenue are the result of the reverse slope in segment E5-6:E5-5. The 15-inch sewer along Sperry Avenue identified in Table 5-2 lacks capacity to convey the allocated flow without surcharging. However, in all instances manhole freeboard is approximately 8 ft or greater, indicating a low risk of overflow. Hydraulically limited sewer under buildout conditions are illustrated in Figure 5-3.

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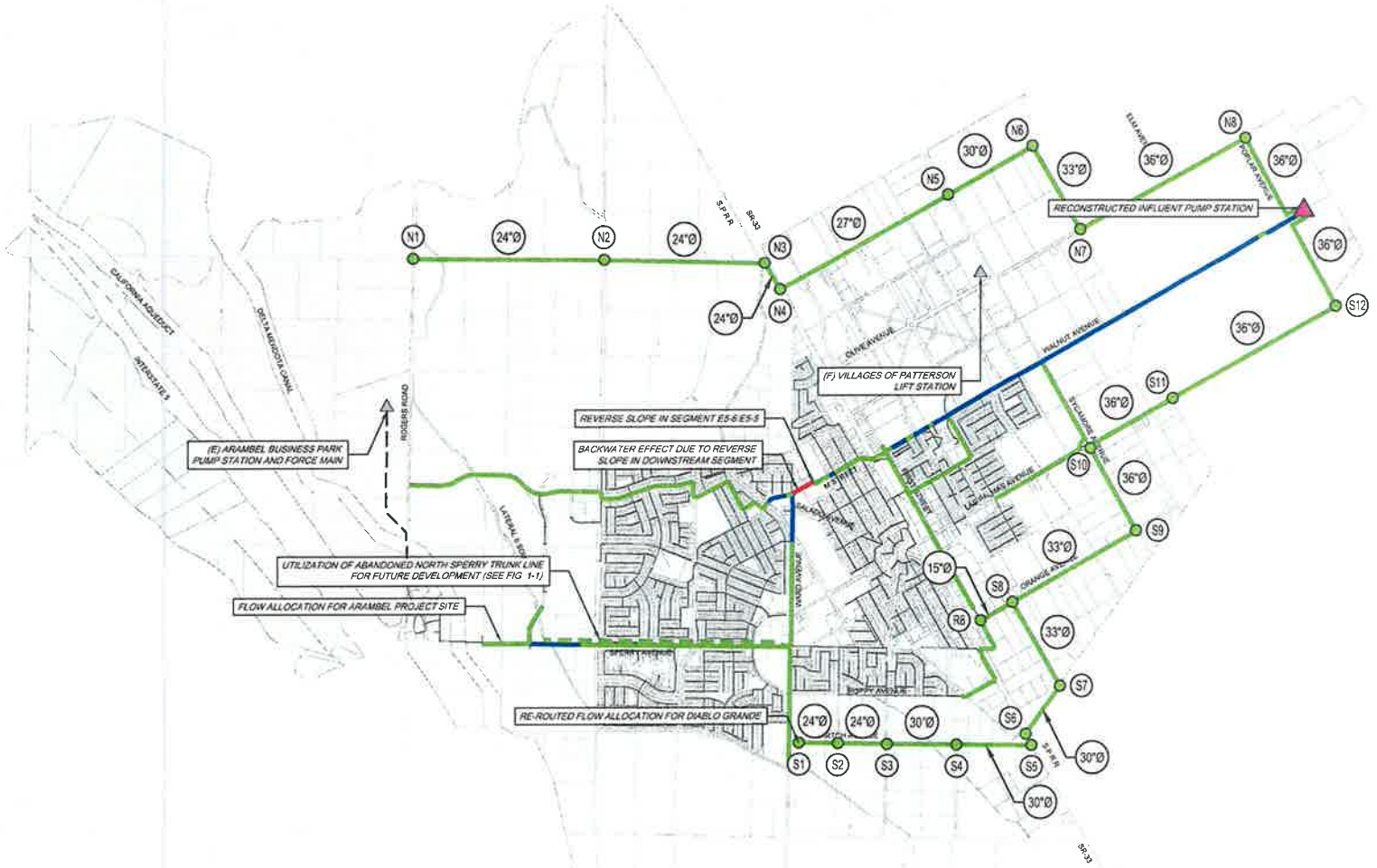


LEGEND

- GENERAL PLAN LAND USE PARCEL
- ARAMBEL PROJECT SITE
- EXISTING SANITARY SEWER (NOT MODELED)
- TRUNK SEWER LESS THAN 50% FULL
- TRUNK SEWER BETWEEN 50% AND 80% FULL
- TRUNK SEWER GREATER THAN 80% FULL
- RECONSTRUCTED INFLUENT PUMP STATION (IPS)
- EXISTING PUMP OR LIFT STATION
- (N1) PROPOSED TRUNK SEWER NODE
- (36"Ø) PROPOSED TRUNK SEWER SIZE

NOTES

1. RESULTS SHOWN REFLECT GENERAL PLAN BUILDOUT LAND USE SCENARIO UNDER PEAK WET WEATHER FLOW CONDITIONS FOR BUILDOUT FLOW SCENARIO ALTERNATIVE 1 (NPTS / SPTS GRAVITY SEWER CONSTRUCTION). CAPACITY RESULTS ARE TYPICAL OF OTHER ALTERNATIVES PRESENTED IN FIGURES 3-4.1 THROUGH 3-4.5.
2. BUILDOUT MODEL SCENARIO ASSUMES THE FOLLOWING:
   - 2.1. ABANDONMENT OF THE ORANGE AVENUE LIFT STATION (OALS). FLOW UPSTREAM OF THE ABANDONED OALS ARE RE-ROUTED TO SPTS NODE S8.
   - 2.2. RE-ROUTING OF DIABLO GRANDE FLOWS TO SPTS NODE S1 IN THE VICINITY OF BARTCH AVENUE AND WARD AVENUE.
   - 2.3. UTILIZATION OF THE ABANDONED NORTH SPERRY TRUNK LINE (NSTL) FOR FUTURE DEVELOPMENT SOUTH OF SPERRY AVENUE. SEE FIGURE 1-1 FOR ADDITIONAL INFORMATION.

N

0 1,500 3,000

1" = 1,500

FIGURE 5-3

CITY OF PATTERSON
WASTEWATER MASTER PLAN

HYDRAULIC MODEL RESULTS BUILDOUT CONDITIONS

NV5

5.5 Future Trunk Sewer Design and Capacity Analysis

Design and analysis of future wastewater collection facilities, including proposed NPTS and SPTS alignments, are discussed below.

5.5.1 Orange Avenue Extension Sewer (OAES)

The OAES will be constructed prior to abandonment of the OALS. With a PWWF of approximately 0.71 MGD, the OAES will consist of a 15-inch sewer at a slope of approximately 0.0016 ft/ft. The OAES will discharge into SPTS Link S8, requiring construction of all downstream SPTS facilities prior to abandonment of the OALS. The diameter and slope of the OAES is identical for all buildout flow alternatives.

5.5.2 Buildout Flow Scenario – Alternative 2

The Wastewater Flow Routing Alternatives and Capacity Evaluation TM (Flow Routing TM) [13] presented an analysis of capital and life cycle costs for each of the five Buildout Scenario Alternatives discussed in Section 5.2. Alternative 2 was found to have the lowest capital cost and life cycle cost of all options. Therefore, Alternative 2 represents the recommended strategy for buildout collection system improvements.

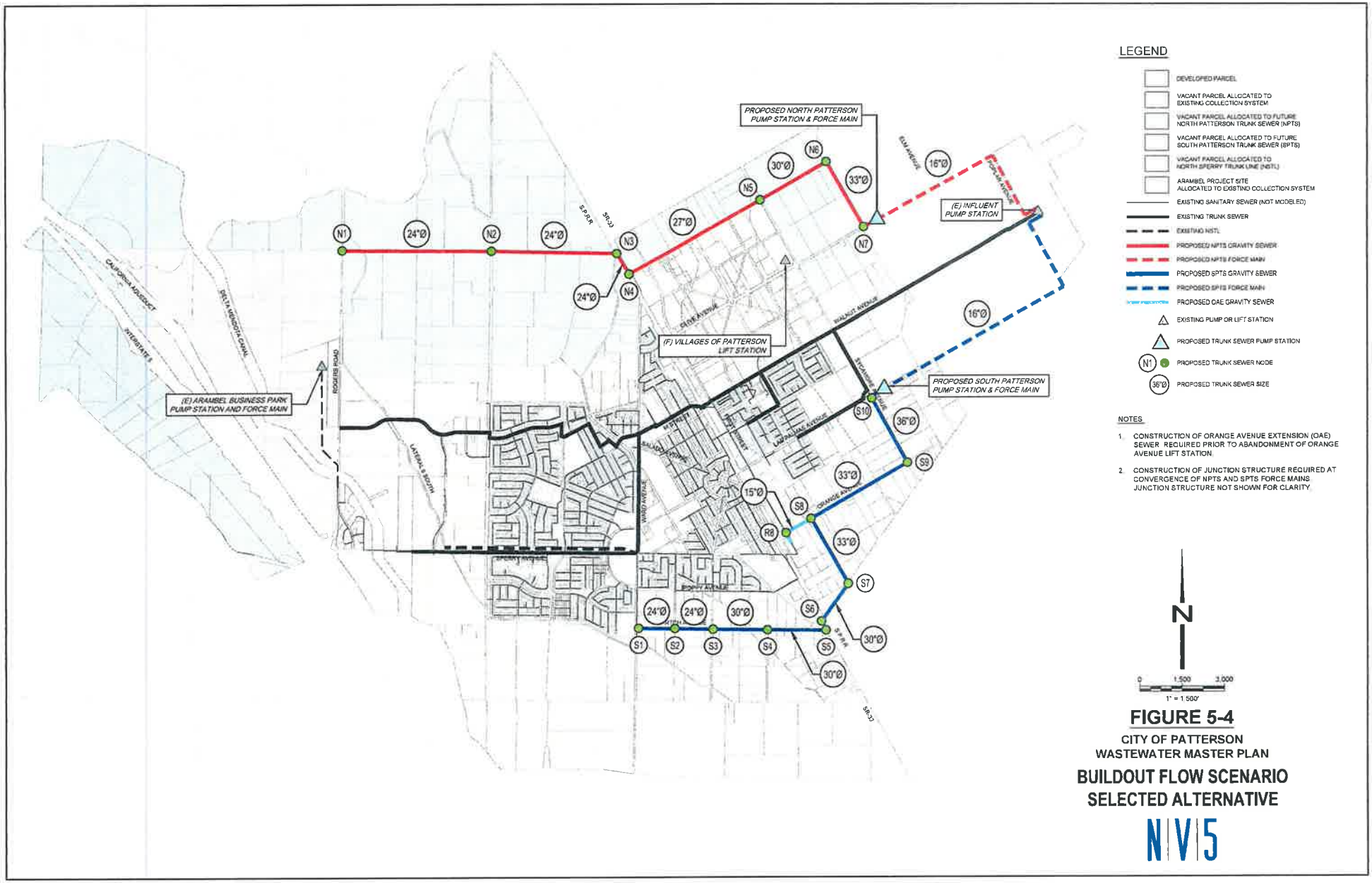
Buildout Alternative 2 includes the construction of two lift stations, replacing the downstream links of the NPTS and SPTS with force mains. The proposed location of the NPTS lift station is at the northeast end of Olive Avenue between Sycamore Avenue and Elm Avenue; the proposed location of the SPTS lift station is at the intersection of Las Palmas Avenue and Sycamore Avenue. The force mains would pump to a junction structure upstream of the IPS. Reconstruction or replacement of the IPS is not required under this alternative. Length, slope, and bury depth information for Alternative 2 is provided in Table 5-3. Alternative 2 is presented graphically in Figure 5-4.

Table 5-3 Buildout Flow Scenario - Alternative 2

Link	Diameter (in)	Slope (ft/ft)	U/S[a] Inv.	D/S[a] Inv.	Length (ft)	Average Bury Depth (ft)
NPTS						
N1	24	0.0037	143.0	123.3	5,317	7.9
N2	24	0.0050	120.9	98.7	4,442	7.2
N3	24	0.0050	95.0	90.7	857	9.2
N4	27	0.0050	90.4	63.8	5,316	10.4
N5	30	0.0032	63.5	54.9	2,693	10.8
N6	33	0.0014	54.6	50.8	2,638	13.3
N7	36	0.0020	50.6	50.5	50	16.3
Force Main	18	-	-	-	7,800	3.5
					34,430	**7.7**
SPTS						
S1	24	0.0041	124.0	118.8	1,280	13.1
S2	24	0.0044	116.9	111.0	1,353	16.1
S3	30	0.0014	110.5	107.2	1,927	15.7
S4	30	0.0018	105.5	101.8	2,076	11.9
S5	30	0.0020	98.3	97.6	353	10.6
S6	30	0.0042	97.3	90.4	1,627	8.2
S7	36	0.0012	81.8	78.6	2,653	14.3
S8	36	0.0022	78.6	69.9	3,947	10.3
S9	36	0.0015	65.6	61.6	2,586	11.9
S10	36	0.0370	61.6	59.5	56	14.4
Force Main	18	-	-	-	10,800	3.5
					26,658	**8.8**

[a] U/S = Upstream, D/S = Downstream

Under the selected Alternative 2, the North Patterson Pump Station (NPPS) and South Patterson Pump Station (SPPS) would have design point requirements of 5.4 MGD at 66 ft total dynamic head (TDH) and 7.0 MGD at 79 ft TDH, respectively.



LEGEND

- DEVELOPED PARCEL
- VACANT PARCEL ALLOCATED TO EXISTING COLLECTION SYSTEM
- VACANT PARCEL ALLOCATED TO FUTURE NORTH PATTERSON TRUNK SEWER (NPTS)
- VACANT PARCEL ALLOCATED TO FUTURE SOUTH PATTERSON TRUNK SEWER (SPTS)
- VACANT PARCEL ALLOCATED TO NORTH SPERRY TRUNK LINE (NSTL)
- ARAMBEL PROJECT SITE ALLOCATED TO EXISTING COLLECTION SYSTEM
- EXISTING SANITARY SEWER (NOT MODELED)
- EXISTING TRUNK SEWER
- EXISTING NSTL
- PROPOSED NPTS GRAVITY SEWER
- PROPOSED NPTS FORCE MAIN
- PROPOSED SPTS GRAVITY SEWER
- PROPOSED SPTS FORCE MAIN
- PROPOSED OAE GRAVITY SEWER
- EXISTING PUMP OR LIFT STATION
- PROPOSED TRUNK SEWER PUMP STATION
- N1 PROPOSED TRUNK SEWER NODE
- 36"Ø PROPOSED TRUNK SEWER SIZE

NOTES

1. CONSTRUCTION OF ORANGE AVENUE EXTENSION (OAE) SEWER REQUIRED PRIOR TO ABANDONMENT OF ORANGE AVENUE LIFT STATION.
2. CONSTRUCTION OF JUNCTION STRUCTURE REQUIRED AT CONVERGENCE OF NPTS AND SPTS FORCE MAINS. JUNCTION STRUCTURE NOT SHOWN FOR CLARITY.

N

0 1,500 3,000

1" = 1,500'

FIGURE 5-4

CITY OF PATTERSON
WASTEWATER MASTER PLAN

BUILDOUT FLOW SCENARIO SELECTED ALTERNATIVE

NV5

6 Existing Wastewater Treatment Facilities

The City's wastewater collection system terminates at the City of Patterson WQCF, where it is then treated and disposed of. The flow enters the WQCF headworks and distribution facilities where influent is screened and then pumped to one of three separate processes: the North Activated Sludge Treatment System (NASTS), the Advanced Integrated Pond System (AIPS), and the South Activated Sludge Treatment System (SASTS). Treated effluent is directed to an effluent pump station which pumps the effluent to the percolation ponds for groundwater recharge.

This chapter will evaluate the existing treatment facilities including:

- A description of the existing treatment processes and equipment.
- An evaluation of the existing performance of each process train.
- An assessment of the treatment and hydraulic capacities for each process.
- A description of the deficiencies of the existing processes.

6.1 Existing Facilities

This section provides a description and evaluation of the individual WQCF process areas.

6.1.1 Headworks and Distribution Facilities

The headworks and distribution facilities, constructed in 2000 and upgraded in 2014, include the following equipment:

- Mechanical Bar Screen with a rated capacity of 7 MGD.
- 6 mm Screenings Washer/Compactor with a rated capacity of 250 gpm.
- The Influent Pump Station (IPS), which consists of:
  - 3 SASTS pumps with a rated capacity of 1.8 MGD each; 2 operating, 1 standby.
  - 2 NASTS/AIPS pumps with a rated capacity of 1.3 MGD each; 1 operating, 1 standby.

Wastewater flow enters the headworks and is passed through the mechanical bar screen to remove coarse material from the raw wastewater. Solids removed by the bar screen is conveyed to a washer/compactor to reduce moisture content and remove some organic waste. Washed and dewatered screenings are periodically taken to a nearby landfill for disposal.

The existing headworks was designed with a peak pumping capacity of 8.0 MGD. The current standard operating procedure is to have one NASTS/AIPS pump in standby and one SASTS pump in standby, resulting in a pumping capacity of 4.9 MGD during regular flows. The Phase III WQCF Project will augment pumping to the SASTS by utilizing the redundant NASTS pump.

Following screening, wastewater then flows to the IPS and is pumped to one of the process areas:

- NASTS
- AIPS
- SASTS

Flow from the IPS that is pumped to the North Distribution Box is manually split between the NASTS and AIPS process areas. Flow from the IPS to the SASTS enters through the splitter station that has been fitted with an auto-sampler to sample influent water quality.

6.1.2 North Activated Sludge Treatment System

Originally constructed in 1980, the NASTS is the oldest of the processes at the plant and originally consisted of an oxidation ditch, a clarifier, and a return activated sludge/waste activated sludge (RAS/WAS) pump station. The NASTS was upgraded in 1987 and included the addition a second clarifier. The NASTS was last rehabilitated in 2010 and included the installation of variable frequency drives and new brush aerators to aid in energy conservation and allow for the nitrification/de-nitrification process to assist in the removal of ammonia. The NASTS process schematic is shown in Figure 6-2.

The settled sludge from the clarifiers is either returned to the oxidation ditch (RAS) or transferred to the aerobic digesters (WAS). Treated effluent from the clarifiers is discharged to the percolation ponds.

6.1.3 Advanced Integrated Pond System

The AIPS was constructed in 1999 and consists of a series of three ponds with a combined volume of 10.7 million gallons (mg). The primary pond has a capacity of 5.0 MG and has three surface brush aerators. The secondary pond has a volume of 3.1 MG and has one surface brush aerator. The tertiary pond has a volume of 2.6 MG and is not aerated. The AIPS process schematic is shown in Figure 6-3.

The intent of the AIPS is to follow a more natural process that utilizes significantly less energy than traditional processes. Algae supersaturate the wastewater with oxygen through the photosynthesis of sunlight. The oxygen is then used by microbes to break down the waste. Reduced sludge production is another advantage of the AIPS. Sludge ferments within the pond until only a small residue is left. Because of this, there is less disposal cost for solids removal.

6.1.4 South Activated Sludge Treatment System

The SASTS was constructed in 2005, with improvements made in 2014 to increase hydraulic capacity of the system. Flow to the SASTS comes from the IPS through the splitter structure. Influent flows are routed to the anoxic zone of the oxidation ditch where nitrogen removal takes place. Mixed liquor is discharged from the oxidation ditch to the system's secondary clarifier. Solids removed in the clarifier are directed to the RAS/WAS pump station and are either pumped to the aerobic digesters for further processing or returned to the oxidation ditch. Treated secondary effluent is disinfected and pumped to the percolation ponds for disposal. The SASTS process schematic is shown in Figure 6-4.

6.1.5 Effluent Pump Stations

An Effluent Pump Station (EPS) is located at each of the three treatment systems. Treated effluent from each systems flows to the associated EPS and pumped to one of the plant's fifteen (15) percolation ponds. The NASTS EPS has two pumps with a capacity of 825 gpm, the AIPS has

one submersible effluent pump with a capacity of 600 gpm, and the SASTS EPS has three pumps with a capacity of 960 gpm each.

6.1.6 Solids Handling Facilities

Wasted sludge from the NASTS and SASTS clarifiers is pumped to aerobic digesters for further processing. The digesters reduce the volume and the organic content of the sludge. There are three aerobic digesters with a capacity of 0.11 MG. Three additional digesters with a capacity of 0.13 MG will be added as part of the Phase III WQCF Project. Digested sludge is pumped to either drying beds or the centrifuge for dewatering.

6.1.7 Centrifuge

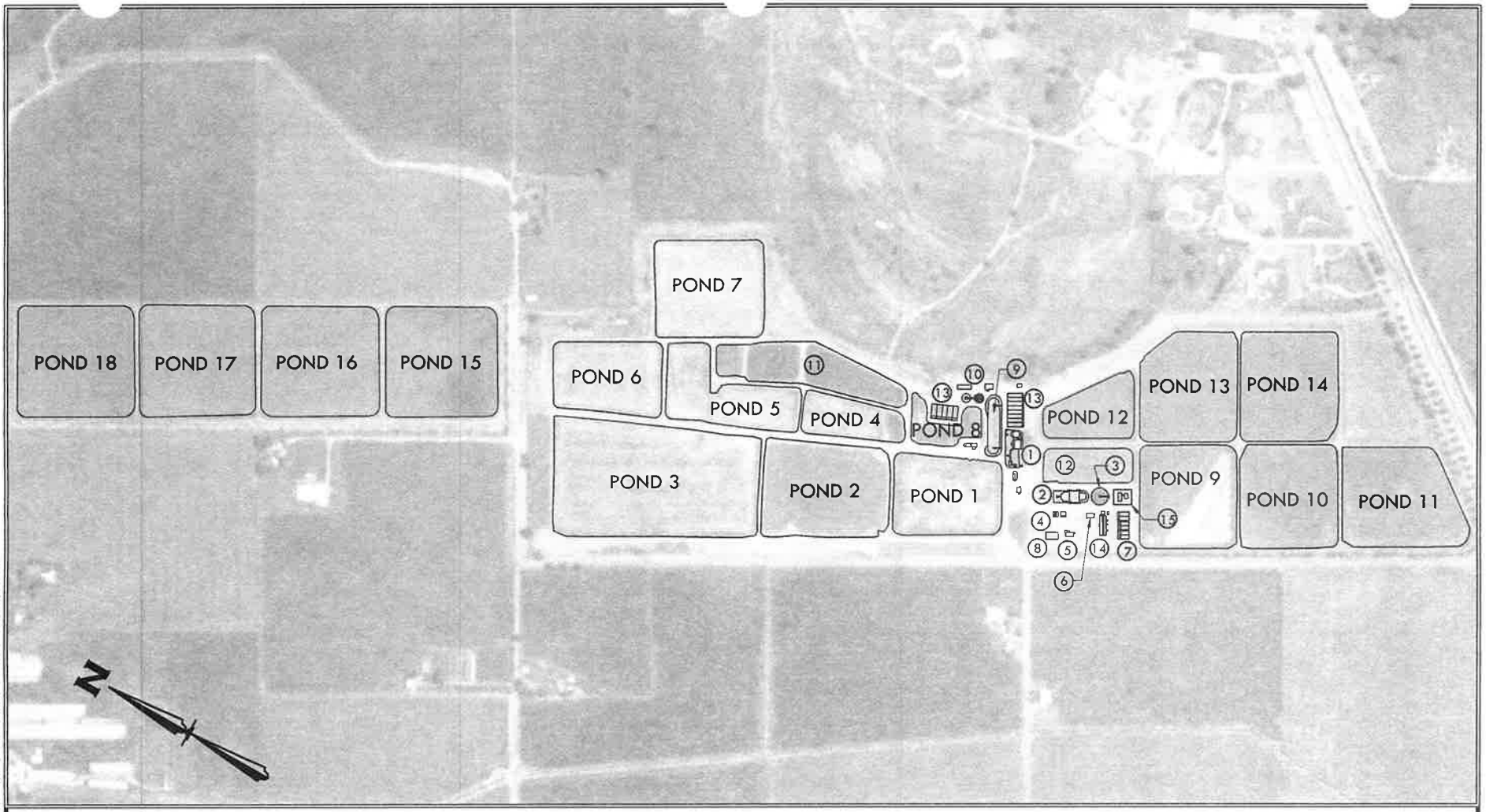
In 2010, the City installed a new centrifuge near the south sludge drying beds to improve the dewatering capacity of the plant. The centrifuge dewaters solids from the aerobic digesters. Dewatered sludge is taken from the centrifuge by truck to the holding area at the south end of Pond 4.

6.1.8 Electrical and Control Systems

A new centralized electrical and control system was constructed in 2004 with the SASTS. This system is installed in its own building with appropriate environmental systems and has space built-in for expansion of the next phase of improvements. The centralized electrical and control system operates the SASTS but not the AIPS or the NASTS. Operators must adjust the AIPS and the NASTS operations locally rather than from the centralized control center.

6.1.9 Administration Building

The existing plant administration building is a portable structure that incorporates staff offices, restroom facilities, and a break room. This building also includes the SCADA controls system.



LEGEND

① HEADWORKS FACILITIES	⑧ MAINTENANCE BUILDING
② SOUTH OXIDATION DITCH	⑨ NORTH OXIDATION DITCH
③ SASTS SECONDARY CLARIFIER	⑩ NASTS SECONDARY CLARIFIER
④ EFFLUENT PUMP STATION	⑪ ADVANCED INTEGRATED POND SYSTEM
⑤ ADMINISTRATION BUILDING	⑫ STORMWATER DETENTION BASIN
⑥ AEROBIC DIGESTERS	⑬ SLUDGE DRYING BEDS (SAND)
⑦ SLUDGE DRYING BEDS (PLASTIC MEDIA)	⑭ SLUDGE STORAGE AREA
	⑮ CENTRIFUGE

FIGURE 6-1

CITY OF PATTERSON
WASTEWATER MASTER PLAN
EXISTING WWTP
AUGUST 2015

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH: 209.322.1820

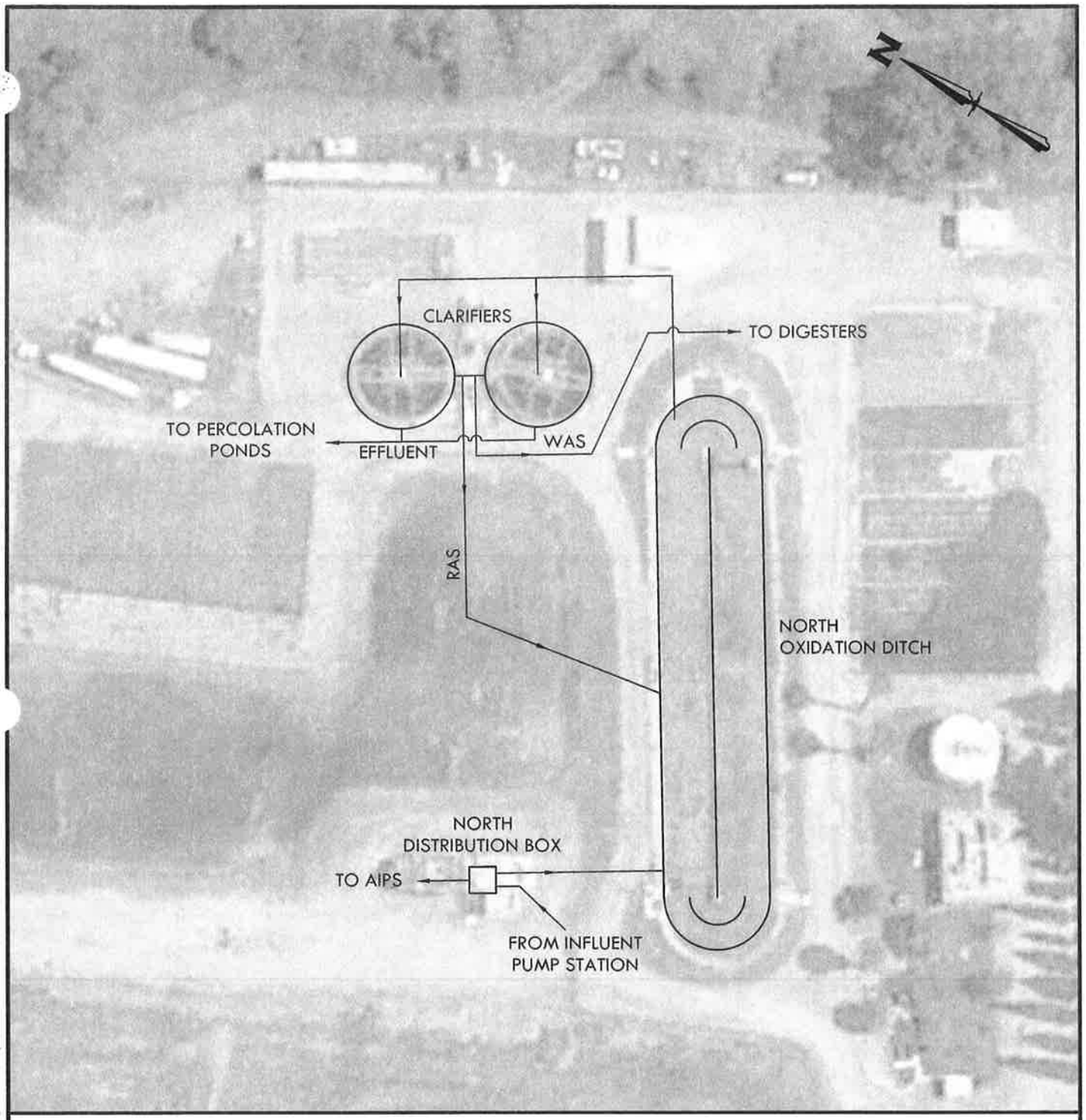


FIGURE 6-2

CITY OF PATTERSON
WASTEWATER MASTER PLAN
NASTS EXISTING PROCESS SCHEMATIC

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH. 209.322.1820

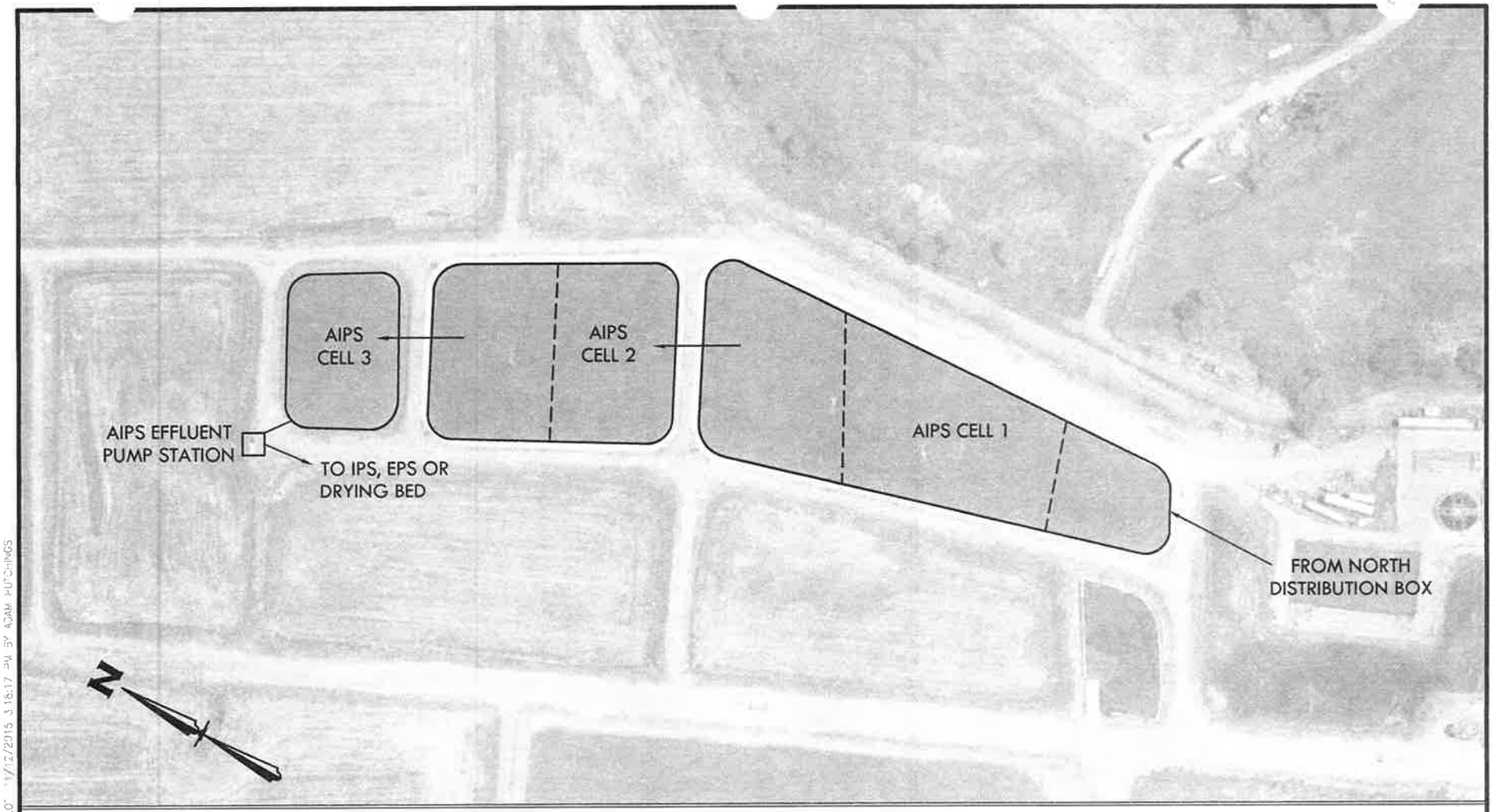


FIGURE 6-3

CITY OF PATTERSON
WASTEWATER MASTER PLAN
AIPS EXISTING PROCESS SCHEMATIC

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH. 209.322.1820

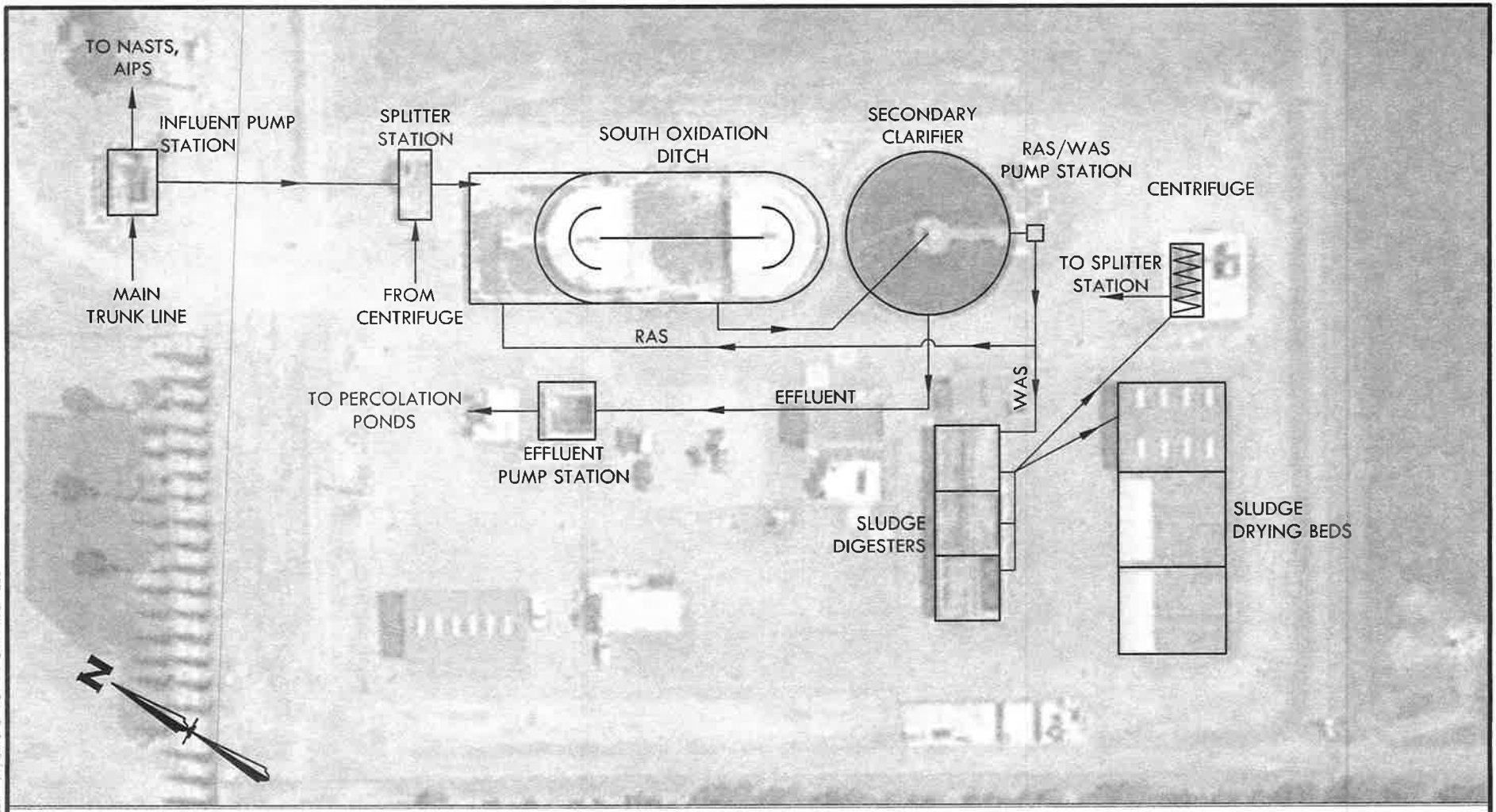


FIGURE 6-4

CITY OF PATTERSON
WASTEWATER MASTER PLAN
SASTS EXISTING PROCESS SCHEMATIC

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH. 209.322.1820

6.2 WQCF Performance and Identified Deficiencies

Although the WQCF has a total permitted capacity of 2.25 MGD, several issues have been observed with regard to the individual treatment processes. Because of these issues, the WQCF can only reliably treat an approximate total flow of 1.85 MGD. Permitted capacity and reliable capacity for each process is summarized in Table 6-1.

Table 6-1 Permitted Capacity of the WQCF

Treatment Process Area	Permitted Capacity (MGD)	Reliable Capacity (MGD)
North Activated Sludge Treatment System	0.8	0.6
Advanced Integrated Pond System	0.2	0 [a]
South Activated Sludge Treatment System	1.25	1.25
Total	2.25	1.85

[a] Does not include flow currently being discharged as part of the Blending Study. WQCF is currently discharging between 0.13-0.18 MGD of AIPS effluent by blending with NASTS and SASTS effluent. [14]

Current average daily flows at the WQCF are 1.39 MGD, as shown in Table 4-14. Flow projections presented in Section 4.10 of this report, project an increase of 0.61 MGD over the next ten years. Based on the assumption that annual flows will increase at a constant rate, the flow projection indicates that the current reliable treatment capacity of the WQCF will be exceeded in approximately 7-8 years. An additional item to consider is that Diablo Grande has already purchased 0.75 MGD of capacity at the WQCF, and currently uses less than 5% of the purchased capacity. The projections assumed a 4 percent annual increase in wastewater flow from Diablo Grande.

This section reviews the current performance of the individual treatment plant facilities as well as issues and deficiencies that have been identified by plant staff. This section also includes information provided by 90% design plans and specifications for the WQCF Phase III WQCFP, which increases the capacity of the WQCF by 1.25 MGD.

6.2.1 Headworks and Distribution Facilities Evaluation

The existing North distribution box for directing flow to the NASTS and the AIPS is not ideal. Flow to the NASTS and AIPS is currently determined by setting a maximum flow on the combined line to the NASTS and the AIPS and manually adjusting a valve on the line to the NASTS. Ideally, controls allowing staff to select a maximum flow to the NASTS and a maximum flow to the AIPS would be provided to limit the possibility of violating the flow limits contained in the WDRs for each individual treatment process area. In addition to the hydraulic limitations, plant staff has

identified the need for a gantry crane at the influent pump station for removal of pumps for maintenance.

6.2.2 North Activated Sludge Treatment System Evaluation

The NASTS was not originally designed to remove nitrogen from the wastewater. Modifications to the NASTS have been implemented, and the permitted capacity of the system has been reduced from 1.0 MGD to 0.8 MGD to provide the necessary residence time for nitrification and denitrification to occur. Flows must be carefully monitored to make sure the process is not upset. Additionally, the two clarifiers are not constructed at the same elevation which also decreases the efficiency of the NASTS. Additional improvements are needed to increase the performance and simplify operation of the NASTS.

6.2.3 Advanced Integrated Pond System Evaluation

Although the AIPS appears to have advantages that make it highly desirable in wastewater treatment, this treatment system has been unable to meet discharge requirements. The permitted treatment capacity of the AIPS is 0.2 MGD. Treated effluent from the AIPS is typically recycled through the WQCF and not discharged to avoid a violation of the WDRs.

Currently, plant staff is performing a blending study, mixing the treated AIPS effluent with treated effluent from the NASTS and SASTS. Results from the blending study are favorable and staff has been able to consistently discharge between 0.13 MGD and 0.18 MGD [14]. Upon completion of the blending study, it is recommended that the WQCF seek an amendment to the WDR to allow the discharge of blended effluent.

6.2.4 South Activated Sludge Treatment System Evaluation

The SASTS is the most effective of the three treatment systems and has a permitted capacity of 1.25 MGD. The system is fully capable of treating primary influent to Board water quality requirements. However, the SASTS lacks redundancy features such as replacement motors or pumps. Were a motor to fail in the oxidation ditch, for example, the system would be down until a replacement was installed. The Phase III project proposes to mirror the facility and will allow additional 1.25 MGD capacity to the WQCF.

6.2.5 Effluent Pump Stations Evaluation

The EPS are fully capable of meeting current system requirements, however the AIPS EPS lacks redundancy, having only a single pump. It is recommended that an additional pump be installed at the AIPS EPS.

6.2.6 Percolation Ponds Evaluation

Currently, secondary-treated effluent is piped to one of 15 percolation ponds on the plant site. The total area of these ponds is approximately 109 acres and the current percolation capacity of the ponds is rated for 3.38 MGD. Additional plant expansions will reduce the available acreage of the percolation ponds. Pond capacity is sufficient for the near future but other means of effluent disposal will have to be considered prior to expansion beyond 3.38 MGD.

6.2.7 Solids Handling Facilities Evaluation

The three digesters making up the Solids Handling Facilities are mostly used as holding tanks because they do not have sufficient volume to provide adequate residence time for digestion. Additional digesters and a rotary drum thickener are planned as part of the Phase III WQCF Project.

6.2.8 Centrifuge Evaluation

The centrifuge currently operates five days a week, 6-7 hours per day. An additional centrifuge, measures to assist with operation of the centrifuge during the night and weekends, or measures to reduce the amount of sludge to be dewatered will be needed to accommodate future flow increases.

Additionally, storage facilities for dewatered cake from the centrifuge are undersized and trucking to the holding area at the south end of Pond 4 is labor intensive and time consuming. The Phase III WQCF Project includes the conversion of Pond 9 to a sludge drying and holding area.

6.2.9 Electrical and Control Systems Evaluation

In a review with plant staff, several deficiencies were identified with the existing Supervisory Control and Data Acquisition (SCADA) controls that are located in the existing administration building. Currently, controls to the WQCF treatment systems are provided on two separate computers. The SASTS controls are operated by Wonderware SCADA software on one computer and the NASTS and AIPS are operated by Ignition SCADA software on a separate computer. Additionally, some equipment within the NASTS facilities are not currently being operated by SCADA. To improve SCADA operations, it is recommended that both SCADA systems be integrated into one complete system for the WQCF and include signals from all equipment from each of the three treatment systems.

6.2.10 Administration and Laboratory Buildings Evaluation

The existing administration building is sub-standard for a plant this size. There are leaks in the roof of the existing building and issues with the electrical wiring. Additionally, the main area of the administration building is currently being used for multiple purposes; a conference room, a break room, and a SCADA controls room. There is limited space for file and document storage. A new administration building and laboratory will be included as part of the Phase III project.

7 Buildout WQCF Capacity Evaluation

The City is currently planning to construct the Phase III WQCF Project to expand the treatment capacity of the WQCF by 1.25 MGD in order to meet anticipated future flows. This section describes the three treatment scenarios that were evaluated early on in the Master Plan process to address flow projections through buildout conditions.

7.1 Preliminary Buildout Alternatives

The three alternatives that were evaluated as part of the Master Plan are summarized in Table 7-1. Alternative 1 is the City's preferred alternative based upon financial and non-financial evaluation criteria, such as cost of construction, use of existing assets, ability to meet projected flow requirements, anticipated permit requirements, and cost and ease of operations and maintenance.

Alternative 1. Expand the existing Water Quality Control Facilities (WQCF) by adding Phases III, IV, and V to the existing SASTS, and add tertiary treatment. Each phase of the SASTS would include a new oxidation ditch and clarifier.

Alternative 2. Abandon the existing WQCF and discharge primary treated effluent to the City of Modesto (COM) for tertiary treatment at the Jennings Road WWTP. This alternative would require a new pump station and force main.

Alternative 3. Construct "scalping" plants for localized tertiary treatment and upgrade existing WQCF to provide tertiary treatment. Title 22 recycled water could be used for irrigation or other non-potable uses near-by.

7.2 Preferred Alternative

The City has selected Alternative 1 as the preferred alternative to meet the requirements of buildout flow conditions. Alternative 1 increases the capacity of the existing by a total of 3.0 MGD, for a reliable buildout treatment capacity of 6.30 MGD. The recommended buildout improvements for Alternative 1 are described in greater detail below.

7.2.1 Phase III WQCF Improvements

The Phase III WQCF Improvements consists of adding a parallel oxidation ditch system to the SASTS. The Phase III project will add a rated treatment capacity of 1.25 MGD to the overall treatment system. The design for the Phase III Project is expected to be completed Spring 2016 and begin construction Summer 2016. The components of the Phase III project are summarized in Table 7-1.

Table 7-1 Phase III WQCF Improvement Project

Process Area	Description of Improvement
Influent Pump Station	
	1) Add aluminum cover plates and 1 ton hoist over wet well
	2) Add automatic refrigerated sampler to Influent Pump Station
	3) Replace washer compactor and controls
	4) Install piping and two plug valves on the influent pump station discharge line to allow use of pump P1004 and pump P1005 for northside or southside facilities.
South Activated Sludge Treatment System	
	1) Install a South Flow Splitter to equally split flow to existing and proposed oxidation ditch
	2) Add Biological Nutrient Removal Oxidation Ditch (same dimensions as existing southside ditch, 184' x 60' x 15', 0.25 MG pre-anoxic zone, 0.79 MG aerobic nitrification zone)
	3) Add secondary circular clarifier (80' diameter, 12' side water depth)
	4) RAS/WAS Station 2 (two RAS pumps with 820 gpm capacity at 32 ft TDH, and two WAS pumps with 200 gpm capacity at 26.5 ft TDH)
	5) Scum pump station (two pumps with 350 gpm capacity)
Solids Handling	
	1) Install a rotary drum thickener for sludge thickening prior to Digesters 4, 5, and 6
	2) Digesters 4, 5, and 6 (130,000 gallon capacity, each)
	3) Two digested sludge transfer pumps to pump transfer sludge to or from Digesters 1, 2, and 3 and Digesters 4, 5, and 6 (300 gpm capacity)
	4) Addition of a concrete block wall to the discharge area of the centrifuge
	5) Convert a portion of an existing percolation pond to a lined and paved solids dewatering area, located south of centrifuge (approx. 75,000 sf)
	6) Modifications to existing polymer system
Effluent Pumping	
	1) Addition of one pump (5,450 gpm capacity at 48 ft TDH)

Process Area	Description of Improvement
Plant Water	
	1) Addition of two duty and 1 standby pump (each with 275 gpm capacity at 110 psi TDH)
Drainage	
	1) Convert a portion of an existing percolation pond to a lined stormwater equalization basin. Receives storm water from the SASTS area (approximate volume - 240,000 gallons)
Electrical and Controls	
	1) Install electrical conduits, junction boxes, and panels to serve proposed equipment
	2) Install control conduits, PLCs, and appurtenances to serve proposed equipment
Administration/Laboratory Building	
	Construct an administration/laboratory building to replace the existing building.

7.2.2 Phase IV and V WQCF Improvements

The Phase IV and V WQCF Improvement Projects are classified as "buildout" projects and should be constructed in the next 10-20 years or beyond. These projects consist of adding parallel oxidation ditches to the existing SASTS, each phase with a treatment capacity of 1.75 MGD. These projects will also include the construction of new 100-ft diameter secondary clarifiers.

7.2.3 Tertiary Filtration and Disinfection Improvements

Alternative 1 consists of providing tertiary filtration and disinfection to accommodate buildout flows at the WQCF. Tertiary filtration can be achieved with a variety of technologies. For the purposes of this Master Plan the addition of cloth disk filtration is assumed. Other tertiary alternatives include membrane filtration, continuous backwash filtration, deep bed sand filters, or compressible media filtration. The first phase of tertiary filtration and disinfection will occur within the next 10 years. The remaining phase(s) will be completed with buildout improvements.

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8 Wastewater Capital Improvement Program

This chapter presents a plan for capital improvements to the wastewater collection system and treatment plant that will aid the City to continue providing sanitary sewer service to current and future customers through near-term and buildout projections. This chapter will include a discussion of the improvements recommended based on the evaluation of the existing collection system and WQCF. Improvements are classified as either 'near-term' improvements or 'buildout improvements.' Near-term improvements are recommended for completion as soon as practicable, within the next 10 years, to improve the reliability of the wastewater system. Buildout improvements are required as needed to serve future developments and should be completed in the next 10-20 years or beyond.

8.1 Recommended Collection System Improvements

Recommended collection system improvements are required to correct known deficiencies or provide for additional development within the City limits. Near-term collection system improvements OA-01, EX-01, TY-01, OT-02, and WA-01 were recommended in previous master planning and modeling studies. These projects are included in the updated CIP to improve the reliability of the City collection system. Collection system improvements are presented in Table 8-1.

Table 8-1 Recommended Collection System Improvements

#	Project ID	Capital Improvement Project Title
	Near-Term	
1	EX-01	Upsize of 18-inch Sewer Segment (Walnut Avenue) to 33-inch
2	SD-01	Storm Drain Cross Connection Removal: First Street/Las Palmas
3	SD-02	Storm Drain Cross Connection Removal: Walnut Avenue/N. Hartley
4	TY-01	Replace First Street Sewers, South of Walnut Street
5	OT-2	Replace Old Town Area Sewers (Phase 2) to Address Existing Issues
6	WA-1	Ward Avenue Sewer Lift Station Rehabilitation
7	YR-8	Year 8 Sewer Rehabilitation Project
8	YR-9	Year 9 Sewer Rehabilitation Project
9	YR-10	Year 10 Sewer Rehabilitation Project
	Buildout	
2	CS-NPTS	Construct North Patterson Trunk Sewer (Segments N1-N7.2A)
3	CS-NPLS	Construct North Patterson Lift Station
4	CS-NPFM	Construct North Patterson Force Main
5	CS-SPTS	Construct South Patterson Trunk Sewer (Segments S1-S10.2A)
6	CS-SPLS	Construct South Patterson Lift Station
7	CS-SPFM	Construct South Patterson Force Main
8	CS-OAE	Construct Orange Avenue Extension and abandon FSLS

#	Project ID	Capital Improvement Project Title
9	CS-DG	Relocate Diablo Grande sewer to SPTS
10	CS-JCT	Construct Junction Structure at NPLS/SPLS confluence

8.2 Recommended WQCF Improvements

Based on an evaluation of the existing treatment facilities, recommendations for improvement projects have been developed to address existing operational concerns and capacity issues. The recommended WQCF improvements are summarized in Table 8-2.

Table 8-2 Recommended WQCF Improvements

#	Capital Improvement Project Title	Description
	Near-Term	
1	Flow Splitter/IPS Improvements[a]	Construct a flow splitter structure for the existing and future oxidation ditches at the Southside facilities. Replace the washer/compactor unit at the Influent Pump Station.
2	WQCF - Phase III Project	Construct additional SASTS oxidation ditch and clarifier facilities to increase the capacity of the WQCF by 1.25 MGD.
3	NASTS/AIPS Hydraulic Control Improvements	Install a motorized valve and controls to allow for automatic flow control to the NASTS and AIPS facilities.
4	WQCF Security & Access Improvements	Install fencing and security improvements around the WQCF.
5	SCADA Computer System Improvements	Integrate SCADA screens and annunciate distinct equipment signals from the NASTS facilities. Replace NASTS master PLC.
6	Expand Maintenance Building	Expand Maintenance Building to improve storage and maintenance capabilities at the WQCF.
7	NASTS Clarifier Repairs	Replace NASTS clarifier mechanisms.
8	Percolation Pond Hydraulic Improvements	Increase pipe diameter for piping to percolation ponds 10, 11, 12, and 13.
9	Solids Dewatering Improvements	Install an additional centrifuge or similar solids dewatering equipment, including appurtenant facilities.
10	NASTS Anoxic Zone Improvements	Construct an anoxic selector box upstream of the NASTS oxidation ditch to improve denitrification.
11	Construct Equalization Basin & Automatic High Flow Diversion Facilities	Construct an equalization basin or improve existing pond to serve as an equalization basin, and install automatic flow diversion facilities.
12	Wastewater Master Plan	Prepare an updated wastewater master plan.

#	Capital Improvement Project Title	Description
13	Grit Removal Facilities	Construct grit removal facilities for the SASTS.
14	South Ditch Clarifier	Replace SASTS Clarifier 1 mechanism.
15	Tertiary Filters	Construct tertiary filters, including a low lift pump station, to provide the capability for producing tertiary treated wastewater which meets the requirements for recycled water.
16	Disinfection Facilities	Construct disinfection facilities which meet the requirements for producing disinfected effluent for recycled water uses.
	Buildout	
1	WQCF - Phase IV Project	Construct additional SASTS oxidation ditch and clarifier facilities to increase the capacity of the WQCF by 1.75 MGD.
2	WQCF – Phase V Project	Construct additional SASTS oxidation ditch and clarifier facilities to increase the capacity of the WQCF by 1.75 MGD.
3	Construct Tertiary Filters	Construct additional tertiary filters as required to accommodate future flows.
4	Disinfection Facilities	Construct additional disinfection facilities as required to accommodate future flows.

[a] Project Completed during Master Planning Process.

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9 Probable Capital Improvement Project Costs

Project costs were developed for the recommended wastewater collection system improvements and the WQCF improvement projects. The basis for the costs are described below.

9.1 Construction Cost Accuracy

The opinions of construction costs presented in this TM are based on quotations from previous projects and bid results from similar projects. The opinions were prepared for general planning purposes and have an expected accuracy within +50 to -30 percent, based on definitions by the Association for the Advancement of Cost Engineering (AACE). The costs are based on an Engineering News Record (ENR) San Francisco Construction Cost Index (CCI) of 11155 (November 2015).

9.2 Unit Costs for Collection System Improvements

Unit costs for pipes, manholes, structures, and other improvements are discussed below.

9.2.1 Unit Pipe Costs

Costs for conventional open cut construction were separated into multiple components. Unit costs assumed for each of these components are presented in Table 9-1.

Table 9-1 Unit Construction Costs for Pipeline Installation

Component	Unit Cost ($)	Unit[a]
Sitework		
Excavation	2.30	cy
Backfill	2.30	cy
Compaction	2.30	cy
Trench dewatering[b]	35.00	vlf
Pavement removal and replacement	5.00	lf
Material and Labor[c]		
Sanitary sewer pipelines	Varies by Size	
Contractor overhead and profit	13%	
Labor and utility/traffic control	25%	
Tax and freight	12%	

[a] lf = lineal foot, cy =cubic yard, vlf = vertical lineal foot

[b] Maximum groundwater level assumed 20 ft below grade [15].

[c] Material and labor contingencies applied to base cost of pipeline materials.

Quantities and materials assumed for the unit costs were based on Details 7-G and 7-H of the City Standard Specifications [4]. Class IV backfill is assumed for 'subsequent backfill' noted on the details and Class I backfill is used for pipe bedding, with limits of the bedding extending from a height of 6 inches above the pipe to an assumed average depth plus 6 inches below the pipe. Details 7-G and 7-H are included as Appendix C.

The excavation costs were multiplied by the appropriate units based on probable trench dimensions. The assumptions used for the width and depth of a conventional open cut trench are provided in Table 9-2.

Table 9-2 Assumed Open Trench Dimensions

Description	Trench Dimension (ft)				
	0-10 ft Depth	10-15 ft Depth	15-20 ft Depth	20-25 ft Depth	25-30 ft Depth
Trench width, added to pipe diameter	1.0	1.0	2.0	2.0	2.0
Trench surface width, added to pipe diameter[a]	1.0	2.0	2.0	4.0	4.0
Trench depth[b]	10.5	15.5	20.5	25.5	30.5

[a] Trench surface width used to estimate pavement removal and replacement

[b] Trench depth includes 6 inches for bedding in accordance with City Standard Details 7-G and 7-H

As allowed by City Standards, vitrified clay pipe (VCP) is assumed for sewers less than 36-inches in diameter. Base unit costs (base costs) for VCP piping material are provided in Table 9-3. Base costs reflect budgetary materials estimates provided by pipe vendors and are indexed to the November 2015 ENR San Francisco CCI.

Table 9-3 Base Material Costs - Vitrified Clay Pipe

Diameter (in)	Unit Cost ($/lf)
15	23
18	33
21	43
24	57
27	69
30	84
33	101

ASTM C76 reinforced concrete pipe (RCP) with PVC sheet liner is assumed for sewers 36 inches in diameter and greater. City Standards do not specify RCP as a sewer pipe material; however, VCP and polyvinyl chloride (PVC) pipe are not commonly available in diameters greater than 36 inches. Base costs for RCP piping material are provided in Table 9-4. Base costs reflect budgetary materials estimates provided by pipe vendors and are indexed to the November 2015 ENR San Francisco CCI.

Table 9-4 Base Material Costs - Reinforced Concrete Pipe with PVC Sheet Liner

Diameter (in)	Unit Cost ($/lf)		
	Class II (0-10 ft Depth)	Class III (10-20 ft Depth)	Class IV (20-30 ft Depth)
36	269	274	279
42	275	280	285
48	280	285	290
54	303	308	313
60	315	326	337

Overall unit pipe costs including excavation work, materials, and installation are summarized in Table 9-5.

Table 9-5 Unit Pipe Costs Including Pavement Removal and Replacement

Diameter (in)	Unit Cost ($/lf)				
	0-10 ft Depth	10-15 ft Depth	15-20 ft Depth	20-25 ft Depth	25-30 ft Depth
15	52	60	86	277	456
18	68	76	102	294	474
21	85	94	120	313	492
24	108	117	144	337	517
27	128	137	164	357	537
30	151	161	188	381	562
33	179	189	216	410	591
36	433	451	478	680	861
42	445	464	492	694	876
48	456	475	504	707	890

Diameter (in)	Unit Cost ($/lf)				
	0-10 ft Depth	10-15 ft Depth	15-20 ft Depth	20-25 ft Depth	25-30 ft Depth
54	494	514	543	747	930
60	515	544	575	788	972

Portions of the NPTS and SPTS alignments are proposed in unpaved areas. Unit pipe costs for these segments exclude pavement removal and replacement. Overall unit pipe costs for installation in unpaved areas are provided in Table 9-6.

Table 9-6 Unit Pipe Costs Excluding Pavement Removal and Replacement

Diameter (in)	Unit Cost ($/lf)				
	0-10 ft Depth	10-15 ft Depth	15-20 ft Depth	20-25 ft Depth	25-30 ft Depth
15	41	44	70	251	430
18	56	59	85	267	447
21	71	75	101	284	463
24	93	97	124	307	487
27	112	116	143	326	506
30	134	139	166	349	530
33	160	165	192	376	557
36	413	426	453	645	826
42	423	437	465	657	839
48	431	445	474	667	850
54	467	482	511	705	888
60	485	509	540	743	927

A summary of unit pipe costs is provided in Appendix D.

9.2.2 Unit Manhole Costs

A manhole diameter of 48-inches was assumed for pipelines up to 24-inches in diameter. A manhole diameter of 60-inches was assumed for pipelines 27-inches and larger. Unit costs for manhole material and labor are provided in Table 4-7. Unit costs reflect budgetary materials

estimates provided by pipe vendors, including PVC sheet liner installation for sanitary sewer service, and are indexed to the November 2015 ENR San Francisco CCI.

Table 9-7 Unit Manhole Costs

Description	Unit Cost ($/ea)
48-inch PVC lined manhole (10 ft depth)	5,000
48-inch PVC lined manhole (20 ft depth)	11,000
48-inch PVC lined manhole (30 ft depth)	15,000
60-inch PVC lined manhole (10 ft depth)	6,000
60-inch PVC lined manhole (20 ft depth)	14,000
60-inch PVC lined manhole (30 ft depth)	19,000

9.2.3 Junction Structure Costs

The recommended Buildout Flow Scenario Alternative (Alternative 2) requires the construction of a flow junction structure upstream of the IPS at the convergence of multiple trunk sewers (gravity or force main). Under Alternative 2, the junction structure is needed to minimize off-gassing and turbulence that would occur from the inlet sewers and force mains converging perpendicular to one another.

A construction cost estimate for the junction structure was developed using bid results from a similar project, indexed to the November 2015 ENR San Francisco CCI, with appropriate contingencies applied. The probable junction structure cost is summarized in Table 9-8.

Table 9-8 Junction Structure Cost

Description	Value
Total project bid, 24-ft x 18-ft concrete structure, two inlets, 30-inch piping[a]	$600,000
April 2011 ENR San Francisco CCI	10161
July 2015 ENR San Francisco CCI	11155
Percent change, CCI	10%
Adjusted bid amount	$659,000
Contingency[b]	50%
Flow Junction Structure Cost	**$990,000**

[a] Bid result for City of Manteca Northside Mixed Liquor Distribution Structure (April 2011)

[b] Contingency applied for increased inlet size and additional inlet

9.2.4 Pump Station and Force Main Costs

Buildout Flow Scenario Alternative 2 requires construction of pump stations and force mains. Costs for pump station structures are based on budgetary estimates for structures and mechanical equipment provided by Jensen Engineered Systems, indexed to the November 2015 ENR San Francisco CCI, including contingencies for contractor overhead and profit, labor, and electrical improvements. Costs for force mains assume installation of DR-18 PVC (AWWA C905) at minimum cover using unit cost criteria similar to gravity sewer installation. Force main installation costs include pressure manhole construction at 500-ft intervals. Based on velocity criteria presented in Table 3-1, 16-inch force mains have been selected for use downstream of NPPS and SPPS locations.

Pump station unit costs are summarized in Table 9-9. Force main unit costs are summarized in Table 9-10.

Table 9-9 Pump Station Unit Costs

Description	Design Point	Material Cost ($)	OH&P ($)	Labor and Electrical ($)	Tax ($)	Freight ($)	Base Cost ($)
			15%	50%	8.5%	3%	
NPPS	6.1 MGD at 81 ft TDH	350,000	52,500	175,000	29,750	10,500	620,000
SPPS	7.0 MGD at 99 ft TDH	360,000	54,000	180,000	30,600	10,800	640,000

Table 9-10 Force Main Unit Costs

Description	Unit	Unit Cost ($)
Force Main Installation		
16-inch PVC, including pavement removal and replacement	LF	49
16-inch PVC, excluding pavement removal and replacement	LF	61
Pressure Manhole Installation		
48-inch PVC lined manhole (0-10 ft depth)	EA	5,000

9.2.5 Other Collection System Improvement Costs

Other improvement costs include removal of existing sewers and correcting known storm drain cross connections. Assumed costs for these improvements are provided in Table 9-11.

Table 9-11 Other Unit Costs for Sewer Improvements

Description	Unit[a]	Unit Cost ($)
Remove existing abandoned sewer	in-lf	1.00
Correct storm drain cross-connections	ls	50,000

[a] in-lf = product of diameter (in) and length (lf), ls = lump sum

Unit costs for removal of existing sewers are in addition to unit pipeline installation costs. Project cost estimates provided in the Flow Routing TM [13] assume removal and replacement of existing trunk sewers along Sycamore Avenue and/or Walnut Avenue where required for upsizing or deepening of existing infrastructure. In some instances, it may be possible to install parallel trunk sewers within existing road corridors to avoid removal of existing facilities. Analysis of this possibility should be included during preliminary design of the improvement projects.

9.3 Capital Improvement Costs for Recommended Projects

A CIP project list was developed for the preferred collection system and WQCF alternatives. As directed by City staff, contingencies were applied to 'Base' project costs (determined by unit costs discussed above) as listed in Table 9-12.

Table 9-12 Capital Improvement Plan Contingencies

Description	Contingency (%)
Planning and design	10[a]
Construction management	10[a]
Construction	20[a]
Program administration	5[b]

[a] Contingencies applied to base cost to obtain initial subtotal cost.

[b] Contingency applied to subtotal cost to obtain total project cost.

Total CIP costs for near-term improvements along with projected CIP costs for the preferred collection system and WQCF alternatives are summarized in Table 9-13.

Table 9-13 Capital Improvement Costs

Project #	Description	Base Construction Cost ($)	Probable Construction Cost ($)[a]	30-Year Capital Cost ($)
Near-Term Improvements				
Collection System CIP		2,395,000	3,706,250	-
WQCF CIP		23,731,000	27,168,775	
Buildout Improvements				
Collection System - Alternative 2	Construct pump stations along NPTS and SPTS alignments with force mains converging at IPS	10.3 M	15.1 M	25.2 M[b]
WQCF - Alternative 1	Construct Phases IV and V of the SASTS and tertiary and disinfection facilities to accommodate buildout flows	26.2 M	31.4 M	56.8 M[b]

[a] Includes planning, design, construction management, program administration, and construction contingencies.

[b] Represents 30-yr life cycle cost. Life Cycle Cost Analysis provided with Flow Routing TM [14]; See Appendix G.

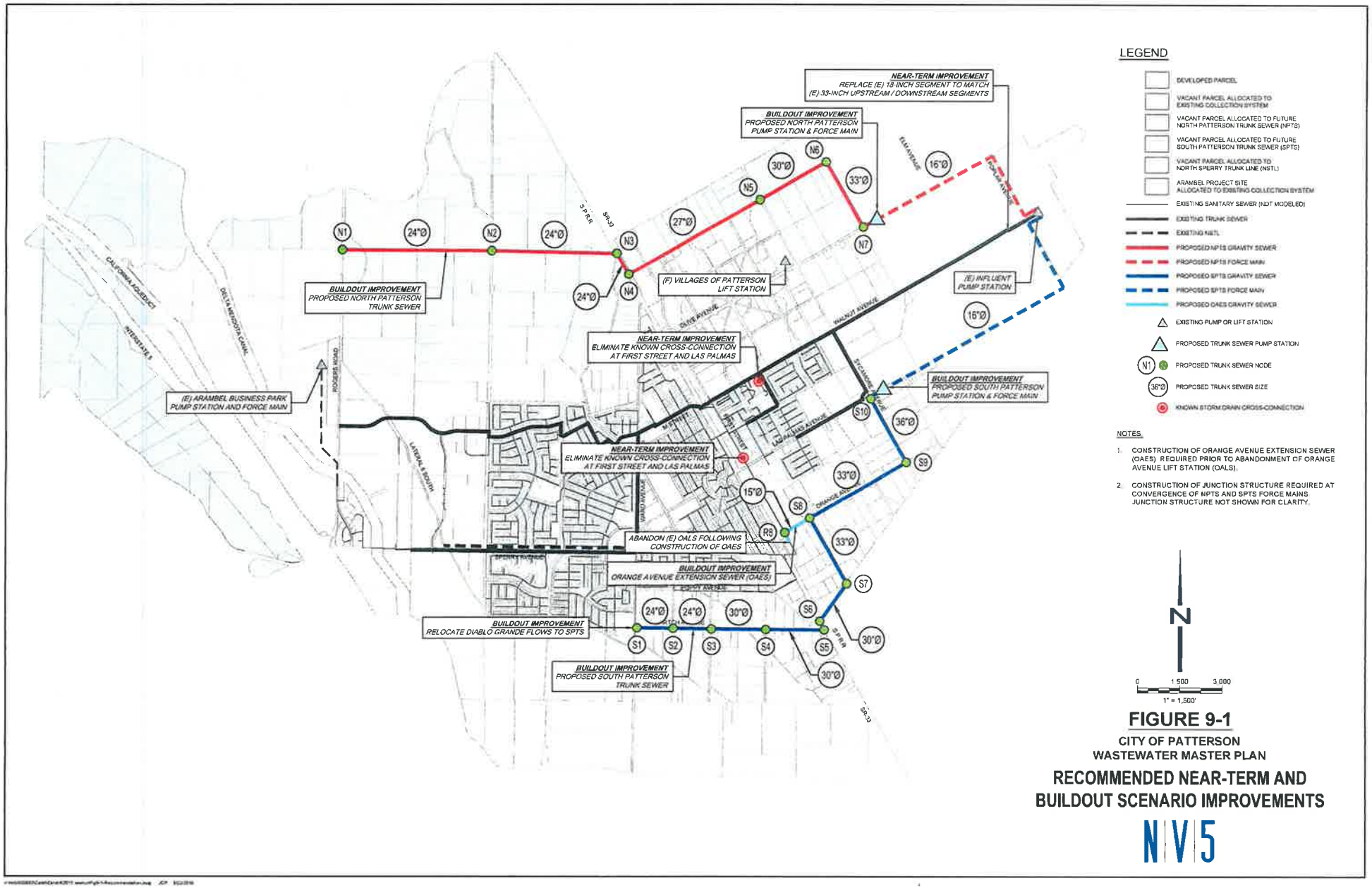
Individual project costs for the collection system projects are provided in Appendix E. Detailed collection system project costs for buildout pipeline projects are provided in Appendix F.

Expanded calculations for the collection system Life Cycle Cost Analysis (LCCA), originally provided with the Flow Routing TM [14], are included as Appendix G for reference.

Detailed project costs for both near-term and buildout WQCF projects are provided in Appendix H.

The overall CIP by year, along with cost allocations is provided in Appendix I.

Recommended near-term and buildout collection system improvements are presented in Figure 9-1. Recommended near-term WQCF improvements are shown in Figure 9-2 and recommended buildout WQCF improvements are shown in Figure 9-3.



LEGEND

- DEVELOPED PARCEL
- VACANT PARCEL ALLOCATED TO EXISTING COLLECTION SYSTEM
- VACANT PARCEL ALLOCATED TO FUTURE NORTH PATTERSON TRUNK SEWER (NPTS)
- VACANT PARCEL ALLOCATED TO FUTURE SOUTH PATTERSON TRUNK SEWER (SPTS)
- VACANT PARCEL ALLOCATED TO NORTH SPERRY TRUNK LINE (NSTL)
- ARAMBEL PROJECT SITE ALLOCATED TO EXISTING COLLECTION SYSTEM
- EXISTING SANITARY SEWER (NOT MODELED)
- EXISTING TRUNK SEWER
- EXISTING NSTL
- PROPOSED NPTS GRAVITY SEWER
- PROPOSED NPTS FORCE MAIN
- PROPOSED SPTS GRAVITY SEWER
- PROPOSED SPTS FORCE MAIN
- PROPOSED OAES GRAVITY SEWER
- EXISTING PUMP OR LIFT STATION
- PROPOSED TRUNK SEWER PUMP STATION
- N1 PROPOSED TRUNK SEWER NODE
- 36"Ø PROPOSED TRUNK SEWER SIZE
- KNOWN STORM DRAIN CROSS-CONNECTION

NOTES:

1. CONSTRUCTION OF ORANGE AVENUE EXTENSION SEWER (OAES) REQUIRED PRIOR TO ABANDONMENT OF ORANGE AVENUE LIFT STATION (OALS).
2. CONSTRUCTION OF JUNCTION STRUCTURE REQUIRED AT CONVERGENCE OF NPTS AND SPTS FORCE MAINS. JUNCTION STRUCTURE NOT SHOWN FOR CLARITY.

N

0 1,500 3,000

1" = 1,500'

FIGURE 9-1

CITY OF PATTERSON
WASTEWATER MASTER PLAN

RECOMMENDED NEAR-TERM AND BUILDOUT SCENARIO IMPROVEMENTS

NV5

LEGEND

① PHASE III OXIDATION DITCH, CLARIFIER, AND DIGESTERS

② PHASE IV AND V EXPANSION AREA

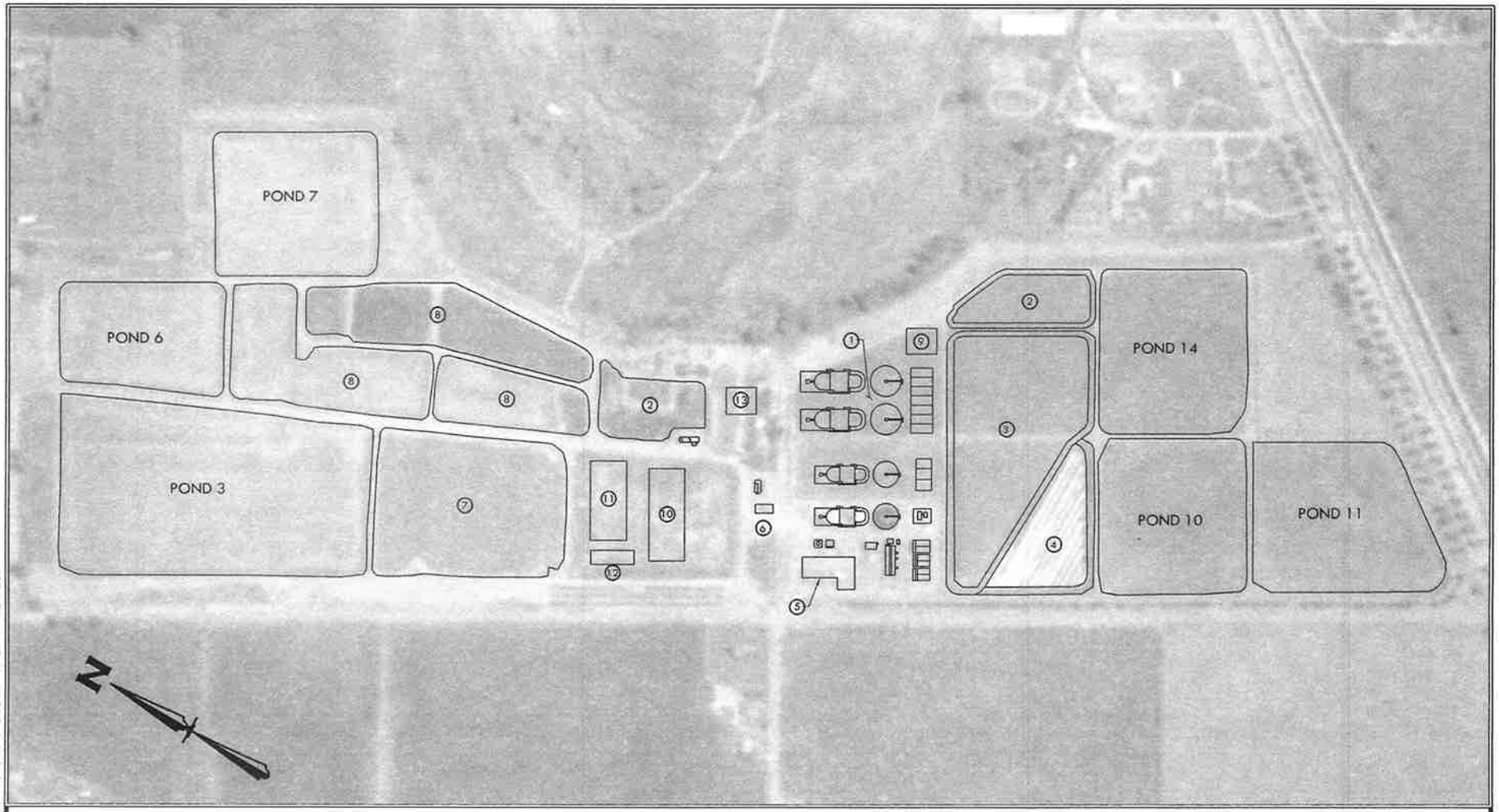
③ STORM WATER EQ BASIN

④ SLUDGE DEWATERING BASIN

FIGURE 9-2

CITY OF PATTERSON
WASTEWATER MASTER PLAN
NEAR TERM WQCF PLAN

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH. 209.322.1820



LEGEND

① PHASE IV AND V OXIDATION DITCH, CLARIFIER, AND DIGESTERS
② STORM WATER EQ BASIN
③ SLUDGE DEWATERING AREA
④ SOLAR ARRAY
⑤ ADMINISTRATION BUILDING
⑥ IPS
⑦ EMERGENCY/EQ BASIN
⑧ SLUDGE STORAGE
⑨ AEROBIC DIGESTERS
⑩ EFFLUENT FILTRATION/DISINFECTION AREA
⑪ DISINFECTED EFFLUENT STORAGE
⑫ RECYCLED WATER PUMP STATION
⑬ SHOP

FIGURE 9-3

CITY OF PATTERSON
WASTEWATER MASTER PLAN
BUILD-OUT WQCF PLAN

BLACKWATER
CONSULTING ENGINEERS, INC.
605 STANDIFORD AVE., SUITE N, MODESTO, CA 95350 PH. 209.322.1820

10 References

[1] *2010 City of Patterson General Plan*, prepared by City of Patterson, December 2010

[2] Memorandum of Understanding Between City of Patterson and Western Hills Water District, 17 December 2002

[3] *1992 Wastewater System Master Plan*, prepared by Dewante and Stowell Consulting Engineers, April 1992

[4] City of Patterson Standard Specifications, *Improvements Standards*, http://ci.patterson.ca.us

[5] *City of Patterson Wastewater Master Plan, Wastewater Collection System Basis of Design Draft Technical Memorandum*, prepared by NV5, April 2012

[6] Information provided by City of Patterson March 2012

[7] Email correspondence with Victorio Tostado, 23 March 2012

[8] Wastewater Engineering Treatment and Reuse, Metcalf and Eddy, Fourth Edition, 2003

[9] National Oceanographic and Atmospheric Organization, Precipitation Frequency Atlas of the Western United States, Volume XI – California, released 1973

[10] *Municipal Service Review and Sphere of Influence Update for the Western Hills Water District*, prepared by Stanislaus Local Agency Formation Commission, 23 June 2010 http://www.stanislauslafco.org/info/PDF/MSR/Districts/WesternHillsWD.pdf

[11] *Final Development Plan*, prepared by Arambel Properties, November 2012

[12] Sewer Index Map, prepared by Boyle Engineering, January 2008

[13] *City of Patterson Wastewater Master Plan, Wastewater Flow Routing Alternatives and Capacity Evaluation Technical Memorandum*, prepared by NV5, November 2015

[14] Discussion with Victorio Tostado, 12 November 2015

[15] California Department of Water Resources Water Data Library, http://www.water.ca.gov/waterdatalibrary

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Appendix A – MOU between City of Patterson and WHWD

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ORIGINAL

MEMORANDUM OF UNDERSTANDING

BETWEEN

CITY OF PATTERSON AND WESTERN HILLS WATER DISTRICT

This MEMORANDUM OF UNDERSTANDING ("MOU") is executed this 17 day of December, 2002, by and between the City of Patterson ("City") and Western Hills Water District ("District") for the purpose of setting forth the general terms and conditions of understanding between the parties respecting District's use of City's sanitary sewer collection and treatment system.

Recitals:

WHEREAS, City is a municipal corporation located within the County of Stanislaus, State of California, which operates a sanitary sewer collection system including pipelines, pumps and manholes ("Collection System"), a treatment plant and evaporation ponds (the "Plant") (collectively, the "Sewer Facilities") which serve the City of Patterson pursuant to a permit issued by the Regional Water Quality Control Board ("RWQCB"); and

WHEREAS, there is excess capacity in the Collection System and the Plant which is not needed to serve land located within the existing city limits of the City; and

WHEREAS, City is currently processing an annexation project known as "Patterson Gardens" involving land west of the current city limits; and

WHEREAS, the County of Stanislaus ("County") is currently processing an application for development of a business park ("West Patterson Business Park") between Baldwin Road and Interstate 5 proposed to be served by the Sewer Facilities; and

WHEREAS, Pursuant to the California Environmental Quality Act ("CEQA") the City is already engaged in environmental review, planning and engineering efforts for a sewer plant expansion and collection system upgrade in connection with both proposed development of Patterson Gardens and West Patterson Business Park in West Patterson (the "West Patterson EIR") and for the City as a whole (the "Expansion EIR"). Environmental documents under preparation will address this expansion and upgrade. The City and District desire to evaluate the City accepting District effluent in its expanded system. This evaluation will include collaboration on environmental review, project planning and project engineering. This MOU (1) provides for collaboration and cost sharing with respect to environmental review, project planning, engineering, and (2) sets forth the staging of and terms and conditions for the District's use of the City sewer facilities, if after appropriate environmental review, the District and City determine that the City will accept District effluent; and

WHEREAS, District, which is located in the Diablo foothill mountain range approximately 7 miles from the City of Patterson, is a water district formed and operating under the laws of the State of California and is authorized by law to provide sewer and water services to existing and planned municipal uses located within the District in a project known as "Diablo Grande" which consists of an approved development plan (the "Approved Plan") for 2000 residential dwelling units, two golf courses, a hotel/ business conference center, a business park and town center, winery and health spa on real property owned by Diablo Grande Limited Partnership, a California limited partnership ("DGLP"); and

WHEREAS, the RWQCB has issued District a permit to construct and operate a sanitary sewer treatment plant and associated ponds within the District boundaries, and District has commenced construction of the permitted treatment facility; and

WHEREAS, City has determined it is in the best interest of City, and District has determined it is in the best interest of the District, for District to use the City Sewer Facilities to treat up to 750,000 gallons per day (gpd) of District's effluent under the terms and conditions of this MOU;

NOW, THEREFORE, City and District agree as follows:

Terms:

ARTICLE 1.

CITY TREATMENT OF DISTRICT EFFLUENT

1.01. **City Treatment.** City agrees to treat up to 750,000 gpd , which is sufficient to accommodate all development within the Approved Plan other than the proposed winery, of District's sanitary sewer effluent under all of the terms and conditions of this MOU. City does not agree to treat any "wet" industry effluent from the District. "Wet" industry shall mean any industry whose BOD level in its effluent exceeds the rate of 350 Mg/L of B.O.D. This number should not be exceeded more than 7 days in a 30-day period. Moreover, District agrees to adopt an ordinance substantially the same as City's wastewater ordinance.

1.02. **District to Provide Public Services to District Ratepayers.** District shall continue to provide sanitary sewer services to all ratepayers and property owners located within the District. City shall not provide sanitary sewer services, or any other public services, to District nor to any ratepayers, property owners, residents or businesses located within the District. District shall be solely responsible for construction, operation, maintenance, repair and replacement of all sanitary sewer *facilities* within the District, and shall be solely responsible for all sanitary sewer *connections* within the District. District shall have the exclusive authority, as between City and District, to determine whether effluent will be treated by the City under the terms and conditions of this MOU, at on-site sanitary sewer facilities located within the District, or otherwise.

City shall have no right, power or authority to assess, bill, lien or otherwise charge District's ratepayers at any time for any purpose. City shall have no control over the services provided by District to its ratepayers, the rates charged by District for sewer

connections, rates and charges for monthly sanitary sewer services, or assessments imposed on ratepayers or property owners for the construction of sewer facilities.

1.03. **District's Periodic Payment to City.** District shall make periodic payments to City to compensate City for its costs to operate, maintain, repair and replace the Sewer Facilities used by District under the terms and conditions of this Agreement.

Although City will not be providing sanitary sewer service to District ratepayers, the District's periodic calculation of the amount of the payments made by the District to City will be based on a multiple of the per unit sewer rate charged by City to its ratepayers so that City ratepayers will be assured District ratepayers will pay at least their fair share of ongoing operation, maintenance, repair and replacement of the Sewer Facilities.

Therefore, within ten (10) days following the last day of each calendar quarter, District shall send City a statement setting forth the number of municipal connections within the District whose effluent the District delivers to City for treatment, including the date each connection was established, together with a check in an amount equal to 150% of the rate City would have charged each such connection during that quarter if those connections were located within the City.

ARTICLE 2.

FACILITIES REQUIRED TO TREAT DISTRICT'S INITIAL 180,000 GPD OF DISTRICT EFFLUENT AT THE PLANT

2.01. **District to Construct District Connection.** The District will need to construct a sanitary sewer line (the "District Connection") from the District to the City's Collection System at the intersection of Sperry Road and American Eagle before any effluent can be delivered from District to City. The District Connection will not be phased in size or reach, but will be constructed adequate in size to accommodate up to 750,000 gpd from a location within District

to be determined by District. The District Connection shall be owned, operated, maintained, repaired and replaced by the District.

2.02. **Collection System: Intial 85,000 GPD.** City does not have adequate capacity in the Collection System to deliver the District's more than 85,000 gallons per day (gpd) of District effluent to the Plant because (i) there is currently no sanitary sewer pipeline running east on Sperry Road to Ward Avenue, (ii) there is no sanitary sewer pipeline in Ward Avenue running north from Sperry Road to the existing sanitary sewer pipeline in "M" Street, and (iii) the existing "M" Street pipeline to the existing Walnut Street line and the existing Walnut Street line to the Plant are not adequate to accommodate the District's more than 85,000 gpd of effluent from the District. Since the City currently has the capacity in its Collection System and the Plant to accommodate up to 85,000 gpd of the District's effluent , the City will accept up to 85,000 gpd from the District upon substantial completion of the District Connection, provided the District or DGLP finance construction of the Collection System Improvements (as defined in paragraph 2.03, below) according to the City's schedule for construction of the Collection System Improvements attached hereto as **Exhibit "B"** (the "Collection System Improvement Construction Schedule") on terms and conditions mutually acceptable to City and the financing party.

2.03. **Collection System: Initial 180,000 GPD.** The Collection System improvements (the "Collection System Improvements") required to deliver the District's 750,000 gpd plus all effluent from Patterson Gardens and West Patterson Business Park from the District Connection to the Plant are listed as items 1 through 6 and A through C in **Exhibit "A"** attached hereto. Since the City will have the capacity in its Collection System and at the Plant to accommodate up to 180,000 gpd of the District's effluent upon completion of the Collection System Improvements, City will accept up to 180,000 gpd of effluent from the District upon completion of the District Connection and the Collection System Improvements, provided the Collection System Improvements are financed by the District or DGLP according to the Collection System Improvements Construction Schedule on terms and conditions mutually acceptable to City and the financing party.

2.04. **The Plant.** City has adequate capacity at the Plant to treat the initial 180,000 gpd from the District without expansion of the Plant, and so, neither the City nor the District will be required to design or construct any improvements to the Plant to treat the initial 180,000 gpd flows from the District to which the City has committed under paragraph 2.02 and 2.03, above. The District's obligation to advance all of the costs to construct the Collection System Improvements under Section 4.04, below, entitles the District to this 180,000 gpd of capacity at the Plant without financial obligation beyond advancing the costs to construct the Collection System Improvements.

ARTICLE 3.

FACILITIES REQUIRED TO TREAT 750,000 GALLONS PER DAY OF EFFLUENT FROM THE DISTRICT

3.01. **Collection System.** The Collection System will be adequate to deliver the entire 750,000 gpd of District effluent to the Plant upon completion of the Collection System Improvements. The District shall not be obligated to pay for the design or construction of any other improvements to the Collection System other than the Collection System Improvements in order to deliver 750,000 gpd of District effluent to the Plant.

3.02. **The Plant.** The treatment capacity at the Plant is not presently adequate to accommodate any portion of the District effluent beyond the initial 180,000 gpd without a 1.25 million gpd expansion (the "Plant Improvements") of the Plant. The Plant Improvements involve both enlargement of the treatment facility and the construction of new evaporation ponds. Allocation of financial responsibility between the City and the District for the design and construction of the Plant Improvements is provided for in Article 4., below.

3.03. **City Option to Construct the Plant Improvement in Two Phases.** If the Collection System Improvement design work and Plant Improvement design work are completed and the City as lead agency and the County as responsible agency have approved the final EIR for the West Patterson EIR but the City as lead agency and the District as responsible agency

have not approved a final environmental impact report for all portions of the Collection System Improvements and the Plant Improvements, City may elect to construct the Plant Improvement in two phases consisting of a 500,000 gpd phase and a 750,000 gpd phase with the 750,000 gpd phase to be constructed when the final environmental impact report for the Improvements is approved by the City and the District.

3.04. **City's Right to Proceed with Plant Improvements without Providing Additional Capacity for the District.** At any time after (i) the Collection System Improvement design work and Plant Improvements design work are completed, (ii) the City as lead agency and the District as responsible agency have approved the final environmental impact report for all portions of the Collection System Improvements and the Plant Improvements, and (iii) the City is financially ready to make its contributions to the costs to construct the Plant Improvements under Article 4., below, the City may request the District to demonstrate its financial readiness to make the contributions to the Plant Improvement construction District is required to make under Article 4., below. If the District declines to do so within ninety (90) days, the City shall have the right to construct the improvements at the Plant without sizing the facilities to accommodate the District's additional effluent.

ARTICLE 4.

DESIGN, PERMITTING, ENVIRONMENTAL REVIEW AND PLANT CONSTRUCTION

4.01. **Consultant Costs.** Consultant costs for design of the Plant Improvements, preparation of the Expansion EIR, and obtaining a RWQCB permit to construct and operate the Collection System Improvements and the Plant Improvements ("Plant Improvement Design/Permitting Costs") will be shared by the City and District according to the Schedule attached hereto as **Exhibit "D"**.

If District elects to withdraw from this MOU under Article 7., below, City shall, within sixty (60) days following District's written notice of withdrawal to City, reimburse

District (i) all funds advanced for City's share under this Section with interest at the rate of six percent (6%) per annum, plus (ii) that portion of District's share of the Plant Improvement Design/Permitting Costs representing work which will benefit the City to be reasonably determined by City's engineer within thirty (30) days following District's notice of withdrawal.

4.02. **Plant Improvement Construction Costs.** The costs to construct the Plant Improvements will be shared by City and District at the ratio of their respective demands for the capacity which is as follows: District = 750,000 gpd; City = 500,000 gpd. However, the District's financial responsibility shall be reduced by $1.00 for every $1.00 it advances of the City's allocated responsibility to construct the Collection System Improvements as shown in the model contained in the "Wastewater Treatment Plant Formula" portion of Exhibit "A".

Exhibit "A" also sets forth a model for the City and District's relative financial responsibilities for the Collection System Improvements based upon the estimates of quantity and installed unit costs available to the parties at the time this MOU was executed. **Exhibit "C"** contains a worksheet based upon the Exhibit "A" model which allows the parties to determine each parties' allocated responsibility for the Collection System Improvements and Plant Improvement responsibility using actual quantity and installed unit costs for the Collection System Improvements and actual Plant Improvement costs.

ARTICLE 5.

COUNTY ACTIONS

5.01. The Diablo Grande Specific Plan currently does not provide for delivery of effluent from District to City for treatment, and so will need to be amended prior to delivery of effluent from District to City. City shall not be responsible for preparing or processing this amendment, but shall reasonably cooperate with District, the County and the developer in processing this amendment. The environmental documentation for the Plant Improvements and Collection System Improvements to be prepared by City as provided in Article 5., above, shall include the District Connection.

ARTICLE 6.

ENVIRONMENTAL REVIEW

6.01. **Expansion EIR.** Prior to approving or constructing the Plant Improvements, the Collection System Improvements (other than that portion of the Collection System Improvements for which the City has already approved completed environmental documentation), and/or the District Connection, City shall use its reasonable best efforts with the reasonable cooperation of District to complete and certify, as lead agency, an appropriate and legally adequate Expansion EIR for the Plant Improvements, the Collection System Improvements, the District Connection, this MOU, and all related agreements and approvals.

6.02. **District CEQA Compliance.** Prior to approving or constructing the Plant Improvements, the Collection System Improvements (other than that portion of the Collection System Improvements for which the City has already approved completed environmental documentation), and/or the District Connection, District shall use its reasonable best efforts with the reasonable cooperation of City to complete and adopt, as responsible agency, appropriate and legally adequate environmental documentation for the Plant Improvements, the Collection System Improvements, the District Connection, this MOU, the amendment of the Diablo Grande Specific Plan, and all related agreements and approvals.

6.03. **No Approvals or Construction Prior to Completed Environmental Documentation.** Neither the Plant Improvements, the Collection System Improvements (other than those portions as to which environmental documentation has already been completed by the City), nor the District Connection shall be constructed, nor any approvals adopted or permits issued therefore, unless and until City and District have taken all actions they are required to take under the California Environmental Quality Act as provided in Sections 6.01 and 6.02, above, including analysis of a range of reasonable alternatives.

6.04. **Litigation.** In the event the Expansion EIR, the RWQCB permit and/or this MOU are challenged in court, District and City agree to cooperate in the defense of any and all such challenges, including the hiring of attorneys and qualified experts.

ARTICLE 7.

DISTRICT'S WITHDRAWAL

7.01. **District's Right to Withdraw.** District shall have the right to withdraw from this MOU at any time after June 30, 2004, in the event the District is unable to deliver the initial 180,000 gpd to the City under that terms and conditions of this Agreement by that date. District shall give City written notice of its intent to withdraw and its withdrawal shall become effective immediately unless otherwise expressly stated in the written notice. In the event District elects to withdraw from this MOU, all contributions made by the District toward the Plant Improvement Design/Permitting Costs under this MOU shall be retained by City or reimbursed to District as provided in Article 4., above.

ARTICLE 8.

GENERAL PROVISIONS

8.01. **Interpretation.** This MOU has been executed in California and California law shall apply to this MOU. The captions of paragraphs used in this Agreement are for convenience only. The provisions hereof shall be binding upon and inure to the benefit of the successors and assigns of City and District. Any amendment or modification of this MOU must be in writing, signed by City and District. The parties agree and acknowledge that this MOU has been mutually reviewed by counsel for the two parties and that the provisions of Civil Code §1654 shall not apply to the interpretation of this MOU.

8.02. **Time of Essence.** Time is of the essence of this MOU.

8.03. **Attorneys' Fees.** In the event any party to this MOU brings any legal or equitable proceedings for enforcement of any of the terms or conditions of this MOU, or any alleged disputes, breaches, defaults, or misrepresentations in connection with any provision of this MOU, the prevailing party in such action, or the nondismissing party where the dismissal occurs other than by reason of a settlement, shall be entitled to recover its reasonable costs and expenses, including, without limitation, reasonable attorneys' fees and costs of defense paid or incurred in good faith. The "prevailing party," for purposes of this MOU, shall be deemed to be that party who obtains substantially the result sought, whether by settlement, dismissal, or judgment or as determined by the court, arbitrator, or mediator to whom the dispute is submitted.

8.04. **Additional Documents.** From time to time, each party shall execute and deliver such instruments and documents as may be reasonably requested to carry out the purpose and intent of this MOU.

8.05. **Assignment.** This MOU, and all rights, benefits and privileges hereunder may be assigned by District with the prior written consent of City, which consent shall not unreasonably withheld or delayed; provided, however, Assignee shall be subject to all terms and conditions of this MOU.

8.06. **Dependency and Survival of Provisions.** The respective covenants, agreements, obligations, and undertakings of each party hereunder shall be construed as dependent upon and given in consideration of those of the other party. No waiver by either party on any provisions hereto shall be deemed a waiver of any other provision hereof or of any subsequent breach by either party of the same or any other provision.

8.07. **Notices.** All notices, approvals, consents, or other documents required or permitted under this MOU shall be in writing, and, except as otherwise provided herein, shall be effective upon personal delivery or three (3) days after deposit in the United States mail, registered or certified mail, with first-class postage fully prepaid, addresses as follows:

City:	City of Patterson c/o George Lambert, City Manager 33 S. Del Puerto Ave. Patterson, CA 95363
With a copy to:	George G. Logan, Esq. Attorney-at-Law 2669 Alabama Avenue Atwater, CA 95301
District:	Western Hills Water District c/o Keith Schneider 10001 Oak Flat Road P.O. Box 655 Patterson, CA 95363
With a copy to:	Russell A. Newman, Esq. RUSSELL A. NEWMAN PROFESSIONAL LAW CORPORATION 1020 Tenth Street, Suite 310 Modesto, CA 95354

or to such other addresses as either party shall, from time to time, specify in the manner provided herein.

8.08. **Venue.** The parties agree that, in any action to interpret or enforce this Agreement, venue shall be proper in the county of Stanislaus, or any other county in which venue is proper under California law.

8.09. **Counterparts.** This MOU may be executed in one or more counterparts, each of which shall be deemed as original, but all of which together shall constitute one and the same MOU.

IN WITNESS WHEREOF, City and District have approved this Agreement. This Agreement shall become effective upon its approval and execution by City and District.

Dated: December 17th, 2002

CITY OF PATTERSON

By: _____
Its: Mayor
Richard Dodds

Dated: December 17th, 2002

WESTERN HILLS WATER DISTRICT

By: _____
Keith Schneider
Its: President, Board of Directors

By: _____
David O. Romano
Its: Secretary

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Appendix B – Existing WQCF Design Criteria

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Appendix B
City of Patterson Wastewater Master Plan
Existing WQCF Design Criteria

Item	Unit	Value
Headworks Facilities		
Influent Pump Station		
Number	-	3 + 2 standby
Flow capacity, each	MGD	3 @ 1.8, 2 @ 1.3
Horsepower, each	HP	20
Mechanical Bar Screen		
Number	-	1
Type	-	inclined
Flow capacity, each	MGD	7
Screenings Washer/Compactor		
Number	-	1
Opening	mm	6
Flow capacity, each	gpm	250
North Activated Sludge Treatment System (NASTS)		
Rated Capacity	MGD	0.8
Reliable Capacity	MGD	0.6
Oxidation Ditch		
Number	-	1
Depth	ft	9
Surface area	sf	14,742
Type of aeration equipment	-	
Number of aerators	-	2
Horsepower, each	HP	40
Type of mixers	-	Submersible
Number of mixers	-	2
Mixer Horsepower, each	HP	3.5
Clarifiers		
Number	-	2
Type	-	circular
Diameter	ft	45
Depth	ft	10
RAS Pump Station		
Number	-	2 + 1 standby
Flow capacity, each	gpm	410
Horsepower, each	HP	3.7
Effluent Pump Station		
Number	-	2
Flow capacity, each	gpm	825
Horsepower, each	HP	7.5

Appendix B
City of Patterson Wastewater Master Plan
Existing WQCF Design Criteria

Item	Unit	Value
Advanced Integrated Pond System (AIPS)		
Rated Capacity	MGD	0.2
Reliable Capacity	MGD	0
Primary Pond		
Volume	MG	5
Type of aeration equipment	-	Surface Brush
Number of aerators	-	3
Aerator Horsepower, each	HP	2
Secondary Pond		
Volume	MG	3.1
Type of aeration equipment	-	Surface Brush
Number of aerators	-	1
Aerator Horsepower, each	HP	5
Tertiary Pond		
Volume	MG	2.6
Return Pump Station		
Number	-	1
Flow capacity, each	gpm	500
Horsepower, each	HP	5
Effluent Pump Station		
Number	-	1
Type	-	Submersible
Flow capacity, each	gpm	600
Horsepower, each	HP	10
South Activated Sludge Treatment System (SASTS)		
Rated Capacity	MGD	1.25
Reliable Capacity	MGD	1.25
Oxidation Ditch		
Number	-	1
Surface area, each	sf	11,040
Depth, each	ft	15
Type of aeration equipment	-	Surface
Number of aerators	-	2
Aerator Horsepower, each	HP	100
Type of mixers	-	Submersible
Number of mixers	-	1
Mixer Horsepower, each	HP	7.5

Appendix B
City of Patterson Wastewater Master Plan
Existing WQCF Design Criteria

Item	Unit	Value
Clarifiers		
Number	-	1
Type	-	circular
Diameter	ft	80
Depth	ft	12
RAS/WAS Pump Station		
Number	-	2
Flow capacity, each	gpm	960
Horsepower, each	HP	15-Oct
Effluent Pump Station		
Number	-	4
Flow capacity, each	gpm	960
Horsepower, each	HP	10
Aerobic Digesters		
Number	-	3
Depth	ft	15
Capacity	MG	0.11
Centrifuge		
Number	-	1
Capacity	gpm	200
Sludge Drying Beds		
Number	-	6
Type	-	Plastic Media
Surface Area, total	sf	4,800
Percolation Ponds		
Number	-	15
Total Area	acres	101
Percolation Capacity	MGD	3.38

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Appendix C – City of Patterson Standard Specifications, Pipe Trench Details

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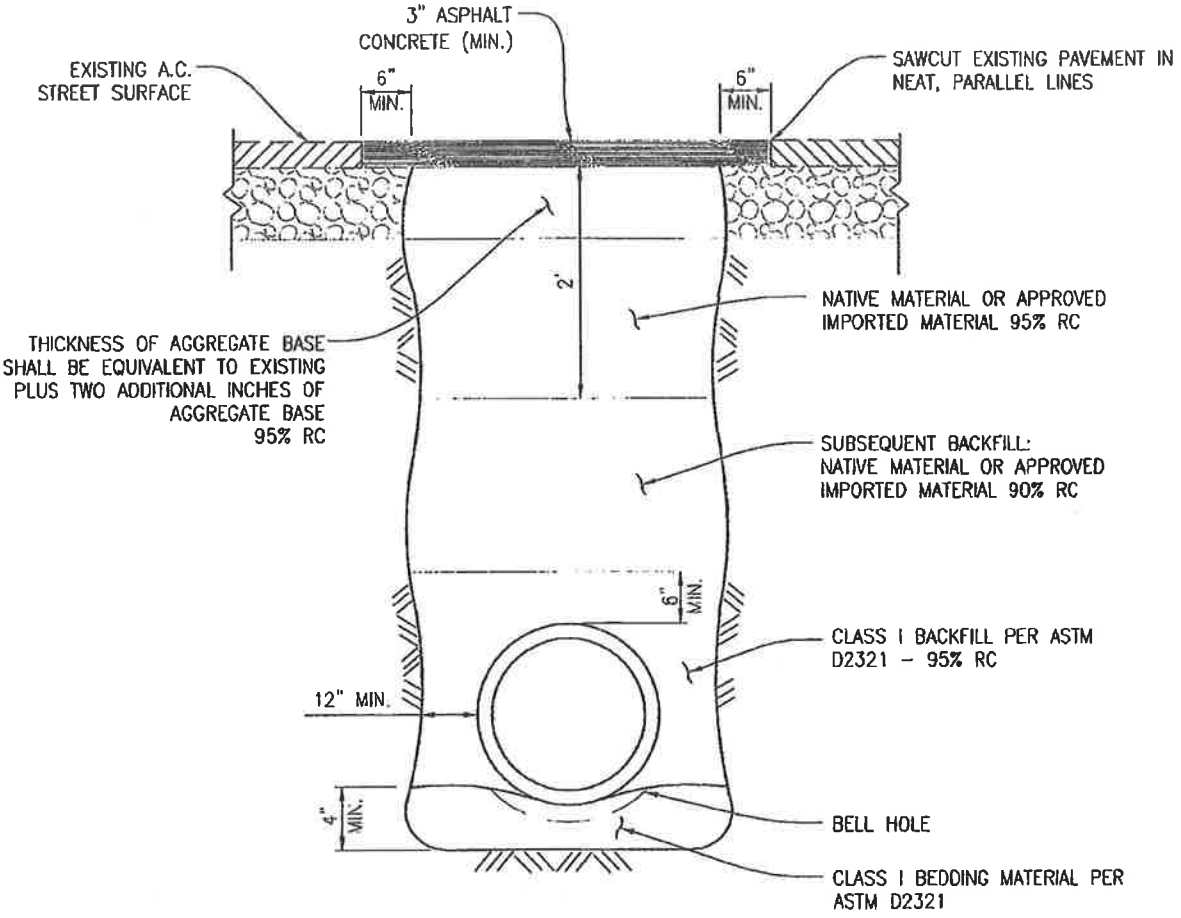
NOTE
TRENCHES NOT IN PAVED AREAS SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS.



NOTES:

1. IF THE BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVER-EXCAVATED 1 FOOT BELOW GRADE AND BACKFILLED WITH APPROVED IMPORTED MATERIAL.

CITY OF PATTERSON IMPROVEMENT STANDARDS

FLEXIBLE WALL PIPE BACKFILL

APPROVED BY: Michael Willett DATE: 5/12/11

DRAWING NO. 7 - G

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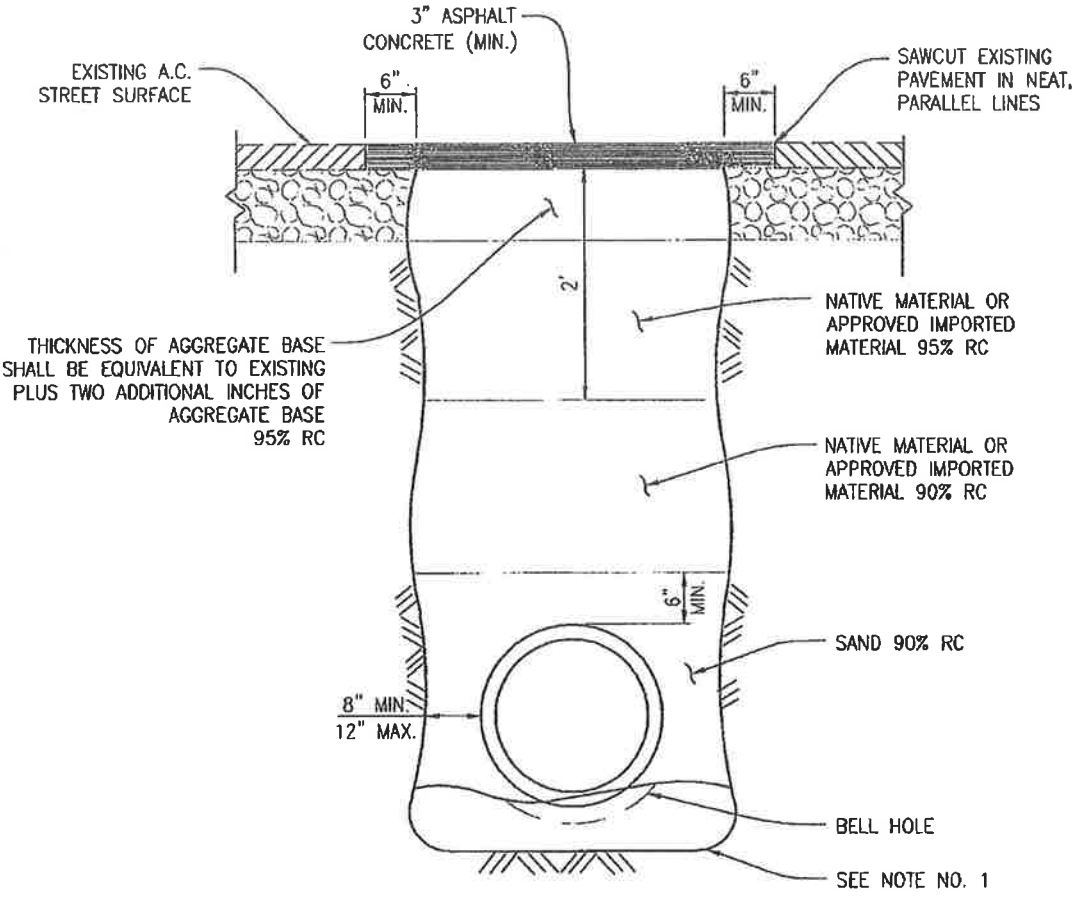
NOTE
TRENCHES NOT IN PAVED AREAS SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS.



NOTES:

1. IF THE BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVER-EXCAVATED A MINIMUM OF 1 FOOT BELOW GRADE AND BACKFILLED WITH APPROVED IMPORTED MATERIAL.

2. SAND SHALL CONFORM TO THE FOLLOWING GRADING REQUIREMENTS:

SIEVE SIZE	PERCENTAGE PASSING
#4	100
#16	0-70
#30	0-15
#200	0-5

CITY OF PATTERSON IMPROVEMENT STANDARDS

RIGID WALL PIPE BACKFILL

APPROVED: Michael Wilson DATE: 5/12/11

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Appendix D – Unit Pipe Costs for Gravity Sewer Construction

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Appendix D
City of Patterson Wastewater Master Plan
Unit Pipe Costs for Gravity Sewer Construction

Sewer Pipeline Description (Diameter and Depth)	Pipeline Material	Assumed Trench Depth (ft)	Trench Width (ft)	Surface Width (ft)	Depth for which Surface Width Applies (ft)	Excavation Quantities (per unit length)					Unit Construction Costs							Installation Cost ($/ft)				Total Cost, rounded ($/ft)	
						Excavation (cy)	Backfill (cy)	Compaction (cy)	Pavement Removal and Replacement (sf)	Water Depth (ft)	Base Material ($/ft)	Backfill ($/ft)	Excavation ($/cy)	Backfill ($/cy)	Compaction ($/cy)	Pavement Removal and Replacement ($/sf)	Trench Dewatering ($/vlf)	Piping Material and Installation	Excavation, Backfill and Compaction	Pavement Removal and Replacement	Trench Dewatering	Including Pavement Removal and Replacement	Excluding Pavement Removal and Replacement
15-inch, 0-10 ft	Vitrified Clay Pipe	10.5	2.5	2.5	-	0.9	0.6	0.6	2.5	-	23.55	23.55	2.50	2.50	2.50	5.00	33.00	35.65	7.65	11.25	-	52	31
15-inch, 10-15 ft	Vitrified Clay Pipe	13.5	2.5	3.2	-	1.5	1.2	1.2	3.3	-	23.55	11.08	2.50	2.50	2.50	5.00	33.00	35.65	8.70	16.25	-	66	44
15-inch, 15-20 ft	Vitrified Clay Pipe	20.5	3.5	3.2	-	2.5	2.4	2.4	3.3	0.5	23.55	11.08	2.50	2.50	2.50	5.00	33.00	35.65	16.92	16.25	17.50	86	70
15-inch, 20-25 ft	Vitrified Clay Pipe	25.5	3.5	3.2	5.0	3.4	3.4	3.4	3.3	3.3	23.55	11.08	2.50	2.50	2.50	5.00	33.00	35.65	23.52	20.25	192.50	277	251
15-inch, 25-30 ft	Vitrified Clay Pipe	30.5	3.5	3.2	5.0	4.0	4.0	4.0	3.3	10.5	23.55	11.08	2.50	2.50	2.50	5.00	33.00	35.65	27.60	20.25	367.50	456	430
18-inch, 0-10 ft	Vitrified Clay Pipe	10.5	2.5	2.5	-	1.0	0.9	0.9	2.5	-	32.03	16.43	2.50	2.50	2.50	5.00	33.00	39.22	6.45	12.50	-	68	58
18-inch, 10-15 ft	Vitrified Clay Pipe	13.5	2.5	3.5	-	1.4	1.0	1.0	3.5	-	32.03	16.43	2.50	2.50	2.50	5.00	33.00	39.22	9.60	17.50	-	76	66
18-inch, 15-20 ft	Vitrified Clay Pipe	20.5	3.5	3.5	-	2.7	2.6	2.6	3.5	0.5	32.03	16.43	2.50	2.50	2.50	5.00	33.00	39.22	18.14	17.50	17.50	102	85
18-inch, 20-25 ft	Vitrified Clay Pipe	25.5	3.5	3.5	5.0	3.7	3.6	3.6	3.5	5.5	32.03	16.43	2.50	2.50	2.50	5.00	33.00	39.22	25.16	17.50	192.50	294	267
18-inch, 25-30 ft	Vitrified Clay Pipe	30.5	3.5	3.5	5.0	4.3	4.3	4.3	3.5	10.5	32.03	16.43	2.50	2.50	2.50	5.00	33.00	39.22	29.54	17.50	367.50	474	447
21-inch, 0-10 ft	Vitrified Clay Pipe	10.5	2.5	2.5	-	1.1	1.0	1.0	2.5	-	43.35	21.58	2.50	2.50	2.50	5.00	33.00	44.73	6.97	13.75	-	65	51
21-inch, 10-15 ft	Vitrified Clay Pipe	13.5	2.5	3.0	-	1.6	1.3	1.3	3.0	-	43.35	21.58	2.50	2.50	2.50	5.00	33.00	44.73	10.38	14.75	-	84	71
21-inch, 15-20 ft	Vitrified Clay Pipe	20.5	3.5	3.5	-	2.8	2.8	2.8	3.0	0.5	43.35	21.58	2.50	2.50	2.50	5.00	33.00	44.73	19.23	14.75	17.50	126	104
21-inch, 20-25 ft	Vitrified Clay Pipe	25.5	3.5	3.5	5.0	3.9	3.8	3.8	3.0	5.5	43.35	21.58	2.50	2.50	2.50	5.00	33.00	44.73	26.98	29.75	192.50	333	284
21-inch, 25-30 ft	Vitrified Clay Pipe	30.5	3.5	3.5	5.0	4.6	4.5	4.5	3.0	10.5	43.35	21.58	2.50	2.50	2.50	5.00	33.00	44.73	34.37	29.75	367.50	492	463
24-inch, 0-10 ft	Vitrified Clay Pipe	10.5	3.0	3.0	-	1.2	1.1	1.1	3.0	-	57.50	28.65	2.50	2.50	2.50	5.00	33.00	49.95	7.91	15.00	-	88	73
24-inch, 10-15 ft	Vitrified Clay Pipe	13.5	3.0	4.0	-	1.7	1.6	1.6	4.0	-	57.50	28.65	2.50	2.50	2.50	5.00	33.00	49.95	14.11	20.00	-	117	97
24-inch, 15-20 ft	Vitrified Clay Pipe	20.5	4.0	4.0	-	3.0	2.9	2.9	4.0	0.5	57.50	28.65	2.50	2.50	2.50	5.00	33.00	49.95	26.42	20.00	17.50	134	121
24-inch, 20-25 ft	Vitrified Clay Pipe	25.5	4.0	4.0	5.0	4.1	4.0	4.0	4.0	5.5	57.50	28.65	2.50	2.50	2.50	5.00	33.00	49.95	28.69	30.00	192.50	337	303
24-inch, 25-30 ft	Vitrified Clay Pipe	30.5	4.0	4.0	5.0	4.9	4.8	4.8	4.0	10.5	57.50	28.65	2.50	2.50	2.50	5.00	33.00	49.95	35.20	30.00	367.50	517	483
27-inch, 0-10 ft	Vitrified Clay Pipe	10.5	3.5	3.5	-	1.3	1.2	1.2	3.5	-	68.93	34.46	2.50	2.50	2.50	5.00	33.00	54.39	8.84	16.25	-	128	112
27-inch, 10-15 ft	Vitrified Clay Pipe	13.5	3.5	4.5	-	1.9	1.7	1.7	4.5	-	68.93	34.46	2.50	2.50	2.50	5.00	33.00	54.39	15.20	21.25	-	157	136
27-inch, 15-20 ft	Vitrified Clay Pipe	20.5	4.5	4.5	-	3.2	3.1	3.1	4.5	0.5	68.93	34.46	2.50	2.50	2.50	5.00	33.00	54.39	28.98	21.25	17.50	184	161
27-inch, 20-25 ft	Vitrified Clay Pipe	25.5	4.5	4.5	5.0	4.4	4.2	4.2	4.5	5.5	68.93	34.46	2.50	2.50	2.50	5.00	33.00	54.39	30.92	31.25	192.50	331	298
27-inch, 25-30 ft	Vitrified Clay Pipe	30.5	4.5	4.5	5.0	5.2	5.0	5.0	4.5	10.5	68.93	34.46	2.50	2.50	2.50	5.00	33.00	54.39	37.85	31.25	367.50	537	504
30-inch, 0-10 ft	Vitrified Clay Pipe	10.5	3.5	3.5	-	1.3	1.2	1.2	3.5	-	85.62	41.81	2.50	2.50	2.50	5.00	33.00	59.08	8.96	17.50	-	151	133
30-inch, 10-15 ft	Vitrified Clay Pipe	13.5	3.5	4.5	-	2.0	1.8	1.8	4.5	-	85.62	41.81	2.50	2.50	2.50	5.00	33.00	59.08	15.85	22.50	-	161	139
30-inch, 15-20 ft	Vitrified Clay Pipe	20.5	4.5	4.5	-	3.4	3.2	3.2	4.5	0.5	85.62	41.81	2.50	2.50	2.50	5.00	33.00	59.08	29.74	22.50	17.50	198	180
30-inch, 20-25 ft	Vitrified Clay Pipe	25.5	4.5	4.5	5.0	4.6	4.4	4.4	4.5	5.5	85.62	41.81	2.50	2.50	2.50	5.00	33.00	59.08	31.68	32.50	192.50	381	350
30-inch, 25-30 ft	Vitrified Clay Pipe	30.5	4.5	4.5	5.0	5.5	5.3	5.3	4.5	10.5	85.62	41.81	2.50	2.50	2.50	5.00	33.00	59.08	38.79	32.50	367.50	502	500
33-inch, 0-10 ft	Vitrified Clay Pipe	10.5	3.5	3.5	-	1.5	1.2	1.2	3.5	-	100.77	50.39	2.50	2.50	2.50	5.00	33.00	63.78	9.05	16.25	-	179	160
33-inch, 10-15 ft	Vitrified Clay Pipe	13.5	3.5	4.5	-	2.2	1.9	1.9	4.5	-	100.77	50.39	2.50	2.50	2.50	5.00	33.00	63.78	15.99	21.25	-	189	165
33-inch, 15-20 ft	Vitrified Clay Pipe	20.5	4.5	4.5	-	3.6	3.4	3.4	4.5	0.5	100.77	50.39	2.50	2.50	2.50	5.00	33.00	63.78	29.97	21.25	17.50	216	192
33-inch, 20-25 ft	Vitrified Clay Pipe	25.5	4.5	4.5	5.0	4.9	4.6	4.6	4.5	5.5	100.77	50.39	2.50	2.50	2.50	5.00	33.00	63.78	32.56	31.75	192.50	320	376
33-inch, 25-30 ft	Vitrified Clay Pipe	30.5	4.5	4.5	5.0	5.7	5.5	5.5	4.5	10.5	100.77	50.39	2.50	2.50	2.50	5.00	33.00	63.78	38.97	31.75	367.50	531	537
36-inch, 0-10 ft	RCP, C76 Cl. II w/ PVC Liner	10.5	4.0	4.0	-	1.6	1.5	1.7	4.0	-	209.00	104.50	2.50	2.50	2.50	5.00	33.00	69.50	9.93	20.00	-	221	219
36-inch, 10-15 ft	RCP, C76 Cl. III w/ PVC Liner	13.5	4.0	5.0	-	2.3	2.0	2.0	5.0	-	209.00	117.00	2.50	2.50	2.50	5.00	33.00	69.50	16.66	26.25	-	231	226
36-inch, 15-20 ft	RCP, C76 Cl. III w/ PVC Liner	20.5	5.0	5.0	-	3.8	3.5	3.5	5.0	0.5	234.00	117.00	2.50	2.50	2.50	5.00	33.00	69.50	29.66	26.25	17.50	270	243
36-inch, 20-25 ft	RCP, C76 Cl. IV w/ PVC Liner	25.5	5.0	7.0	5.0	5.1	4.8	4.8	7.0	5.5	259.00	130.50	2.50	2.50	2.50	5.00	33.00	69.50	33.95	35.63	192.50	389	449
36-inch, 25-30 ft	RCP, C76 Cl. IV w/ PVC Liner	30.5	5.0	7.0	5.0	6.0	5.8	5.8	7.0	10.5	259.00	130.50	2.50	2.50	2.50	5.00	33.00	69.50	40.92	35.63	367.50	461	428
42-inch, 0-10 ft	RCP, C76 Cl. II w/ PVC Liner	10.5	4.5	4.5	-	1.8	1.7	1.7	4.5	-	275.00	137.50	2.50	2.50	2.50	5.00	33.00	112.50	10.19	22.50	-	135	123
42-inch, 10-15 ft	RCP, C76 Cl. III w/ PVC Liner	13.5	4.5	5.5	-	2.6	2.2	2.2	5.5	-	296.00	148.00	2.50	2.50	2.50	5.00	33.00	120.00	16.38	27.50	-	164	147
42-inch, 15-20 ft	RCP, C76 Cl. III w/ PVC Liner	20.5	5.5	5.5	-	4.2	3.8	3.8	5.5	0.5	296.00	148.00	2.50	2.50	2.50	5.00	33.00	120.00	27.17	27.50	17.50	192	165
42-inch, 20-25 ft	RCP, C76 Cl. IV w/ PVC Liner	25.5	5.5	7.5	5.0	5.6	5.2	5.2	7.5	5.5	295.00	147.50	2.50	2.50	2.50	5.00	33.00	127.50	36.76	37.50	192.50	404	457
42-inch, 25-30 ft	RCP, C76 Cl. IV w/ PVC Liner	30.5	5.5	7.5	5.0	6.6	6.2	6.2	7.5	10.5	295.00	147.50	2.50	2.50	2.50	5.00	33.00	127.50	43.79	37.50	367.50	476	524
48-inch, 0-10 ft	RCP, C76 Cl. II w/ PVC Liner	10.5	5.0	5.0	-	1.9	1.8	1.8	5.0	-	280.00	140.00	2.50	2.50	2.50	5.00	33.00	128.00	10.28	25.00	-	156	151
48-inch, 10-15 ft	RCP, C76 Cl. III w/ PVC Liner	13.5	5.0	6.0	-	2.9	2.6	2.6	6.0	-	295.00	147.50	2.50	2.50	2.50	5.00	33.00	127.50	17.66	30.00	-	175	165
48-inch, 15-20 ft	RCP, C76 Cl. III w/ PVC Liner	20.5	6.0	6.0	-	4.8	4.5	4.5	6.0	0.5	295.00	147.50	2.50	2.50	2.50	5.00	33.00	127.50	29.28	30.00	17.50	301	274
48-inch, 20-25 ft	RCP, C76 Cl. IV w/ PVC Liner	25.5	6.0	8.0	5.0	6.5	5.9	5.9	8.0	5.5	295.00	147.50	2.50	2.50	2.50	5.00	33.00	135.00	36.93	40.00	192.50	367	467
48-inch, 25-30 ft	RCP, C76 Cl. IV w/ PVC Liner	30.5	6.0	8.0	5.0	7.5	6.7	6.7	8.0	10.5	295.00	147.50	2.50	2.50	2.50	5.00	33.00	135.00	45.10	40.00	367.50	488	550
54-inch, 0-10 ft	RCP, C76 Cl. II w/ PVC Liner	10.5	5.5	5.5	-	2.1	1.9	1.9	5.5	-	365.00	151.50	2.50	2.50	2.50	5.00	33.00	151.50	12.05	27.50	-	191	167
54-inch, 10-15 ft	RCP, C76 Cl. III w/ PVC Liner	13.5	5.5	6.5	-	3.2	2.9	2.9	6.5	-	365.00	151.50	2.50	2.50	2.50	5.00	33.00	162.35	19.08	32.50	-	214	182
54-inch, 15-20 ft	RCP, C76 Cl. III w/ PVC Liner	20.5	6.5	6.5	-	4.9	4.7	4.7	6.5	0.5	365.00	151.50	2.50	2.50	2.50	5.00	33.00	162.35	30.84	32.50	17.50	321	311
54-inch, 20-25 ft	RCP, C76 Cl. IV w/ PVC Liner	25.5	6.5	8.5	5.0	6.5	5.9	5.9	8.5	5.5	313.00	156.50	2.50	2.50	2.50	5.00	33.00	169.20	42.26	42.50	192.50	337	389
54-inch, 25-30 ft	RCP, C76 Cl. IV w/ PVC Liner	30.5	6.5	8.5	5.0	7.7	7.1	7.1	8.5	10.5	313.00	156.50	2.50	2.50	2.50	5.00	33.00	169.20	50.34	42.50	367.50	530	550
60-inch, 0-10 ft	RCP, C76 Cl. II w/ PVC Liner	10.5	6.0	6.0	-	2.5	2.3	2.3	6.0	-	515.00	157.50	2.50	2.50	2.50	5.00	33.00	177.50	12.75	30.00	-	215	195
60-inch, 10-15 ft	RCP, C76 Cl. III w/ PVC Liner	13.5	6.0	7.0	-	3.4	3.2	3.2	7.0	-	520.00	163.06	2.50	2.50	2.50	5.00	33.00	189.00	20.32	35.00	-	245	209
60-inch, 15-20 ft	RCP, C76 Cl. III w/ PVC Liner	20.5	7.0	7.0	-	5.5	4.6	4.6	7.0	0.5	520.00	163.06	2.50	2.50	2.50	5.00	33.00	189.00	33.55	35.00	17.50	325	346
60-inch, 20-25 ft	RCP, C76 Cl. IV w/ PVC Liner	25.5	7.0	9.0	5.0	7.0	6.3	6.3	9.0	5.5	337.00	168.50	2.50	2.50	2.50	5.00	33.00	205.50	44.89	45.00	192.50	388	389
60-inch, 25-30 ft	RCP, C76 Cl. IV w/ PVC Liner	30.5	7.0	9.0	5.0	8.3	7.6	7.6	9.0	10.5	337.00	168.50	2.50	2.50	2.50	5.00	33.00	205.50	53.77	45.00	367.50	532	527

Appendix E – Collection System Capital Improvement Project Summary

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Appendix E
City of Patterson Wastewater Master Plan
Capital Improvement Projects Summary

Project ID	Project Description	Base Construction Cost ($)	Planning & Design Cost ($)	Constuction Mngmt Cost ($)	Construction Contingency ($)	Project Cost Subtotal ($)	Administration Cost ($)	Probable Construction Cost ($)
			10%	10%	20%		5%	
Near-Term Improvements								**$3,706,250**
EX-01	Upsize of 18-inch Sewer Segment (Walnut Avenue) to 33-inch	$50,000	$5,000	$5,000	$10,000	$70,000	$5,000	$75,000
SD-01	Storm Drain Cross Connection Removal: First Street/Las Palmas	$50,000	$5,000	$5,000	$10,000	$70,000	$5,000	$75,000
SD-02	Storm Drain Cross Connection Removal: Walnut Avenue/N. Hartley	$50,000	$5,000	$5,000	$10,000	$70,000	$5,000	$75,000
TY-01	Replace First Street Sewers, South of Walnut Street	$275,000	$28,000	$28,000	$55,000	$386,000	$20,250	$406,250
OT-02	Replace Old Town Area Sewers (Phase 2) to Address Existing Issues	$1,290,000	$130,000	$130,000	$260,000	$1,810,000	$65,000	$1,875,000
WA-01	Ward Avenue Sewer Lift Station Rehabilitation	$140,000	$14,000	$14,000	$25,000	$193,000	$7,000	$200,000
YR-08	Year 8 Sewer Rehabilitation Project	$170,000	$17,000	$20,000	$34,000	$241,000	$9,000	$250,000
YR-09	Year 9 Sewer Rehabilitation Project	$170,000	$17,000	$20,000	$34,000	$241,000	$9,000	$250,000
YR-10	Year 10 Sewer Rehabilitation Project	$340,000	$35,000	$35,000	$70,000	$480,000	$20,000	$500,000
Buildout Improvements - Alternative 2 - NPTS/SPTS Force Mains to IPS								**$15,103,000**
CS-NPTS	Construct North Patterson Trunk Sewer (Segments N1-N7.2A)	$2,872,000	$288,000	$288,000	$575,000	$4,023,000	$202,000	$4,225,000
CS-NPLS	Construct North Patterson Pump Station	$620,000	$62,000	$62,000	$124,000	$868,000	$44,000	$912,000
CS-NPFM	Construct North Patterson Force Main	$458,000	$46,000	$46,000	$92,000	$642,000	$33,000	$675,000
CS-SPTS	Construct South Patterson Trunk Sewer (Segments S1-S10.2A)	$3,897,000	$390,000	$390,000	$780,000	$5,457,000	$273,000	$5,730,000
CS-SPLS	Construct South Patterson Pump Station	$640,000	$64,000	$64,000	$128,000	$896,000	$45,000	$941,000
CS-SPFM	Construct South Patterson Force Main	$635,000	$64,000	$64,000	$127,000	$890,000	$45,000	$935,000
CS-OAE	Construct Orange Avenue Extension and abandon FSLS	$104,000	$11,000	$11,000	$21,000	$147,000	$8,000	$155,000
CS-DG	Relocate Diablo Grande sewer to SPTS	$50,000	$5,000	$5,000	$10,000	$70,000	$4,000	$74,000
CS-JCT	Construct Junction Structure at NPLS/SPLS confluence	$990,000	$99,000	$99,000	$198,000	$1,386,000	$70,000	$1,456,000
TOTAL COLLECTION SYSTEM CIP (rounded)								**$18,850,000**

Appendix F – Collection System Capital Improvement Project Detail Costs

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Appendix F
City of Patterson Wastewater Master Plan
Capital Improvement Projects Summary
Buildout Alternative 2 - Pipeline Projects

Segment ID	Length	Diameter	Buildout PWWF (MGD)	U/S Bury Depth (ft)	D/S Bury Depth (ft)	Avg. Depth (ft)	Depth Class	Material	Surface	Pipe Cost ID	Pipe Cost ($/LF)	MH Qty.	MH Size (in)	MH Cost ID	MH Cost ($/EA)	Base Cost ($)
NORTH PATTERSON TRUNK SEWER CONSTRUCTION																
RECOMMENDED ALTERNATIVE: Alternative 2																**TOTAL: 2,872,000**
N1	5,317	24	3.40	9.0	6.7	7.9	0-10 ft	VCP	Unpaved	24-VCP 0-10 ft	93	11	48	48-SSMH-10ft	5,000	550,000
N2	4,442	24	4.63	9.1	5.3	7.2	0-10 ft	VCP	Unpaved	24-VCP 0-10 ft	93	9	48	48-SSMH-10ft	5,000	459,000
N3	857	24	4.73	9.0	9.3	9.2	0-10 ft	VCP	Unpaved	24-VCP 0-10 ft	93	2	48	48-SSMH-10ft	5,000	90,000
N4	5,316	27	5.00	9.6	11.2	10.4	10-15 ft	VCP	Unpaved	27-VCP 10-15 ft	116	11	60	60-SSMH-20ft	14,000	771,000
N5	2,693	30	5.38	11.5	10.1	10.8	10-15 ft	VCP	Unpaved	30-VCP 10-15 ft	139	6	60	60-SSMH-20ft	14,000	459,000
N6	2,638	33	5.38	10.4	16.2	13.3	10-15 ft	VCP	Unpaved	33-VCP 10-15 ft	165	6	60	60-SSMH-20ft	14,000	520,000
N7	50	36	5.56	16.4	16.5	16.5	15-20 ft	RCP-C76-III, T-Lock	Unpaved	36-RCP-C76-III, T-Lock 15-20 ft	453	-	60	60-SSMH-20ft	14,000	23,000
SOUTH PATTERSON TRUNK SEWER CONSTRUCTION																
RECOMMENDED ALTERNATIVE: Alternative 2																**TOTAL: 3,897,000**
S1	1,280	24	4.23	12.0	14.2	13.1	10-15 ft	VCP	Unpaved	24-VCP 10-15 ft	97	3	48	48-SSMH-20ft	11,000	158,000
S2	1,353	24	4.52	16.1	16.0	16.1	15-20 ft	VCP	Unpaved	24-VCP 15-20 ft	124	3	48	48-SSMH-20ft	11,000	201,000
S3	1,927	30	4.84	16.5	14.8	15.7	15-20 ft	VCP	Unpaved	30-VCP 15-20 ft	166	4	60	60-SSMH-20ft	14,000	376,000
S4	2,076	30	4.93	16.5	7.2	11.9	10-15 ft	VCP	Unpaved	30-VCP 10-15 ft	139	5	60	60-SSMH-20ft	14,000	359,000
S5	353	30	5.38	10.7	10.4	10.6	10-15 ft	VCP	Unpaved	30-VCP 10-15 ft	139	1	60	60-SSMH-20ft	14,000	64,000
S6	1,627	30	5.38	10.7	5.6	8.2	0-10 ft	VCP	Unpaved	30-VCP 0-10 ft	134	4	60	60-SSMH-10ft	6,000	243,000
S7	2,653	33	5.47	14.2	14.4	14.3	10-15 ft	VCP	Unpaved	33-VCP 10-15 ft	165	6	60	60-SSMH-20ft	14,000	522,000
S8	3,947	33	6.54	14.4	6.1	10.3	10-15 ft	VCP	Unpaved	33-VCP 10-15 ft	165	8	60	60-SSMH-20ft	14,000	764,000
S9	2,586	36	6.68	10.4	13.4	11.9	10-15 ft	RCP-C76-III, T-Lock	Unpaved	36-RCP-C76-III, T-Lock 10-15 ft	426	6	60	60-SSMH-20ft	14,000	1,186,000
S10	56	36	6.96	13.4	15.5	14.4	10-15 ft	RCP-C76-III, T-Lock	Unpaved	36-RCP-C76-III, T-Lock 10-15 ft	426	-	60	60-SSMH-20ft	14,000	24,000
ORANGE AVENUE EXTENSION																
Orange Avenue Extension																**TOTAL: 104,000**
F7-12.R6	400	15	0.71	10.3	10.8	10.5	10-15 ft	VCP	Paved	15-VCP 10-15 ft	60	1	48	48-SSMH-20ft	11,000	35,000
R6.S8	1,020	15	0.71	10.8	8.6	9.7	0-10 ft	VCP	Paved	15-VCP 0-10 ft	52	3	48	48-SSMH-10ft	5,000	69,000
NORTH / SOUTH PATTERSON FORCE MAIN CONSTRUCTION																
RECOMMENDED ALTERNATIVE: Alternative 2														*(Pressure Manhole)*		**TOTAL: 1,093,000**
NPFM	7,800	16	6.10	-	-	3.0	0-10 ft	C905-DR18	Unpaved	16-C905-DR18 0-10 ft	49	15	48	48-SSMH-10ft	5,000	458,000
SPFM	10,800	16	7.00	-	-	3.0	0-10 ft	C905-DR18	Unpaved	16-C905-DR18 0-10 ft	49	21	48	48-SSMH-10ft	5,000	635,000

Appendix G – Collection System Alternatives Life Cycle Cost Analysis

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Appendix G
City of Patterson Wastewater Master Plan
Life Cycle Cost Analysis

Buildout Flow Alternative	Probable Construction Cost ($M)[a]	Pump Station Capital Cost ($M)[b, c]	Power Consumption					Labor Cost		30-Year Present O&M Cost ($M)	30-Year Life Cycle Cost ($M)	
			Draw (kW)[c]	Daily (kW-h)	Annual (kW-h)	First Year Cost ($M)	30-Year Present Cost ($M)	First Year Labor Cost ($M)	30-Year Present Cost ($M)			
Alt. 1	28.2	-	-	-	-	-	-	-	-	-	28.2	*+$4.3M*
Alt. 2	**15.1**	**1.9**	**243**	**5,830**	**2,127,895**	**0.17**	**4.21**	**0.19**	**4.59**	**8.80**	**23.9**	***Preferred Alternative***
Alt. 3	27.5	-	-	-	-	-	-	-	-	-	27.5	*+$3.6M*
Alt. 4	24.7	1.7	653	15,667	5,718,395	0.46	11.32	0.17	4.12	15.44	40.1	*+$16.2M*
Alt. 5	22.5	1.7	825	19,790	7,223,236	0.58	14.30	0.17	4.23	18.53	41.0	*+$17.1M*

[a] Table 5-2, Wastewater Flow Routing Alternatives and Capacity Evaluation Technical Memorandum

[b] Appendix C, Wastewater Flow Routing Alternatives and Capacity Evaluation Technical Memorandum

[c] Includes NPLS and SPLS

Alternative	Description
Alt. 1	Gravity Only; Serparate Trunks; Reconstruct IPS
Alt. 2	**Construct NPLS and SPLS; Construct long force mains**
Alt. 3	Gravity Only; Single Trunks; Reconstruct Sycamore/Walnut; Reconstruct IPS
Alt. 4	Construct NPLS and SPLS; Force mains converge at Walnut and Sycamore
Alt. 5	Construct NPLS and SPLS; Force mains converge at Walnut only

Calculation Parameters

Parameter	Value	
Power Cost	$0.08/kW-h	
S.G.	1.00	
ηPump	70%	
ηMotor	70%	
Power Infl., g_P	5.0%	
Labor Infl., g_L	5.0%	
Return, i	6.0%	
n, Years	30	
Op. Hours	24	
Labor Cost	10%	*Annual cost based on P.S. capital cost*

Pump Power Calculations

Alternative	Station	Q (mgd)	Q (gpm)	Q (cfs)	H (ft)	HP_{HYDR}	HP_{BRAKE}	HP_{INPUT}	kW_{DRAW}	Total kW
Alt. 2	NPLS	5.4	3,750	8.4	66	63	89	128	95	243
	SPLS	7.0	4,861	10.8	79	97	139	198	148	
Alt. 4	NPLS	5.4	3,750	8.4	35	33	47	415	309	653
	SPLS	7.0	4,861	10.8	30	37	53	461	344	
Alt. 5	NPLS	5.4	3,750	8.4	35	33	47	415	309	825
	SPLS	7.0	4,861	10.8	45	55	79	691	515	

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Appendix H – WQCF Capital Improvement Project Summary

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Appendix H
City of Patterson Wastewater Master Plan
WQCF Capital Improvement Project Summary

Project No	Project Description	Base Construction Cost ($)	Construction Contingency (%)	Construction Contingency ($)	Project Cost Subtotal ($)	Administration Cost (%)	Administration Cost ($)	Probable Project Cost ($)
Near-Term Improvements								**$27,168,775**
1	Flow Splitter / IPS Improvements (2014/15 CIP)	-	-	-	-	-	-	-
2	WQCF Phase III Expansion	13,865,373	10	1,386,537	15,251,910	10	1,525,190	16,777,100
3	NASTS/AIPS Hydraulic Control Improvements	73,485	20	14,697	88,182	10	8,818	97,000
4	WQCF Security and Access Improvements	100,000	-	-	100,000	25	25,000	125,000
5	SCADA Computer System Improvements (2014/15 CIP)	-	-	-	0	-	-	-
6	Expand Maintenance Building	166,700	20	33,300	200,000	25	50,000	250,000
7	NASTS Clarifier Repairs	450,000	20	90,000	540,000	25	135,000	675,000
8	Percolation Pond Hydraulic Improvements	220,000	20	44,000	264,000	20	52,800	316,800
9	Solids Dewatering Improvements	1,025,000	20	205,000	1,230,000	20	246,000	1,476,000
10	NASTS Anoxic Zone Improvements	454,546	20	90,909	545,455	10	54,545	600,000
11	Construct Equalization Basin and Automatic High Flow Diversion	270,000	25	67,500	337,500	25	84,375	421,875
12	Wastewater Master Plan	125,000	-	-	125,000	-	-	125,000
13	Grit Removal Facilities	750,000	20	150,000	900,000	25	225,000	1,125,000
14	South Ditch Clarifier	347,250	20	69,450	416,700	20	83,300	500,000
15	Construct Tertiary Filters	2,050,000	20	410,000	2,460,000	20	492,000	2,952,000
16	Disinfection Facilities	1,200,000	20	240,000	1,440,000	20	288,000	1,728,000
Buildout Improvements						**Buildout Project 30-Year Cost @ 2% growth rate**		**$56,881,826**
								$31,402,800
1	Phase IV WQCF Improvement Project	7365000	20	1,473,000	8,838,000	20	1,767,600	10,605,600
2	Phase V WQCF Improvement Project	4792500	20	958,500	5,751,000	20	1,150,200	6,901,200
3	Tertiary Filtration (2 phases)	4800000	20	960,000	5,760,000	20	1,152,000	6,912,000
4	Disinfection Facilities (2 phases)	4850000	20	970,000	5,820,000	20	1,164,000	6,984,000
TOTAL WQCF CIP (rounded)								**$58,575,000**

Appendix I – Overall Capital Improvement Program by Year

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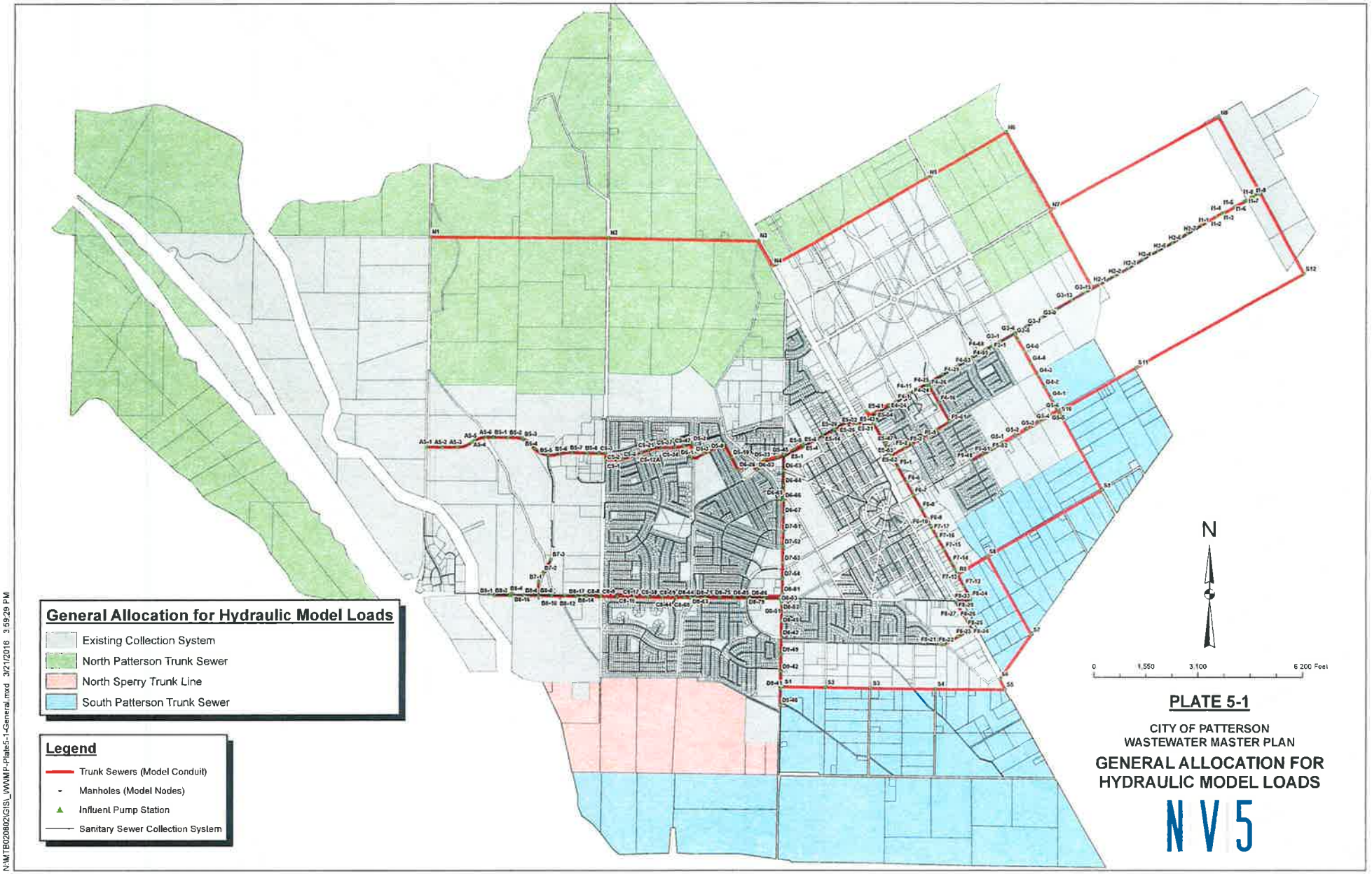
Appendix I
City of Patterson Wastewater Master Plan
Near-term Capital Improvement Program by Year

Project #	Project Title	2014/15	Annual CIP Expenditure, $ 2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total CIP, $
	COLLECTION SYSTEM NEAR-TERM CIP											
1	Eliminate Known Storm Drain Cross-Connections		50,000	100,000								150,000
2	Walnut Trunk Repair / Correction		75,000									75,000
3	First Street Sewer Replacement, South of Walnut Street		50,000	356,250								406,250
4	Ward Ave Sewer Lift Station Rehabilitation					25,000	175,000					200,000
5	Old Town Phase 2			150,000	1,725,000							1,875,000
6	Annual Sewer Rehabilitation Project						25,000	250,000	250,000	250,000	225,000	1,000,000
	Total Collection System CIP	-	175,000	606,250	1,725,000	25,000	200,000	250,000	250,000	250,000	225,000	3,706,250
	WQCF CIP											
1	Flow Splitter / IPS Improvements	485,000										-
2	WQCF Phase III Expansion		336,250	9,569,800	6,871,050							16,777,100
3	NASTS/AIPS Hydraulic Control Improvements		97,000									97,000
4	WQCF Security and Access Improvements			125,000								125,000
5	SCADA Computer System Improvements	125,000										-
6	Expand Maintenance Building				250,000							250,000
7	NASTS Clarifier Repairs					337,500	337,500					675,000
8	Percolation Pond Hydraulic Improvements			316,800								316,800
9	Solids Dewatering Improvements					123,000	1,353,000					1,476,000
10	NASTS Anoxic Zone Improvements		60,000	540,000								600,000
11	Construct Equalization Basin and Automatic High Flow Diversion							33,750	388,125			421,875
12	Wastewater Master Plan							125,000				125,000
13	Grit Removal Facilities						90,000	1,035,000				1,125,000
14	South Ditch Clarifier							250,000	250,000			500,000
15	Construct Tertiary Filters							246,000	2,706,000			2,952,000
16	Disinfection Facilities							144,000	1,584,000			1,728,000
	Total WQCF CIP	610,000	493,250	10,551,600	7,121,050	460,500	1,780,500	1,833,750	4,928,125	-	-	27,168,775
												-
	TOTAL CAPITAL IMPROVEMENT PROGRAM (Current $)		668,250	11,157,850	8,846,050	485,500	1,980,500	2,083,750	5,178,125	250,000	225,000	30,875,025
	Escalation Factor		1.03	1.06	1.09	1.13	1.16	1.19	1.23	1.27	1.30	
	TOTAL CAPITAL IMPROVEMENT PROGRAM (Escalated $)		**688,298**	**11,041,688**	**9,666,318**	**546,435**	**2,295,942**	**2,488,106**	**6,368,441**	**316,693**	**293,574**	**33,705,494**


General Allocation for Hydraulic Model Loads
Existing Collection System
North Patterson Trunk Sewer
North Sperry Trunk Line
South Patterson Trunk Sewer
Legend
Trunk Sewers (Model Conduit)
Manholes (Model Nodes)
Influent Pump Station
Sanitary Sewer Collection System
N
0
1,550
3,100
6,200 Feet
PLATE 5-1
CITY OF PATTERSON
WASTEWATER MASTER PLAN
GENERAL ALLOCATION FOR HYDRAULIC MODEL LOADS
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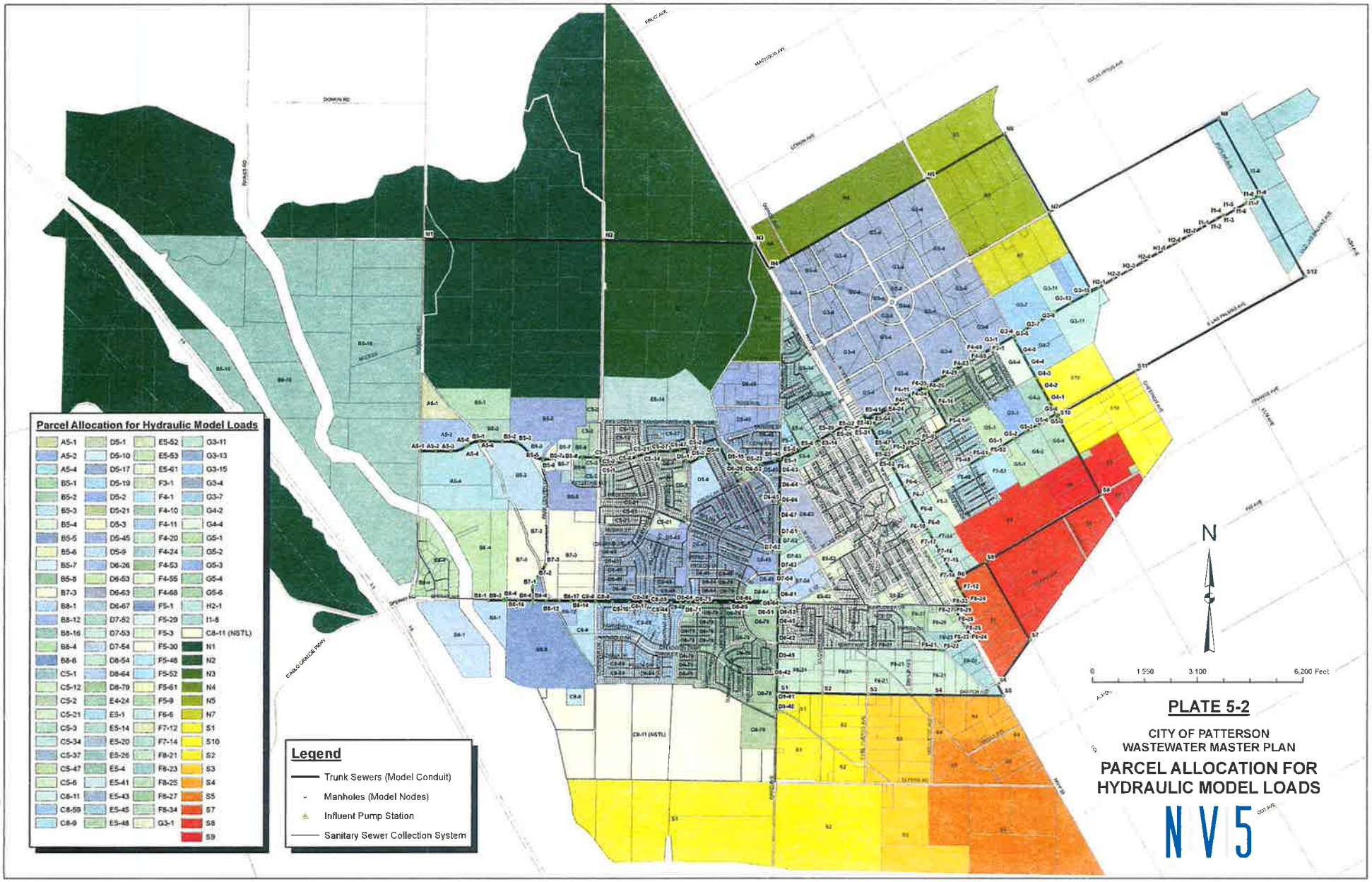

PLATE 5-2

CITY OF PATTERSON
WASTEWATER MASTER PLAN

PARCEL ALLOCATION FOR HYDRAULIC MODEL LOADS

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1.0 Background and Issue Presented

In November 2010, the City of Patterson adopted the City of Patterson 2010 General Plan update and certified the City of Patterson 2010 General Plan Environmental Impact Report (State Clearinghouse Number 2010022035). The 2010 General Plan includes the goals, policies, standards, implementation programs, quantified objectives, draft land use diagram, and preliminary circulation diagram recommended as the formal policy of the City of Patterson for land use, development, and environmental quality. The General Plan identified the need for and preparation of a Master Plan to guide the installation of facilities and the provision of services to properties located within the General Plan area to meet the needs of the City as it developed toward the growth projections assumed in the General Plan. The City developed the Wastewater Master Plan to address sewage disposal as the city grows as envisioned in the General Plan. Specifically, the Master Plan builds on the goals and objectives contained in the Public Services Element of the 2010 General Plan and directly implement the General Plan policies and implementation measures cited below.

2010 Patterson General Plan

Public Services Element – Implementation Measures

PS-4 The City shall review and periodically update the City's Sewer Master Plan consistent with the land use patterns and densities/intensities specified in the General Plan.

The Master Plan includes a comprehensive review of the City's sewage disposal facilities and services to identify improvements and expansions that are required to accommodate future growth anticipated by the General Plan and analyzed in the General Plan EIR.

1.1 CEQA Requirements and Purpose of This Document

CEQA Guidelines Section 15162 specifies the type of documentation required when changes are proposed to a project. CEQA Guidelines Section 15162 states:

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

(b) If changes to a project or its circumstances occur or new information becomes available after adoption of a negative declaration, the lead agency shall prepare a subsequent EIR if required under subdivision (a). Otherwise the lead agency shall determine whether to prepare a subsequent negative declaration, an addendum, or no further documentation.

(c) Once a project has been approved, the lead agency's role in project approval is completed, unless further discretionary approval on that project is required. Information appearing after an approval does not require reopening of that approval. If after the project is approved, any of the conditions described in subdivision (a) occurs, a subsequent EIR or negative declaration shall only be prepared by the public agency which grants the next discretionary approval for the project, if any. In this situation no other responsible agency shall grant an approval for the project until the subsequent EIR has been certified or subsequent negative declaration adopted.

(d) A subsequent EIR or subsequent negative declaration shall be given the same notice and public review as required under Section 15087 or Section 15072. A subsequent EIR or negative declaration shall state where the previous document is available and can be reviewed.

Section 15164 of the CEQA Guidelines includes situations when a subsequent or supplemental EIR is not required. CEQA Guidelines Section15164 states:

(a) The lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred.

(b) An addendum to an adopted negative declaration may be prepared if only minor technical changes or additions are necessary or none of the conditions described in Section 15162 calling for the preparation of a subsequent EIR or negative declaration have occurred.

(c) An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration.

(d) The decision making body shall consider the addendum with the final EIR or adopted negative declaration prior to making a decision on the project.

(e) A brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR, the lead agency's findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence.

1.3 CONCLUSION

The General Plan contains policies and implementation measures that specifically call out the need for the Wastewater Master Plan. The Master Plan was envisioned in the General Plan as a method to ensure adequate infrastructure and services are provided to growth that was anticipated in the General

Plan and analyzed in the General Plan EIR. The Master Plan would not provide for the expansion of services beyond that needed to accommodate the level of growth identified in the General Plan.

The City of Patterson, acting as the Lead Agency, determined that an Addendum is the appropriate environmental document under CEQA, because the proposed Master Plan would not require major revisions to the previous EIR due to the involvement of new significant environmental effects or substantial increases in the severity of significant effects previously identified in the City of Patterson 2010 General Plan EIR. As required by Section 15164 of the CEQA Guidelines, this determination must be supported by substantial evidence, included in the following analysis.

2.0 ANALYSIS

The following analysis documents that the Master Plan would not constitute substantial changes to the assumptions contained in the City of Patterson 2010 General Plan EIR (EIR) that would require major revisions to the EIR. No further mitigation would be required to reduce impacts. Based on the analysis below, the Master Plan would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects that would require the preparation a subsequent or supplemental EIR.

The City of Patterson 2010 General Plan EIR analyzed three equal-weight alternatives. The City Council ultimately approved a plan identical to the Jobs Emphasis Alternative analyzed in the Draft EIR with the following exceptions:

- An additional 339 acres of land is designated for Heavy Industrial development north of the future high school site along the railroad right-of-way and spur; and
- The General Plan makes no distinction between a 20-year and 40-year buildout time frame.

The City Council found that impacts associated with the approved General Plan were adequately addressed in the Jobs Emphasis Alternative analyzed in the EIR.

The proposed Wastewater Master Plan assumes development consistent with the development density and intensity as analyzed in the General Plan EIR, adjusted to exclude acreage for land uses that would not generate wastewater, such as streets, drainage basins, and other infrastructure.

2.1 IMPACT DISCUSSIONS

The impacts discussed below are based on the City of Patterson 2010 General Plan Draft EIR. Because the Draft EIR contains analysis of multiple alternatives, which were numbered separately in the EIR, the numbering below may not be sequential.

5.1 Land Use Impacts

Impact 5.1-1 Land use compatibility conflicts between existing and future land uses within the Study Area

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.2, LU-1.13, LU-1.14, LU-1.15, LU-3.2, LU-7.2, LU-7.4, LU-8.1, CD-1.1, CD-3.2, HS-4.7, HS-4.8, HS-4.11, HS-6.4, HS-6.6, HS-6.7, NR-2.1, NR-2.2, NR-2.3, NR-2.10, PS-9.1, and PS-9.5

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

The EIR determined that implementation of the General Plan could result in land use compatibility conflicts between existing and future land uses within the General Plan area, but compliance with the City's Municipal Code would reduce the impact to a less than significant level. The Patterson Municipal Code includes a number of performance standards to minimize land use compatibility impacts. For example, Title 6, Health and Safety, describes standards for (among other things): Property Maintenance (6.16); Neglected Vacant Structures (6.18); Storage of Fuels (6.24); Hazardous Materials (6.40); Noise Control (6.44); and Right to Farm (6.48). In addition, the City's Zoning Ordinance (Title 18) sets forth, for each zone, development and use standards that are intended to help ensure compatibility among land uses. The ordinance establishes conditionally allowable uses for each zone that require discretionary review of new development. The City's Community Design Guidelines and Downtown Physical Design Plan set forth the City's expectations for the qualities to be incorporated in new development. The guidelines illustrate design strategies to help ensure new development complements existing development and minimizes impacts to surrounding development. The General Plan includes policies intended to minimize conflicts between existing and new development to ensure that this impact would be less than significant.

Master Plan Impact

The Master Plan includes guidance for the timing, size, and general location of wastewater facilities to accommodate growth identified in the General Plan. The Master Plan does not add or change land uses identified in the General Plan and thus would not alter any assumptions contained in the EIR regarding the potential for incompatibility with these facilities. The General Plan policies and implementation measures, as well as the City's Municipal Code, including the Zoning Ordinance, would continue to apply to these facilities. With implementation of the General Plan policies and compliance with the City's Municipal Code, potential incompatibilities would be less than significant. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.1-2 Consistency with the County General Plan

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.2, LU-1.9, LU-1.13, LU-1.14, LU-1.15, LU-9.1, CD-1.1, CD-1.7, CD-3.2, NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-3.11, AI-1.1, AI-1.2, and AI-1.3
Implementation Measures: LU-5, CD-1, NR-3, NR-5, and AI-1

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

The EIR found that a comparison of County's land use designations with those of the City's General Plan reveals inconsistencies, in that the Patterson General Plan designates land surrounding the city with urban land use designations that would allow the conversion of agricultural land to urban uses. The General Plan includes policies that require the inclusion of land within the City's sphere of influence and annexation prior to urban development. Amendment of the City's sphere of influence and annexation require the approval of the Local Agency Formation Commission (LAFCo) and cannot be guaranteed. Prior to annexation, the land use designations of the Patterson General Plan will remain inconsistent with those of the County. The EIR found that inconsistencies between the Stanislaus County General Plan and the Patterson General Plan would remain unless and until the areas in question are included within the City's sphere of influence and annexed to the city by the Local Agency Formation Commission. Moreover, impacts associated with development of these areas with urban uses would be greater than those associated with uses allowed by the County General Plan. These impacts were considered significant and unavoidable.

Master Plan Impact

The Master Plan does not propose changes in land use designations from agricultural to urban uses; the Master Plan provides guidance on the necessary wastewater infrastructure to accommodate growth identified in the Patterson General Plan. Therefore, while the Master Plan would not reduce impacts identified in the EIR with regard to consistency with the County General Plan, there would be no new or more severe impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.1-3 Inconsistencies with City of Patterson zoning regulations

Applicable General Plan Policies and Implementation Measures

Implementation Measure: LU-1

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

Site-specific development in Patterson is regulated by the Patterson Zoning Ordinance (Title 18 of the Patterson Municipal Code). In accordance with the California Government Code, the zoning districts applied within the city must be consistent with the land use designations in the General Plan. The EIR found that the General Plan would result in changes to the land use designations within the city limits, which in turn would result in inconsistencies between the land use designations and the current zoning for particular areas. Thus, until the applicable zoning regulations are amended consistent with the adopted General Plan land use designations, there would be inconsistencies between the two. This was considered a less than significant impact because potential inconsistencies between the recommended land use designations associated with the General Plan would be resolved by implementation measure LU-1, which requires an amendment of the City's Zoning Ordinance following adoption of the General Plan. The City Zoning Ordinance was amended in 2013.

Master Plan Impact

The Master Plan would not alter land use designations or zoning within the city, so there would be no increased potential for inconsistencies between General Plan designations and zoning. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.1-4 Consistency with LAFCo policies

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.2, LU-1.9, LU-1.13, LU-1.14, LU-1.15, LU-9.1, CD-1.1, CD-1.7, CD-3.2, NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-3.11, AI-1.1, AI-1.2, and AI-1.3
Implementation Measures: LU-1, LU-5, CD-1, NR-3, NR-5, and AI-1

General Plan EIR Mitigation Measures

No feasible measures available.

Previously Identified Impacts

The General Plan designates land for urban development outside the City's previous General Plan area and adopted sphere of influence to meet the General Plan objectives. The General Plan sets forth a long-term development strategy and a set of policies and implementation measures to meet these objectives. The recommended policies and implementation measures encourage the application of "Smart Growth" principles, which encourage the orderly outward expansion of the city through the development of "complete neighborhoods," which facilitates the efficient provision of public services.

However, land for urban development would be needed over time to meet the City's objectives for affordable housing, balancing jobs with housing, the expansion of local retail opportunities, and the provision of public facilities, such as health care and schools. The city is surrounded by prime agricultural land, which comprises most of the acreage in the General Plan Planning Area (see Table 5.11-5 on page 5.11-17 of Draft EIR Section 5.11, Agricultural Resources). To meet the General Plan objectives described in Draft EIR Section 3.0, a portion of this acreage would

be converted to urban use. The General Plan thus results in a trade-off between urban development and prime agricultural land.

The 2010 General Plan does not propose the annexation of land or an amendment of the City's sphere of influence. However, the draft policies and programs recommended in the General Plan anticipate the expansion of City services to serve development in the General Plan area. Draft EIR Section 5.3, Public Services, describes the various policies and programs to be implemented to ensure the provision of services concurrently or in advance of annexation. The infrastructure programs described in Draft EIR Sections 5.4, Water Supply; 5.5, Wastewater; 5.6, Transportation; and 5.13, Hydrology and Water Quality, set forth the City's programs for providing these services. Thus, the EIR found that the draft General Plan is consistent with LAFCo Policy 4.

The EIR discloses that the boundaries chosen for the extent of urban development accommodated by each of the Equal-Weight Alternatives were chosen to result in logical boundaries. In each case, the boundaries follow property lines, canals, roadways, or a creek. However, when weighing the various competing interests reflected in the General Plan, together with the General Plan policies, certain aspects could be found to be inconsistent with applicable LAFCo policies. For this reason, this impact was considered in the EIR to be significant and unavoidable.

Master Plan Impact

As discussed above, the General Plan does not propose the annexation of land or an amendment of the City's sphere of influence. Similarly, the Master Plan does not propose the annexation of land or an amendment of the City's sphere of influence. Some improvements identified in the Master Plan would occur in lands outside the city's current boundaries. However, because the Wastewater Master Plan is intended to accommodate the growth in the General Plan by providing adequate wastewater infrastructure, it would not itself result in development that would encroach on land outside the city boundaries that was not already considered for development in the General Plan. Therefore, there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.1-5 Consistency with adopted plans and policies, cumulative population growth

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.2, LU-1.9, LU-1.13, LU-1.14, LU-1.15, LU-9.1, CD-1.1, CD-1.7, CD-3.2, NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-3.11, AI-1.1, AI-1.2, and AI-1.3
Implementation Measures: LU-1, LU-5, CD-1, NR-3, NR-5, and AI-1

General Plan EIR Mitigation Measures

No feasible measures available.

Previously Identified Impacts

The EIR disclosed that the General Plan designates land for urban development surrounding the city that would remain inconsistent with the Stanislaus County General Plan. The EIR determined that the conversion of these areas from a largely agricultural to an urban setting could conflict with

LAFCo policies relating to the protection of prime agricultural land and, unless and until these areas are annexed into the city, the inconsistency would remain. Although General Plan policies and implementation measures would help reduce the cumulative, long-term impacts of such development, impacts relating to consistency with adopted plans were found to remain cumulatively considerable and significant and unavoidable.

Master Plan Impact

While the Master Plan would not directly result in growth outside the previous city boundaries, it would accommodate growth by providing necessary wastewater infrastructure to serve that growth. Consequently, the Wastewater Master Plan would not reduce the cumulative effects related to consistency with adopted plans and policies, but there would be no new or more severe impacts related to the Master Plan. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.2 Population, Housing, and Employment Impacts

Impact 5.2-1 Increase in population, housing, and employment will result in direct and indirect physical impacts to the environment.

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.7, LU-1.9, LU-1.10, LU-1.13, LU-1.14, ED-3.1, ED-3.2, and ED-3.3
Housing Element Policies and Programs: 1-3-1, 1-3-2, 1-3-3, 1-3-4, 1-3-5, 1-3-6, 1-3-7, and 1-3-8

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

The EIR found that the projected increase in urban development and the resulting increase in population, housing, and employment associated with the General Plan would result in direct and indirect physical environmental impacts. Direct impacts include noise, traffic, air pollution, potential erosion, and water quality impacts associated with construction activities, as well as the conversion of productive agricultural soils. Indirect impacts include an increased demand for water, wastewater collection and treatment, schools, and police and fire protection, and increased traffic, air pollution, and noise. The EIR also concluded that policies included in the General Plan would minimize impacts related to traffic, air, and noise by (among other things) promoting a balance among jobs, housing, and shopping and by facilitating alternate modes of transportation. Nevertheless, implementation of the General Plan would allow for a substantial increase in population, housing units, and employment in the General Plan area. This increase would have a significant adverse impact on the physical environment (as documented in the topical sections of the Draft EIR, Sections 5.1 through 5.15), regardless of the policies in the General Plan. Therefore, this impact was considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan identifies the construction of facilities to serve development in the city, the construction of which would result in physical environmental impacts. However, the

General Plan assumed construction of the necessary facilities to serve the increased population associated with the implementation of the General Plan. Therefore, although facilities identified in the Wastewater Master Plan would contribute to this significant effect, the physical effects of the facilities identified in the Master Plan were addressed in the EIR and there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.2-2 Displacement of existing dwellings as result of new urban development

Applicable General Plan Policies and Implementation Measures

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

The EIR found that the General Plan would not, in and of itself, result in the construction of any new development. It would change the existing land use designations to allow an intensification of development, including housing. Urban development accommodated by the General Plan could result in the displacement of as many as 669 dwelling units as the city expands outward. The Circulation Diagram identifies a circulation system that would require the construction of new roadways within the area, which in turn may require the removal of some housing units and/or businesses, thereby displacing persons. The EIR concluded, however, that such displacement would be minor, given that roadway sizing and alignments are designed to avoid impacts to existing development areas and adoption of the General Plan would not, in and of itself, displace substantial numbers of housing units or people, nor would the General Plan redesignate existing residential areas to land uses that would require the relocation of residents. If relocation is required, state and federal laws require due compensation for persons required to relocate as a result of redevelopment projects carried out by the City or any projects that use federal or state funding. Any private development that may occur would pay the fair market price for any land/housing acquired as a result of project development. Therefore, although some isolated displacement of persons or housing may result, due compensation will be provided in accordance with the law to offset any cost-related effects.

In summary, although some existing units and their associated occupants will be displaced over the time frame of the General Plan (40 or more years), the number in each case is small compared to the number of units and population accommodated by the General Plan, so there would be ample opportunity for relocation within the General Plan area. The EIR determined that implementation of the 2010 Patterson General Plan would result in a less than significant impact.

Master Plan Impact

Development of facilities associated with the Master Plan was anticipated as part of the General Plan, as noted above in reference to road improvements. The Master Plan would not provide for infrastructure or facilities beyond those anticipated in the EIR and thus would not result in additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.2-3 Cumulative impacts to population, housing, and employment

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.7, LU-1.9, LU-1.10, LU-1.13, LU-1.14, ED-3.1, ED-3.2, and ED-3.3
Housing Element Policies and Programs: 1-3-1, 1-3-2, 1-3-3, 1-3-4, 1-3-5, 1-3-6, 1-3-7, and 1-3-8

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

Population growth projections for the region included in the EIR show the regional population is expected to be about 3.6 million in 40 years. The General Plan Planning Area will accommodate a growth in population of about 47,831 by 2030, which exceeds the Stanislaus Council of Governments (StanCOG) Regional Transportation Plan projection for Patterson for the year 2030. The EIR found that when the additional population accommodated by the General Plan is added to the projected 2030 population for the county, it would raise the projected Stanislaus County population from 1 to 3 percent above the most recent 2030 projection. It should be noted, however, that the population growth in the city would, at least partially, accommodate some of the projected growth in the county.

The General Plan contains policies that help minimize impacts relating to traffic, air, and noise by (among other things) promoting a balance among jobs, housing, and shopping and by facilitating alternate modes of transportation. Nevertheless, implementation of the General Plan will allow for a substantial increase in population, housing units, and employment in Patterson. This increase would have a significant adverse impact on the physical environment (as documented in the topical sections of the Draft EIR, Sections 5.1 through 5.15) regardless of the policies listed above. Therefore, this impact was considered significant and unavoidable.

Master Plan Impact

Implementation of the Master Plan would result in physical environmental effects from the construction of facilities to serve the population growth in the city. As discussed above, the EIR considered the physical effects of serving the population growth in Patterson (EIR Sections 5.1 through 5.15). Because the effects of providing services and facilities to the growing population in the city were disclosed in the EIR, there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.3 Public Services and Utilities Impacts

Impact 5.3-1 Increased city population, the number of structures, and the geographic area served by the Fire Department

Applicable General Plan Policies and Implementation Measures

Policies: PS-6.1, PS-6.2, PS-6.3, and PS-6.4
Implementation Measures: PS-9, PS-11, and PS-13

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

The EIR determined that implementation of the General Plan would increase the population, number of structures, and geographic area served by the Patterson Fire Department. As the geographic area and population served by the Fire Department increases, the desired response times may not be achieved without additional fire stations and firefighting personnel. Based on a buildout population of 66,673, a total of 67 career firefighting personnel (24 more than in 2010) would be needed to achieve and maintain the desired level of service of 1 career firefighter per 1,000 residents. In addition, the city's geographic area would increase to 11,796 acres. However, the EIR identified General Plan policies and implementation measures that would ensure additional fire stations and firefighting personnel are provided in order to achieve and maintain the desired response times, the implementation of which would ensure impacts related to fire protection are less than significant.

Master Plan Impact

The Wastewater Master Plan identifies the construction of facilities to serve development in the city, which would increase the number of structures served by the Fire Department. However, the General Plan assumed construction of the necessary facilities to serve the increased population associated with the implementation of the General Plan. Therefore, although the facilities identified in the Wastewater Master Plan would contribute to this effect, the resulting increase in demand for fire protection services was addressed in the EIR and there would be no new or additional impact.

Furthermore, implementation measure PS-13 calls for the development of a Master Plan for the provision of fire protection services. The City is currently in the process of developing such a Master Plan that addresses, among other things, the roles of the City and the West Stanislaus Fire Protection District in the provision of fire protection services for the City; the size, number, and location of fire stations to serve Patterson; desired firefighter staffing and organizational structure; and equipment and training. The Fire Protection Master Plan will implement mitigating policies and measures identified in the EIR to reduce impacts on fire protection services. Implementation of the Fire Protection Master Plan will reduce impacts compared to those identified in the EIR. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-2 Increased city population, number of businesses, and geographic area served by the Police Department

Applicable General Plan Policies and Implementation Measures

Policies: PS-5.1, PS-5.2, PS-5.3, and PS-5.4
Implementation Measures: PS-9, PS-11, and PS-12

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

The EIR determined that implementation of the General Plan would increase the population, number of businesses, and geographic area served by the Patterson Police Department. As the geographic area and population served increases, the desired response times may not be achieved without additional police substations and personnel. The EIR concluded, based on a buildout population of 66,673, a total of 100 law enforcement personnel would be needed (79 more than in 2010) to maintain the desired ratio of 1.5 officers per 1,000 residents. However, the EIR found that policies and implementation measures contained in the General Plan would ensure additional police stations and law enforcement personnel are provided in order to achieve and maintain the desired response times. The EIR determined that implementation of these policies and programs will ensure impacts related to police protection are less than significant.

Master Plan Impact

The City is currently in the process of developing a Master Plan for Police Services that implements General Plan implementation measure PS-12, calling for preparation and adoption of a Master Plan for the provision of police services, in cooperation with Stanislaus County. The Master Plan addresses, among other things, the roles of the City and County in the provision of law enforcement services in Patterson; the size, number, and location of police satellite/patrol offices to serve the city; desired police staffing and organizational structure; and equipment and training. The Master Plan would reduce impacts on police services by implementing measures from the EIR identified to reduce effects. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-3 The project will increase the city's population with a corresponding increase in the demand for parks and recreational facilities.

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.3, LU-1.4, PR-1.1, PR-1.2, PR-1.3, PR-1.4, PR-1.5, PR-1.6, PR-1.7, PR-1.10, PR-1.12, PR-2.1, PR-2.2, PR-2.3, and PR-4
Implementation Measures: PR-1, PR-2, PR-3, PR-4, PR-5, PR-6, PR-7, and PS-11

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

Based on the ratio of 5 acres of developed parkland per 1,000 residents desired in the city, the General Plan would require a total of 333 acres of developed parkland at buildout, or 256 acres more than in 2010. The EIR determined that a significant impact relating to parks could occur if developed parkland is not provided concurrently or in advance of population growth to achieve and maintain the desired ratio of 5 acres of parkland per 1,000 residents. As disclosed in the EIR, the General Plan includes policies and implementation measures that ensure additional developed parkland is provided in order to achieve and maintain the desired ratio of parkland to population. Implementation of these policies and programs would ensure impacts related to the demand for parkland would be less than significant.

Master Plan Impact

The City has since adopted a parks and recreation master plan, pursuant to General Plan policy PR 1.1, which considers locational standards, preferred sites, improvement and equipment standards, development priorities, financing mechanisms, development of community activity centers, sports facilities, and joint use facilities. The Wastewater Master Plan would not increase population in the city, increase use of existing parks, increase demand for new or expanded parks, or conflict with the adopted Parks and Recreation Master Plan. In addition, the Master Plan would not hinder the ability of the City to operate existing parks or construct new parks to serve city residents. Consequently, there would be no additional impacts on parks and recreational facilities. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-4 The increased population accommodated by the project would generate additional students with a corresponding increase in the demand for school facilities provided by the PJUSD.

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.3, LU-1.4, PS 7-1, PS-7.2, PS-7.3, PS-7.4, PS-7.5, PS-7.6, PS-7.7, PS-7.8, and PS-7.9

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

The EIR identified a potential buildout population of 66,673, which could generate as many as 18,441 additional school-aged children (7,864 K through 5th grade, 3,248 6th through 8th grade, and 7,328 9th through 12th grade). As discussed on page 5.3-32 of Draft EIR Section 5.3, Public Services and Utilities, Senate Bill (SB) 50 preempts a city or school district from levying or imposing additional fees (or other mitigation) in connection with, or made a condition of, any new land use approval as additional mitigation for the impacts of land use approvals on school facilities. In addition, a local agency may not deny or refuse land use entitlements on the basis that school facilities are inadequate, notwithstanding other provisions of the law, including CEQA. The provisions of SB 50 are the exclusive means of both considering and mitigating a project's impacts on school facilities. The Patterson Join Unified School District owns a 12-acre site along Ward Avenue in the Patterson Gardens project area that it plans to use for an elementary school and a 56-acre site located north of Zacharias Road at Baldwin Road that it plans to use for a high school. The timing of the construction of these facilities will be based on the availability of funds and the demand for these facilities. The Villages of Patterson Development Plan EIR (2006) also notes that two additional school sites could be accommodated within that project's boundaries, both of which would be K–5 facilities. Lastly, the General Plan includes policies and implementation measures to ensure potential school facilities impacts are mitigated in accordance with the provisions of state law.

Master Plan Impact

The Wastewater Master Plan would not increase the city's population or generate additional students. In addition, the Master Plan would not hinder the ability of the school district to serve the increased population in the city. Consequently, there would be no additional school impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-5 Cumulative impacts relating to health care facilities

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.3, LU-1.4, PS 7-1, PS-7.2, PS-7.3, PS-7.4, PS-7.5, PS-7.6, PS-7.7, PS-7.8, PS-7.9, PS-8.1, PS-8.2, PS-8.3, and PS-8.4
Implementation Measures: PS-16 and PS-17

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

The EIR found that, although the City will implement a variety of policies and implementation measures to address the range of potential environmental impacts that may be associated with the construction and operation of new health care facilities, the ability to mitigate certain potential impacts is contingent on a number of factors, including the severity of the impact, existing land use conditions, and the technical feasibility of the proposed mitigation measures. Because of these contingencies, the potential impacts of construction of new health care facilities that may be needed to serve the expanded service population remain significant. No additional measures were identified to reduce impacts to a less than significant level, so this impact was considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not reduce impacts compared with those disclosed in the EIR, but Master Plan would not increase the need for health care facilities or hinder the development of new health care facilities. Therefore, there would be no new impacts or increases in severity of previously disclosed impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-6 Additional solid waste which in turn will reduce capacity of the landfill serving the city

Applicable General Plan Policies and Implementation Measures

Policies: PS-4.1, PS-4.2, PS-4.3, PS-4.4, PS-4.5, PS-4.6, PS-4.7, PS-4.8, and PS-4.9

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

The EIR determined that future development accommodated by the General Plan would generate as much as 53,119 tons per year of additional solid waste at buildout, which would reduce capacity of the landfill serving Patterson. In addition to solid waste, sludge produced at the wastewater treatment plant will require disposal at a landfill. Sludge de-watered to about 20 percent solids would produce about 10,000 tons per year, but dried sludge production would be about 7,000 tons per year. Assuming total sludge produced by development within the 20-year growth boundary is about two-thirds of the buildout total, about 4,620 tons per year will require disposal by 2030 and 7,000 tons by 2050.

Brine generated through the treatment of groundwater and surface water will also necessitate disposal at a landfill. Brine production could result in about 31 tons per year of concentrated salts at buildout that would be periodically hauled to the landfill.

The Fink Road Landfill has a remaining capacity of 10 million cubic yards. The facility is permitted to receive 2,400 tons per day and is projected to close in 2023 if it accepts waste at that maximum daily rate. However, when the EIR was written, the landfill was receiving about 369 tons per day. If this rate were to continue into the future, the remaining life of the landfill could be 35 to 50 years from 2010. Its actual life would depend on several factors, including whether the waste stream received at the landfill remains around 369 tons per day, the density of the waste, and the rate at which solid waste is recycled.

The Fink Road Landfill has sufficient capacity for an additional 10 million cubic yards of solid waste over current levels (estimated to be 6 million tons, assuming 0.6 tons per cubic yard). If there were no other source of solid waste entering the landfill, Patterson's contribution would take 130 years to bring the facility to capacity. Thus, the EIR found there is ample capacity to accommodate the city's contribution to the landfill under existing plus project conditions. For these reasons and because the General Plan contains policies and implementation measures to ensure impacts to landfill capacity are minimized, the impact was found to be less than significant.

Master Plan Impact

The facilities included in the Wastewater Master Plan would not generate substantial amounts of solid waste, with the exception of solid waste generated at the wastewater treatment plant, the growth of which was specifically considered in the EIR. Therefore, the proposed Wastewater Master Plan would not alter the conclusions of the EIR or result in new or more severe impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-7 Cumulative impacts to solid waste disposal capacity

Applicable General Plan Policies and Implementation Measures

Policies: PS-4.1, PS-4.2, PS-4.3, PS-4.4, PS-4.5, PS-4.6, PS-4.7, PS-4.8, and PS-4.9

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

The EIR disclosed that the landfill serving Patterson received 134,574 tons of waste in 2007 or about 0.2585 tons per year per capita (based on a 2007 county population of 520,506). The Stanislaus Council of Governments projects the total county population in 2030 to be about 791,332, assuming a 2030 population for Patterson of about 39,067, which is less than that accommodated by the General Plan for the year 2030 (about 47,000) and does not include waste generation associated with the West Park project. Assuming the 2007 per capita rate of solid waste generation continues into the future, the total additional solid waste disposed in the landfill between 2007 and 2030 would be about 4 million tons, which is less than the remaining estimated capacity of 6 million tons. However, by applying these same assumptions, the capacity of the landfill would be reached around 2039. Therefore, the EIR found that the General Plan's contribution to landfill capacity impacts associated with solid waste generated in the city would be considered cumulatively considerable and significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not reduce the amount of solid waste delivered to the landfill, nor would it increase the landfill's capacity. However, as noted above, facilities included in the Wastewater Master Plan would not generate substantial amounts of solid waste, with the exception of solid waste generated at the wastewater treatment plant, which was specifically considered in the EIR. Consequently, although this impact would remain significant and unavoidable, the Master Plan would not result in new or more severe impacts than already disclosed in the EIR. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-8 Increased demand for library services

Applicable General Plan Policies and Implementation Measures

Policy: PS-7.8

General Plan EIR Mitigation Measures

No additional mitigation required.

Previously Identified Impacts

The Patterson Library is part of a 13-branch network that serves the people of Stanislaus County, and the branch libraries are augmented by an extensive online library system. The EIR found that future development associated with the General Plan would increase demand for public information, including information available within the library system. However, with the growth in the use and availability of the Internet since the mid-1990s, access to information of all kinds has increased dramatically and Internet access is generally available for a nominal cost. For citizens without Internet access, the library continues to provide such access and to check out books and other documents and to augment information available to residents online. The City will continue to coordinate with the library system to ensure that adequate public meeting space is available, with the City's recently completed community center/senior center providing one such venue. At the same time, with increased population, there will be increased opportunities for volunteerism to assist the library system. For the reasons noted above and with implementation of General

Plan Policy PS-7.8, which is intended to minimize the impact on library services, the EIR found this impact to be less than significant.

Master Plan Impact

The Wastewater Master Plan would accommodate growth in Patterson by providing for necessary facilities, but it would not increase the city's population and thus would not result in an increase in demand for library services. There would therefore be no new or more severe impacts than those disclosed in the EIR. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-9 Increased demand for electricity and natural gas

Applicable General Plan Policies and Implementation Measures

Policies: NR-6.1, NR-6.2, NR-6.3, NR-6.4, NR-6.5, AR-6.1, AR-6.2, AR-7.3, AR-7.5, AR-7.6, AR-7.7, AR-7.8, and CD-1.8
Implementation Measures: NR-8, NR-9, and NR-11

General Plan EIR Mitigation Measures

The EIR recommended an additional policy, as follows:

LU-1.16 Provision of public services. The City shall ensure that adequate public services are available concurrently or in advance of new development consistent with the policies and implementation measures of the General Plan. Such services include, but are not limited to, water supply; wastewater collection, treatment, and disposal capacity; storm drainage and flood control; roadway and intersection capacity; electricity and natural gas; schools; health care; police and fire protection; and solid waste disposal capacity.

Previously Identified Impacts

The EIR determined that buildout of the General Plan could result in an increase in demand for electricity of about 292,264 megawatts over usage in 2010, for a total of about 596,066 megawatts. It should be noted that the EIR assumed that the per capita consumption of electricity in the future would remain at 2009 levels; however, compliance with newer efficiency requirements for electrical appliances and regulations intended to reduce the effects of climate change will likely result in a reduction in the future per capita consumption of electricity. In addition, the Turlock Irrigation District (TID), which supplies electrical energy to Patterson, does not anticipate any generation or capacity shortages in meeting the buildout demand of the General Plan. According to TID, as growth occurs in areas that currently have little to no electrical facilities, TID will upgrade existing lines or build new overhead or underground primary facilities and install service transformers and services. Adding capacity to existing substations will also be required in the form of new transformer banks or replacement of the existing banks with larger units. While TID does not currently have plans to build new transmission lines, it is likely that the increase in load would necessitate upgrading the existing lines serving Patterson, and the EIR assumed these facilities may not be limited to facilities in the General Plan study area. All electrical distribution lines, substations, transmission lines, delivery facilities, and easements required to serve the city would be subject to CEQA review, but it would be speculative at this time to predict the timing, location, and therefore impacts of any such facilities. The future demand for electricity

that exceeds TID's generating capacity will be satisfied by purchasing additional power on the open market.

Natural gas is provided to the city by Pacific Gas and Electric Company (PG&E). Assuming 422 therms per capita per year, the city's current (2010) natural gas consumption is about 8,862,000 therms (422 therms times 21,000 population). Future natural gas consumption associated with General Plan buildout is about 32,014,186 therms. However, improvements to energy efficiency and regulations intended to mitigate the effects of human-induced climate change will likely significantly reduce the per capita demand for natural gas. Nonetheless, PG&E does not anticipate any capacity shortages in meeting the buildout demand associated with the city. Similar to the approach TID takes for providing electricity, as growth occurs in areas that currently have little to no natural gas distribution lines, PG&E will upgrade existing lines or install new lines. All natural gas distribution lines, delivery facilities, and easements required to serve the city would be subject to CEQA review, but it would be speculative at this time to predict the timing, location, and therefore impacts of any such facilities. The future demand for natural gas that exceeds PG&E's supplies will likely be satisfied by purchasing additional natural gas on the open market.

Master Plan Impact

The Wastewater Master Plan would accommodate growth in the city by providing for necessary facilities, but would not increase the city's population and thus would not result in increases in demand for electricity or natural gas beyond that disclosed in the EIR. There would therefore be no new or more severe impacts than those disclosed in the EIR. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-10 Cumulative impacts to utility services

Applicable General Plan Policies and Implementation Measures

Policies: NR-5.1, NR-5.2, NR-5.3, NR-5.4, NR-5.5, AR-6.1, AR-6.2, AR-7.3, AR-7.5, AR-7.6, AR-7.7, AR-7.8, and CD-1.8
Implementation Measures: NR-7, NR-8, and NR-10

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR found that implementation of the General Plan, in addition to future development in the region, would result in cumulative utility service impacts, but neither TID nor PG&E predict any capacity shortages or problems in meeting the buildout demands of the city. While TID does not have plans at the present time to build new transmission lines to Patterson, it is likely that the increase in load would necessitate upgrading the existing lines in the area serving the city. All electrical distribution lines, substations, transmission, delivery facilities, and easements required to serve the city would be subject to CEQA review, but it would be speculative at this time to predict the timing, location, and therefore impacts of any such facilities. Because capacity shortages are not predicted and the General Plan includes policies and implementation measures that would improve the city's efficient use of energy and reduce overall energy demand, the EIR determined the General Plan's contribution to future energy demands would not be considerable.

Master Plan Impact

The Wastewater Master Plan provides for infrastructure and facilities needed to serve the projected population growth in the city over buildout of the General Plan. As noted above, the EIR considered energy demand associated with that growth, including that related to demand from public facilities. Therefore, there would be no new or more severe impacts than those already disclosed in the EIR. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.3-11 Impacts related to the construction of public facilities

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.3, AQ-1.4, AR-5.1, NR-1.3, and HS-2.9
Implementation Measures: AR-1, AR-2, PS-6, and PS-7

General Plan EIR Mitigation Measures

AR-6 The City will require all of the following as a condition of project approval:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, track-out (earth material deposited on City streets by construction equipment) shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day shall prevent carryout and track-out.
- Limit traffic speeds on unpaved roads to 15 mph;

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;
- Install wind breaks at windward side(s) of construction areas;
- Suspend excavation and grading activity when winds exceed 20 mph; and
- Limit area subject to excavation, grading, and other construction activity at any one time. Regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.

HS-10 The City will require the following as a condition of project approval to mitigate the adverse noise effects of construction-related activities:

a. Construction activities shall be restricted to the hours between 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. on Saturday, with no construction on Sundays or federal and state holidays; minor construction equipment servicing and maintenance will be exempted from this restriction.
b. During construction, mufflers shall be provided for all heavy construction equipment and all stationary noise sources in accordance with the manufacturers' recommendations.
c. Stationary noise sources and staging areas shall be located as far as is feasible from existing residences, or contractors shall be required to provide additional noise-reducing engine enclosures (with the goal of achieving approximately 10 dBA of reduction compared to uncontrolled engines).
d. Air compressors and pneumatic equipment should be equipped with mufflers, and impact tools should be equipped with shrouds or shields.
e. If for construction purposes, locating stationary construction equipment near existing residential uses is required, an eight-foot-tall sound rated fence should be erected between the equipment and the sensitive receptor. The fence should be located as close to the equipment as is feasible.
f. Construction vehicle access routes shall be designed to minimize the impact on existing residences and occupied hospital facilities.
g. A "construction liaison" shall be designated to ensure coordination between construction staff and neighbors to minimize disruptions due to construction noise. Occupants and property owners of residences within 400 feet of construction activity shall be notified in writing of the construction schedule and the contact information for the construction liaison.
h. A qualified acoustical engineer should be retained during the construction phase of the project to determine if the noise levels generated from construction equipment at the project site to adjacent property lines are within the standards.

The EIR found that implementation of General Plan policies and implementation measures would address the range of potential environmental impacts associated with the construction and operation of new or expanded facilities. Compliance with the City's Small MS4 General Permit Best Management Practices and Chapter 6.44 of the Patterson Municipal Code (noise ordinance) would also reduce construction-related impacts. The additional measures identified above (AR-6 and HS-10) would further reduce the potential effects of construction of new facilities to serve the expanded population. However, because the ability to mitigate certain potential impacts is contingent on a number of factors, including the severity of the impact, existing land use conditions, and the technical feasibility of the proposed mitigation measures, the potential impacts

of construction of new public facilities and utilities that may be needed to serve the expanded service population were determined to remain significant. Since no additional measures were identified in the EIR to reduce impacts to a less than significant level, this impact was considered significant and unavoidable.

Master Plan Impact

The impact discussion relates directly to the provision of services addressed in the proposed Wastewater Master Plan. Because these effects were already considered in the EIR, no additional effects would occur. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.4 Water Supply Impacts

Impact 5.4-1 Water demand will exceed available supplies.

Applicable General Plan Policies and Implementation Measures

Policies: NR-1.10, PR-1.11, PS-1.1, PS-1.2, PS-1.3, PS-1.4, PS-1.5, PS-1.6, PS-1.7, PS-1.8, PS-1.9, PS-1.10, and PS-1.11
Implementation Measures: NR-2, PS-1, and PS-2

General Plan EIR Mitigation Measures

PS-1.3 Supply for new development (as amended in the Draft EIR). The City shall not approve any new development without the demonstrated assurance of an adequate water supply to support such development and a City-approved funding mechanism to pay for necessary improvements. Such assurance shall be provided in a form and manner determined by the City, and may include, but is not limited to, the following:

- A contract between the property owner(s) and a water purveyor guaranteeing the long-term delivery of a suitable quantity of water to serve the intended use of the property consistent with the General Plan;
- A contract between a water purveyor and the City guaranteeing the long-term delivery of a suitable quantity of water to serve the intended use of the property consistent with the General Plan;
- Such other mechanism suitable to the City.

PS-15 The City will prepare, adopt and implement a program for development of a secure, reliable, affordable long-term secondary water supply. Such a program shall include, but shall not be limited to, the following:

a. The development of multiple sources of water, including, but not limited to:
   i. Recycled water;
   ii. Surface water;
   iii. Conservation;
b. Water conservation measures, including but not limited, the following:
   i. Best Management Practices as recommended by the Department of Water Resources;

ii. Conservation strategies necessary to ensure compliance with the per capita water demand reduction requirements of state law;
iii. The installation of non-potable water supply infrastructure in all new expansion areas;

c. Groundwater management, including:
   i. Participation in regional groundwater management efforts;
   ii. The enhancement of groundwater recharge to increase groundwater supplies, ensure the protection of water quality and reliability, and to minimize impacts to other groundwater users;
d. The conjunctive management of water resources;

NR-2 (As amended in the Draft EIR) Within 24 months of adoption of the General Plan, the City shall prepare and adopt a comprehensive water conservation plan, which includes but is not limited to, the following:

a. Landscape watering timing restrictions;
b. Requirements for water-efficient irrigation equipment for all new private and public development;
c. Enforcement strategies for water waste;
d. Recommendations for water-efficient landscape ordinances;
e. Evaluation of and recommendations for water conservation pricing (such as a tiered rates for water users) to encourage efficient use;
f. Strategies for providing individualized water audits for large accounts to identify conservation opportunities;
g. Requirements for water efficiency training and certification for irrigation designers, installers, and property managers operating within the City.
h. Measures to ensure a reduction in per capita water demand City-wide of 20 percent by the year 2030. Such measures may include, but are not limited to, the following:
   - Water Survey Programs for Single-Family Residential and Multi-family Residential Customers;
   - Residential Plumbing Retrofit;
   - System Water Audits, Leak Detection and Repair;
   - Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections;
   - Large Landscape Water Audits and Incentives;
   - High-efficiency Washing Machine Rebate Programs;
   - Public Information Programs;
   - School Education Programs;
   - Commercial and Industrial Water Conservation;
   - Wholesale Agency Assistance;
   - Conservation Pricing;
   - Conservation Coordinator;
   - Water Waste Prohibition;
   - Residential Ultra Low Flow Toilet Replacement Programs

Water demand associated with the General Plan was estimated in the EIR to be between 24,705 acre-feet per year and 27,311 acre-feet per year, which exceeds the available supplies to the city

(assumed for planning purposes to be about 7,700 acre-feet). Section 5.4, Water Supply, of the Draft EIR and Appendix 5.4 set forth a water supply program to serve the General Plan area. With regard to water supply, the Draft EIR recommends a program comprising the following elements, as articulated in implementation measure PS-15. In addition, the General Plan recommends policies and implementation measures that address (among other things):

- Water conservation (Policies NR-1.10 and PS-1.5)
- The requirements for a demonstrated assurance of water supply for new development (Policy PS-1.3)
- The use of reclaimed water (Policy PS-1.6)

Previously Identified Impacts

The water supply program and the analysis provided in Draft EIR Section 5.4 acknowledged that there are considerable uncertainties associated with the recommended water supply strategy. The primary uncertainty relates to the willingness of the water purveyors currently providing water to properties in the General Plan area to continue to provide water either to the property owners or to the City to serve these properties. Under this program, the responsibility for acquiring the water rights rests with the property owner/proponent of development. Should the water purveyors choose not to sell the water to the property owner or to the City, the development could not go forward unless and until a suitable water supply alternative is provided.

The policies and implementation measures included in the EIR would ensure that new development in the city would not proceed without verification and determination that an adequate water supply exists. However, it is speculative to state that a reliable water supply source would be available to serve buildout of the entire General Plan area, due to the significant obstacles and costs associated with obtaining surface water supplies from the local water purveyors. In addition, the water supply strategy outlined for the General Plan would contribute to significant environmental impacts associated with planned water supply projects and other potential future water supply sources. The EIR disclosed that the water supply program outlined in the EIR would require extensive new and expanded infrastructure to transport water to the city, including canals, pipelines, pump stations, and transmission lines, as well as the construction and operation of a new water treatment plant. Given these conditions, this impact was considered significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not increase the population in the city compared to that analyzed in the EIR and would therefore not increase water demand. The Wastewater Master Plan would not result in increased impacts related to water supply. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.4-2 Construction of water supply infrastructure

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.3, AQ-1.4, AR-5.1, NR-1.3, and HS-2.9
Implementation Measures: AR-1, AR-2, HS-6, PS-6, and PS-7

General Plan EIR Mitigation Measures

PS-14 The City shall require new development to implement relevant portions of the May, 2010 Water Supply Analysis by:

a. Installation of improvements necessary to serve such development, and/or
b. By the payment of in-lieu development impact fees that may be established from time to time by the City to fund water supply improvements required for new development.

AR-6 The City shall require all of the following as a condition of project approval:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, track-out (earth material deposited on City streets by construction equipment) shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day shall prevent carryout and track-out.
- Limit traffic speeds on unpaved roads to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;
- Install wind breaks at windward side(s) of construction areas;
- Suspend excavation and grading activity when winds exceed 20 mph; and
- Limit area subject to excavation, grading, and other construction activity at any one time. Regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.

HS-10 The City shall require the following as a condition of project approval to mitigate the adverse noise effects of construction-related activities:

- Construction activities shall be restricted to the hours between 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. on Saturday, with no construction on Sundays or federal and state holidays; minor construction equipment servicing and maintenance shall be exempted from this restriction.
- During construction, mufflers shall be provided for all heavy construction equipment and all stationary noise sources in accordance with the manufacturers' recommendations.
- Stationary noise sources and staging areas shall be located as far as is feasible from existing residences, or contractors shall be required to provide additional noise-reducing engine enclosures (with the goal of achieving approximately 10 dBA of reduction compared to uncontrolled engines).
- Air compressors and pneumatic equipment should be equipped with mufflers, and impact tools should be equipped with shrouds or shields.
- If for construction purposes, locating stationary construction equipment near existing residential uses is required, an eight-foot-tall sound rated fence should be erected between the equipment and the sensitive receptor. The fence should be located as close to the equipment as is feasible.
- Construction vehicle access routes shall be designed to minimize the impact on existing residences and occupied hospital facilities.
- A "construction liaison" shall be designated to ensure coordination between construction staff and neighbors to minimize disruptions due to construction noise. Occupants and property owners of residences within 400 feet of construction activity shall be notified in writing of the construction schedule and the contact information for the construction liaison.
- A qualified acoustical engineer should be retained during the construction phase of the project to determine if the noise levels generated from construction equipment at the project site to adjacent property lines are within the standards.

Mitigation Provided by Existing Regulations

Chapter 6.44 of the Patterson Municipal Code discourages construction-related noise-generating activities that would result in a disturbance at nearby noise-sensitive land uses between the hours of 8:00 p.m. and 10:00 p.m. and typically prohibits these activities between the hours of 10:00 p.m. and 6:00 a.m..

Continued compliance with relevant provisions of the Clean Water Act regarding the protection of surface water and groundwater quality ensures impacts to water quality associated with development accommodated by any of the Equal-Weight Alternatives will be less than significant. Specifically:

- Compliance with the City's Small MS4 General Permit best management practices (BMPs) before, during, and after construction. Such BMPs include:
  - Good housekeeping activities such as storing of materials covered and elevated off the ground, in a central location.
  - Securely locating portable toilets away from the storm drainage system and performing routine maintenance.

- Providing a central location for concrete washout and performing routine maintenance.
- Providing several dumpsters and trash cans throughout the construction site for Litter/floatable management.
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

- For projects disturbing more than 1 acre of land during construction continuing to file a Notice of Intent (NOI) with the Regional Water Quality Control Board (RWQCB) to be covered under the State National Pollutant Discharge Elimination System (NPDES) General Construction Permit for discharges of stormwater associated with construction activity. Under the provisions of the City's General Permit, a developer must propose control measures that are consistent with the State General Permit. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site.

Previously Identified Impacts

The City does not supply water to areas outside the city limits. Land within the Study Area identified for growth in the General Plan is largely in agricultural use and supplied by the Patterson Irrigation District, the West Stanislaus Irrigation District, and the Del Puerto Water District or from on-site wells. Supplying water to the expansion areas would require the construction of water supply infrastructure that includes water lines, wells, storage tanks, booster pumps, pressure-reducing valves, one or more water treatment plants, and a groundwater recharge basin.

The City implements a variety of General Plan policies and implementation measures to address the range of potential environmental impacts that may be associated with the construction and operation of water supply facilities. Nonetheless, the ability to mitigate certain potential impacts, such as the permanent loss of agricultural land and habitat for sensitive species, is contingent on a number of factors including the severity of the impact, existing land use conditions, and the technical feasibility of the proposed mitigation measures. Because of these contingencies, the potential impacts of construction of new water supply infrastructure were identified as significant. The following are some impacts associated with the provision of water infrastructure, as identified in the EIR:

- **Surface Water Hydrology:** Changes in the magnitude and timing of flows in affected streams.
- **Water Quality:** Changes in stream and reservoir/lake temperature, dissolved oxygen levels, turbidity, total suspended solids, and other water quality parameters of concern during construction and operation of new facilities.
- **Fishery Resources:** Change in the amount and quality of fishery habitat in affected streams, and potential fish entrainment at possible diversion sites.
- **Wetlands and Riparian Habitat:** Changes in the amount or functions and values of various types of wetlands from the construction of new facilities or in riparian areas from changes in the operation of stream flows. Riparian habitat could be affected by hydrology changes or new construction and is especially important habitat for wildlife and botanical species.
- **Botanical Resources:** Disturbance to rare plants and their habitat and other types of vegetation from construction activities or changes in hydrology along streams.
- **Wildlife Resources:** Changes in the amount and quality of affected wildlife habitat near affected streams and where appurtenant facilities would be located.

- **Geology and Soils:** Increase in erosion and sedimentation from construction activities; change in sediment transport in streams; geologic hazards could cause problems for new facilities and their operators if they are not sited carefully.
- **Recreation:** Changes in the quantity or quality of recreation opportunities; some impacts could also occur during construction and operation of new conveyance, treatment, storage, and pumping facilities.
- **Visual Resources:** Changes in stream flows and the addition of new project facilities could affect the visual environment. New pipelines, pumping stations, or transmission lines near or in residential areas or highly visited areas would cause negative impacts.
- **Agriculture:** Some irrigated land or grazing land could be taken out of production where project conveyance facilities need to be located and to accommodate growth. The availability of water supplies for agricultural uses could decrease.
- **Cultural Resources:** Historic, prehistoric, and ethnographic resources could be affected by hydrology changes or the construction and maintenance of new facilities.
- **Compatibility with Existing Land Uses and Consistency with Adopted Plans and Policies:** Some new project facilities may not be compatible with surrounding land uses or may be inconsistent with related federal, state, tribal, and local plans and policies (including those of the US Fish and Wildlife Service and California Department of Fish and Game [now the Department of Fish and Wildlife]).
- **Mineral Resources:** New project facilities could interfere with the extraction of minerals at known or yet-to-be discovered mineral sites.
- **Public Utilities**: The routing and siting of new project facilities could interfere with the operation or maintenance of existing or planned public utilities, including communication and energy infrastructure.
- **Socioeconomic Resources:** Water service customers of the City and others would enjoy the socioeconomic benefits associated with a more reliable water supply and related economic growth. Water rates would likely increase to help pay for new facilities. Facility construction would cause short-term and beneficial employment and income impacts. Energy or mineral impacts would also cause related socioeconomic effects.
- **Air Quality and Noise**: Air emissions and excessive noise from construction equipment and traffic could occur during the construction phase of new projects. New pumping stations would likely cause adverse noise impacts for nearby residents. This could also result in additional greenhouse gas emissions.
- **Transportation:** Local roads would experience traffic increases during construction.
- **Public Health and Safety:** Construction activities could create some short-term safety hazards.
- **Growth Inducing Effects**: New system infrastructure and water supply projects would likely cause growth-inducing impacts.

Since no additional measures were identified in the EIR to reduce impacts to a less than significant level, this impact was considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not result in any increase in population beyond that identified in the General Plan EIR and would not result in the construction of any water supply infrastructure. There would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.4-3 Potential impacts to surrounding wells from increased groundwater pumping

Applicable General Plan Policies and Implementation Measures

Policy: NR-1.8
Implementation Measure: PS-1

General Plan EIR Mitigation Measures

The EIR recommended an additional policy, as follows:

PS-1.12 Effect of City Wells on Surrounding Wells. If, in the unlikely event that an existing user of the confined aquifer finds its well affected by the City's pumping, the City shall compensate that user for the cost of deepening the pump setting and the increased cost of operating the well to draw water from greater depths. New development in the City's sphere of influence shall be required to pay its fair share of such costs.

The EIR recommended implementation measures, as follows:

PS-15 The City shall sample groundwater quality semi-annually to assess water quality and shall conduct additional studies to better understand the direction and rate of groundwater flow in the confined aquifer. These investigations will allow the City to optimize the arrangement of new water supply wells to maximize water quality and minimize the severity of the resulting cone of depression and associated impacts. To the extent feasible, new wells shall be located at greater spacings to reduce the cone of depression and maximize their distance from nearby users. This would reduce the risk and/or severity of the potential impacts from subsidence discussed above.

PS-16 The City shall implement a subsidence monitoring program. Subsidence shall be monitored annually at each well and new wells shall be designed to prevent damage to the wells from subsidence as described in the groundwater study.

Previously Identified Impacts

The EIR found that use of the upper aquifer could interfere with the existing wells used by individual groundwater users in areas near the city, but the likelihood of interfering with other groundwater uses would be reduced substantially by several factors. Local agricultural and domestic groundwater users rely on the shallow, unconfined aquifer, which reduces their well installation and operation costs. The City of Patterson prohibits the use of private wells for domestic or irrigation use. Thus, privately owned well locations are outside of the city limits. When sites are annexed into the city, they would be required to connect to the City water system, and

the private wells would be abandoned. Therefore, the EIR found that if the City were to use water from the upper aquifer, it is not anticipated to have a measurable impact on private use of that aquifer. It is not known, however, if existing wells would be affected by new City wells pumping from both the unconfined (upper) and the confined (lower) aquifer. Therefore, the EIR found impacts to other wells significant.

Master Plan Impact

The proposed Wastewater Master Plan would not increase the population in the city compared to that analyzed in the EIR and would therefore not increase water demand or require additional groundwater pumping. There would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.4-4 Disposal of brine from water treatment

Applicable General Plan Policies and Implementation Measures

Policies: PS-4.5 and PS-9.4
Implementation Measure: PS-10

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that treatment of groundwater or surface water would require one of four water treatment technology options: reverse osmosis, membrane treatment, ion exchange, and lime softening. Any of the treatment technologies would produce concentrated brine, which could be as high as 1.5 million gallons per day (1,680 acre-feet) per year of brine. The brine produced by water treatment would require disposal.

Brine processing can be accomplished through drying beds, mechanical dewatering, and/or blending with other wastewaters. Use of evaporative drying beds and lagoons alone would require many acres of land (350 to 400 acres). In lieu of an ocean discharge, membrane reject is often treated to reduce the volume of brine residuals, or in combination with other processing solutions to minimize land use and operating expenses and to meet discharge requirements.

Evaporation would require the City to purchase new property and construct evaporation ponds with impervious linings to prevent percolation of the brine into the shallow aquifer. After evaporation, salts would need to be collected and transported to an appropriate solid-waste disposal facility. If evaporated, the 1,680 acre-feet annually of brine would produce approximately 31 tons of salts per year that would require proper disposal. As discussed under Impact 5.3-6 of Section 5.3, Public Services and Utilities, the additional 31 tons per year will contribute to a cumulatively considerable adverse impact on the capacity of the landfill.

A common process is to concentrate the brine through use of additional mechanical and nonmechanical processes. Based on experience of other similar projects, a cost-effective membrane residuals treatment process could consist of mechanical processes, including (additional) high-pressure reverse osmosis or electrodialysis reversal, followed by mechanical

vapor recompression evaporators or crystallizers. Nonmechanical processes may include solar- or wind-induced evaporation and chemical precipitation. The end process would include a highly concentrated brine solution with lined-pond evaporation. The dried solids would be hauled off every 10–20 years to a municipal landfill. There are two possible disposal sites: the Fink Road Landfill and the Kettleman Hills Landfill. If the waste salts were considered hazardous and could not be disposed of at the Fink Road Landfill, they would need to be trucked to Kettleman City, the location of the nearest landfill that accepts hazardous waste. Thus, disposal of the dried salts would not be a significant impact. While the additional vehicle miles traveled (approximately 260 miles per trip) would incrementally increase air emissions in the San Joaquin Valley Air Pollution Control District, the increase would not substantially change the already significant impact (see Impacts 5.7-3 and 5.7-8).

Lagoon space at the City's wastewater treatment plant has also been proposed to be used for membrane concentrate processing (around 20–40 acres). The City was also in discussions with the RWQCB regarding brine disposal and salt management solutions, including brine reject from proposed groundwater treatment processes. Emerging technologies may also offer solutions to brine handling. Under any of the disposal methods, the brine would need to be piped from the treatment facility to the disposal site. Laying of that pipeline and the pipeline from wellheads to the treatment facility would entail physical impacts that would be evaluated in project-specific environmental review after the treatment disposal systems have been designed, though it is anticipated that the pipelines would be installed in existing rights-of-way and impacts would be similar to other pipeline construction, including temporary noise increases and air quality emissions.

Master Plan Impact

The proposed Wastewater Master Plan would not increase the population in the city compared to that analyzed in the EIR and would therefore not increase water demand or require additional water treatment or the disposal of brine associated with water treatment. The Master Plan would not increase the amount of brine generated in the city. Therefore, there would be no new or more severe impacts than those already disclosed in the EIR. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.4-5 Impacts to agricultural water supply

Applicable General Plan Policies and Implementation Measures

The policies and implementation measures recommended in the discussion of Impact 5.4-1 would help reduce cumulative impacts relating to water supply by developing multiple sources of water; water conservation; and encouraging the conjunctive use of groundwater, surface water, and non-potable water supplies in a manner that enhances groundwater recharge.

General Plan EIR Mitigation Measures

No feasible mitigation available.

Previously Identified Impacts

The EIR determined that although the Water Supply Program recommended for the Patterson General Plan will result in a reduction of water use by properties currently served by irrigation

water, the net result will be a net decrease in the amount of irrigation water available for agricultural uses delivered by the Central Valley Project via the Patterson Irrigation District, the West Stanislaus Irrigation District, and the Del Puerto Water District. This impact was considered significant and unavoidable

Master Plan Impact

The proposed Wastewater Master Plan would not increase water demand compared to that analyzed in the EIR and would therefore not decrease the availability of water for agricultural use beyond that already identified in the General Plan EIR. The Wastewater Master Plan would not result in additional impacts on agricultural water supply. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.4-6 Impacts to cumulative water supply

Applicable General Plan Policies and Implementation Measures

The policies and implementation measures recommended in the discussion of Impact 5.4-1 will help minimize cumulative impacts to water supply by developing multiple sources of water; water conservation; and encouraging the conjunctive use of groundwater, surface water, and non-potable water supplies in a manner that enhances groundwater recharge.

General Plan EIR Mitigation Measures

No feasible mitigation available.

Previously Identified Impacts

The EIR found that the City of Patterson has historically satisfied all of its demand for water from the underlying groundwater basin. The EIR reported that the City operates nine wells with a total capacity of 9,600 gallons per minute, with a projected production of about 7,500 acre-feet per year. In 2010, the wells produced a combined 5,000 acre-feet. However, the local groundwater basin has production limitations, and for purposes of water supply planning, it was estimated that an average of 8,300 acre-feet per year of groundwater is available for City use, which (according to the City's 2006 Urban Water Management Plan) is sufficient to serve a population of about 35,000. Accordingly, the EIR found that water demand associated with a population greater than 35,000 will require a secondary source of water.

Policies and implementation measures recommended in the discussion of Impact 5.4-1 set forth a program for ensuring a reliable secondary source of water is available to serve development beyond 35,000 residents. Although the Water Supply Program recommended for the Patterson General Plan will result in a reduction of water use by properties currently served by irrigation water, the net result will be a permanent loss of irrigation water available for agricultural use. This impact is considered cumulatively considerable and significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not increase water demand compared to that analyzed in the EIR and would therefore not increase the cumulative demand beyond that

identified in the General Plan EIR. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.5 Wastewater Impacts

Impact 5.5-1 Projected wastewater flows will exceed treatment plant design capacity.

Applicable General Plan Policies and Implementation Measures

Policies: PS-2.1, PS-2.2, PS-2.3, PS-2.4, PS-2.4, PS-2.5, and PS-2.7
Implementation Measures: PS-4, PS-9, and PS-11

General Plan EIR Mitigation Measures

The following additional implementation measure was recommended:

PS-14 The City shall implement the improvements recommended by the 2010 Wastewater Master Plan as determined by the City Council.

Previously Identified Impacts

This was considered a potentially significant impact prior to implementation of mitigation.

In 2010, the wastewater treatment plant had a rated capacity of 2.25 million gallons per day (mgd) and a permitted capacity of 3.5 mgd. Planned improvements will increase the rated capacity to approximately 3.5 mgd. The EIR identified that buildout of the General Plan would result in average annual wastewater flows of between 6.4 and 7.0 mgd and peak flows of between 16.6 and 17.9 mgd. According to the EIR, buildout of the General Plan will generate wastewater flows that will exceed the rated capacity of the wastewater treatment plant by approximately 4.1–4.75 mgd. The 2010 Wastewater Master Plan included in Appendix 5.5 of the EIR recommended improvements to the wastewater treatment plant to accommodate projected flows. The improvements recommended included (among others):

- Expansion of capacity of the influent pump station;
- The construction of emergency/equalization basins;
- Improvements to the south activated sludge treatment systems;
- Construction of primary sedimentation tanks;
- Construction of vortex grit removal tanks;
- The addition of a mixed liquor channel;
- The construction of secondary clarifiers;
- The addition of filters and ultraviolet disinfection systems to meet Title 22 water reclamation requirements;
- Construction of a sludge storage area;
- The addition of anaerobic digesters; and
- The construction of an administration building.

The policies and implementation programs listed above would help minimize impacts relating to wastewater collection, treatment, and disposal. Therefore, this impact was considered less than significant.

Master Plan Impact

The proposed Wastewater Master Plan is consistent with implementation measure PS-14, which requires the City to implement the improvements recommended in the 2010 Wastewater Master Plan. The 2010 Wastewater Master Plan estimated the city's average wastewater flow at approximately 1.5 mgd and projected it to increase to 3.09 mgd in 2030. Based on these projections, the 2010 Wastewater Master Plan identified necessary improvements to accommodate anticipated growth. These improvements included various improvements to expand the capacity of the City's Water Quality Control Facility (WQCF), a new trunk sewer planned for development north and west of the central area of the city, and another new trunk sewer for the area south and west.

The proposed Master Plan defines and prioritizes the capital improvement projects that are anticipated to be constructed over a 10-year period. The Master Plan estimates the city's 2015 average wastewater flow at 1.39 mgd and projects this amount to increase to 1.72 mgd over the next 10 years. Based on this projection, the capacity of the WQCF would be exceeded in approximately 6 years. The Master Plan discusses three alternatives to address this deficiency: (1) expansion of the WQCF and addition of tertiary treatment; (2) discharge primary treated effluent to the City of Modesto Jennings Road Wastewater Treatment Plant for tertiary treatment; and (3) localized tertiary treatment and addition of tertiary treatment at the WQCF. Alternative 1, expanding the existing WQCF and adding tertiary treatment, is the City's preferred alternative.

The Master Plan would not increase the population in the city compared to that analyzed in the EIR and thus would not increase effluent flows entering the WQCF beyond those considered in the General Plan EIR. The proposed Wastewater Master Plan would accommodate flows anticipated in the General Plan EIR and would be consistent with the EIR in that improvements to the WQCF were assumed to accommodate future growth. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.5-2 Construction of wastewater collection and disposal infrastructure

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.3, AQ-1.4, AR-5.1, NR-1.3, and HS-2.9
Implementation Measures: AR-1, AR-2, PS-6, and PS-7

General Plan EIR Mitigation Measures

The EIR recommended the following:

PS-14 The City shall implement the improvements recommended by the 2010 Wastewater Master Plan as determined by the City Council.

In addition, the EIR recommended additional mitigation measures AR-6 and HS-10 as described in Impact 5.3-11.

Previously Identified Impacts

The General Plan designated additional land for urban development in areas not served by wastewater collection systems. Moreover, the EIR identified that the existing trunk sewer system does not have capacity sufficient to accommodate the additional flows associated with the buildout of the General Plan. To assess the potential impacts to the wastewater collection, treatment, and disposal systems, a Wastewater Master Plan was prepared as part of the General Plan EIR. Construction of the relevant trunk systems was determined to provide sufficient capacity to convey the anticipated wastewater flows.

City policies and implementation measures were determined to address a range of potential environmental impacts associated with the construction and operation of wastewater facilities. Nonetheless, the ability to mitigate certain potential impacts, such as the permanent loss of agricultural land and habitat for sensitive species, would be contingent on a number of factors including the severity of the impact, existing land use conditions, and the technical feasibility of the proposed mitigation measures. Because of these contingencies, the potential impacts of construction of new wastewater infrastructure were identified to remain significant. Since no additional measures were available to reduce impacts to a less than significant level, this impact was considered significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan includes a review of the wastewater flow that would be generated by buildout of the General Plan. Based on the wastewater flow rates, the Master Plan provides for the necessary infrastructure to meet those needs. The Master Plan is generally consistent with the 2010 Wastewater Master Plan and would not result in any population increase beyond that identified in the General Plan EIR. As discussed above, the EIR considers impacts of the provision of the wastewater-related infrastructure. Construction of wastewater conveyance infrastructure and treatment would be subject to project-specific environmental review as individual components of the plan are proposed and, while the City would continue to implement applicable General Plan policies and implementation measures to reduce physical effects of that construction, localized, site-specific impacts would still occur. However, the Master Plan does not change the development assumptions from those assumed in the EIR, so there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.5-3 Treatment plant expansion will require revisions to the City's discharge permit from the Regional Water Quality Control Board.

Applicable General Plan Policies and Implementation Measures

Policies: PS-2.3 and PS-2.7

General Plan EIR Mitigation Measures

The EIR recommended the following additional mitigation as an implementation measure:

PS-15 The City will apply to the Regional Water Quality Control Board to modify or re-issue the City's National Pollution Discharge Elimination Permit for the wastewater treatment

plant as necessary to accommodate the increase in disposal capacity necessary to serve buildout of the General Plan.

Previously Identified Impacts

Under the NPDES program, local governments and development projects are required to adopt and implement best management practices (BMPs) to reduce water pollution. The Central Valley Regional Water Quality Control Board issues NPDES permits for the City's wastewater treatment plant, establishing allowable effluent discharge levels. The current NPDES permit limits the treatment plant capacity to an annual average daily flow of 3.5 mgd. NPDES permits typically expire 5 years after issuance and must be reissued every 5 years or less. During the re-issuance process, the discharger must comply with all conditions of the existing permit until a new final permit is reissued.

Issuance of a revised NPDES permit is necessary to increase the permitted treatment capacity of the treatment plant. Because issuance of the amended permit falls under the jurisdiction of another agency (the RWQCB), the City cannot guarantee the increased permitted capacity. Therefore, the need for additional permitted capacity was considered a significant and unavoidable impact.

Master Plan Impact

The Wastewater Master Plan is consistent with General Plan Policies PS-2.3 and PS-2.7 in that it would plan to expand the treatment and disposal capacity to accommodate existing and planned development and meet the RWQCB's discharge standards. Implementation measure PS-15 requires the City to apply for re-issuance of the NPDES permit as necessary to accommodate expansion. The Master Plan would provide supportive planning documentation for this process and would not change the permit process assumed in the EIR. Therefore, there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.5-4 Cumulative impacts

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.3, AQ-1.4, AR-5.1, NR-1.3, HS-2.9, PS-2.1, PS-2.2, PS-2.3, PS-2.4, PS-2.4, PS-2.5, and PS-2.7
Implementation Measures: AR-1, AR-2, PS-4, PS-6, PS-7, PS-9, and PS-11

General Plan EIR Mitigation Measures

Additional implementation measures: PS-14, PS-15, AR-6, and HS-10 as listed above

Previously Identified Impacts

The EIR identified that buildout of the General Plan will result in the demand for wastewater collection, treatment, and disposal capacity. Buildout of the General Plan will result in an estimated total cumulative flow of about 7.0 mgd. The General Plan includes policies and implementation measures to ensure adequate collection, treatment plant, and disposal capacity is available to serve new development. Therefore, these impacts were considered less than cumulatively considerable.

The cumulative impacts associated with the permanent loss of habitat for sensitive biological resources associated with the construction of disposal ponds were discussed under Impacts 5.10-1 and 5.10-20 in Section 5.10, Biological Resources. Project and cumulative impacts associated with the permanent loss of prime agricultural land associated with the construction of disposal ponds were discussed under Impacts 5.11-2 and 5.11-5 in Section 5.11, Agricultural Resources.

Master Plan Impact

The Wastewater Master Plan does not change the development assumptions from those assumed in the EIR, and the Master Plan itself is the implementation of the policies intended to ensure that adequate collection, treatment plant, and disposal capacity is available to serve new development. Therefore, there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan; no additional analysis or mitigation measures are required.

5.6 Transportation and Circulation Impacts

Impact 5.6-3 Project impacts to streets and intersections serving the project

Applicable General Plan Policies and Implementation Measures

Implementation Measures: T-19, T-20, T-21, and T-22

General Plan EIR Mitigation Measures

The EIR recommended the following additional implementation measures:

5.6-1 Intersection No. 1 – Sperry Ave/I-5 SB Off-Ramps. Signalize intersection. Southbound: add left turn lane. Westbound: add two left turn lanes.

Funding: Not completely funded in 2010. Partial funding in 2007 Regional Transportation Plan Tier I; partially funded by City traffic impact fees.

5.6-2 Intersection No. 2 – Sperry Ave/I-5 NB On-Ramps. Signalize intersection. Eastbound: add left turn and through lane. Westbound: add a right turn lane. Northbound: add right turn lane.

Funding: Not completely funded in 2010. Partial funding in 2007 Regional Transportation Plan Tier I; partially funded by City traffic impact fees.

5.6-3 Intersection No. 7 – Sperry Ave/Las Palmas Ave. Signalize intersection.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-4 Intersection No. 8 – Sperry Ave/Ward Ave. Eastbound: add one left turn lane. Northbound: add a left turn lane. Southbound: add a right turn lane.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-5 Intersection No. 9 – Sperry Avenue/S. Del Puerto Avenue. Add eastbound and westbound left turn lanes.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-6 Intersection No. 10 – Sperry Ave/SR 33. Signalize intersection. Eastbound: add left turn and right turn lanes. Westbound: add a left turn lane. Northbound: add two left turn lanes. Southbound: add a left turn lane; restripe the shared through and left turn lane as a shared through and right turn lane.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-7 Intersection No. 13 – Ward Ave/SR 33. Signalize intersection. Add a northbound left turn lane. Add one through lane to the northbound and southbound.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-8 Intersection No. 14 – Zacharias Rd/SR 33. It is assumed that this intersection will be realigned as a part of the proposed South County Corridor project. Signalize intersection. Northbound: add two left turn lanes. Eastbound: add a left turn lane.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-9 Intersection No. 15 – Baldwin Rd/SR 33. Signalize intersection and add left-turn lane in the northbound. And add a southbound right-turn lane.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-10 Intersection No. 16 – Rogers Rd/SR 33. Signalize intersection. Add eastbound and northbound left turn lanes. Southbound: add a right turn lane.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-11 Intersection No. 17 – SR 33/Eucalyptus Ave. Southbound: add a left turn and through lane. Northbound: add a through lane

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-12 Intersection No. 19 – Walnut Ave/M Street/SR 33. Signalize intersection. Eastbound, Westbound: add a left turn lane and restripe shared through and left turn lane as a shared through and right turn lane.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-13 Intersection No. 20 – E. Las Palmas Ave/Sycamore Ave. Signalize intersection. Add left turn lane to southbound and northbound approaches.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

5.6-15 Intersection No. 11 – East Las Palmas Ave/SR 33. Add additional westbound left turn lane.

Funding: Not completely funded in 2010. Included in City traffic impact fees.

T-18 The City shall continue to monitor traffic levels on roadways and intersections serving the City and to require the installation of roadway and intersection improvements necessary to maintain the desired level of service.

T-19 The City shall refine the analysis of future traffic conditions during the 2030 to 2050 timeframes as the traffic model used by the Stanislaus Council of Governments is updated to include the 2050 time frame.

T-20 Based on traffic monitoring, consider implementing the following roadway improvements as needed to maintain an acceptable level of service on street segments and intersections:

a. Widening Rogers Road north of Sperry Avenue to four lanes.
b. Widen Zacharias Road and Eucalyptus Avenue to four lanes, or complete the South County Corridor.
c. Widen the West Main Street bridge over the San Joaquin River to six lanes or provide a separate bridge/roadway.
d. Signalize the intersection of State Route 33 and Baldwin Road.
e. Signalize the intersection of State Route 33 and Olive Avenue.
f. Widen State Route 33 to four lanes from Sperry Avenue to Rogers Road.

Previously Identified Impacts

The General Plan would accommodate approximately 16,000 additional dwelling units and about 25 million square feet of nonresidential floor space. Morning and afternoon peak-hour vehicle trip generation associated with buildout of the General Plan would range between 38,897 (during AM peak period) and 68,660 (during PM peak period) trips.

The EIR found that implementation of the roadway and intersection improvements recommended by the General Plan and Draft EIR would reduce potential impacts to intersections and roadways serving the General Plan area through buildout. Although the City has adopted a development impact fee ordinance and has included the partial cost of these improvements in currently collected fees on new development, none of these improvements were fully funded in 2010 and future funding cannot be guaranteed.

Although the measures described above, in conjunction with the policies and implementation measures recommended by the General Plan and EIR, help to mitigate potential traffic impacts associated with buildout of the General Plan, the precise nature of the growth in background traffic associated with development in the region through buildout is unknown. In addition, roadway and intersection improvements to roadways outside the City's jurisdiction may be required and cannot be guaranteed. For these reasons, project-level traffic impacts associated with the General Plan were considered significant and unavoidable.

Master Plan Impact

The proposed Master Plan would not change the development assumptions from those assumed in the EIR and would therefore not increase traffic volumes or adversely impact any streets or intersections in the city. There would be no new or additional impacts. This is an impact for which

the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.6-7 Increased truck traffic

Applicable General Plan Policies and Implementation Measures

Policies: T-1.6, T-1.7, T-1.9, T-1.10, T-1.13, T-1.14, HS-5.5, HS-5.6, HS-5.7, and HS-5.8
Implementation Measures: T-2, T-3, T-4, T-11, T-12, T-13, T-14, T-19, T-20, T-21, T-22, HS-5, HS-6, HS-7, and HS-8

General Plan EIR Mitigation Measures

Implement the truck route plan as provided in the EIR and the development impact fee program as required in Impact 5.6-3.

Previously Identified Impacts

According to the EIR, development of properties designated for additional commercial and industrial uses would generate approximately 68,600 truck trips, or 6,866 truck trips during the PM peak period. Businesses such as distribution centers, similar to those previously established in the West Patterson Business Park, would likely generate a significant number of additional truck trips between the business location and roadways that connect Patterson with the region. These roadways include Interstate 5, Sperry Avenue, E. Las Palmas Avenue, and State Route 33. In addition, increased truck traffic could adversely increase the effects on existing neighborhoods. Although the City has adopted a development impact fee ordinance, none of the improvements were fully funded and future funding cannot be guaranteed. In addition, several of the intersections and roadways on the list of improvements fall under the jurisdiction of other agencies, such as the State of California or Stanislaus County. Improvements to these roadways would require approvals and/or funding which cannot be guaranteed by the City. Therefore, truck traffic impacts were considered significant and unavoidable.

Master Plan Impact

The proposed Master Plan would not change the development assumptions from those assumed in the EIR and would therefore not increase truck traffic in the city. There would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impacts 5.6-8 Project impacts to roadways of other jurisdictions

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

As identified in the EIR, buildout of the General Plan will adversely impact roadways under the jurisdiction of other agencies, including Stanislaus County. Roadways surrounding the city (other than state highways) are improved and maintained by Stanislaus County. Traffic generated by the General Plan will result in roadways and intersections surrounding the city in the unincorporated county to operate at level of service (LOS) C or below, in the absence of mitigation.

Since Stanislaus County has decision-making authority on implementing improvements to county roadways, the City of Patterson cannot guarantee implementation and/or the timing of the mitigation measures for roadways outside the city. Therefore, project-level impacts to county roadways were considered significant and unavoidable.

Master Plan Impact

The proposed Master Plan would not change the development assumptions from those assumed in the EIR and would therefore not increase traffic volumes or otherwise adversely impact roadways of other jurisdictions. There would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impacts 5.6-9 Project traffic impacts on freeway operations

Applicable General Plan Policies and Implementation Measures

Policies: T-1.10, T-1.13, T-2.1, T-2.2, T-2.3, T-3.1, T-3.2, T-3.3, T-5.1, T-.5.2, AQ-1.11, AQ-1.12, AR-2.1, AR-2.2, AR-2.3, AR-2.4, AR-2.5, AR-3.1, AR-3.2, AR-3.3, AR-3.4, and NR-3.3
Implementation Measures: T-3, T-4, T-5, T-6, T-7, T-11, T-12, T-13, T-14, T-19, T-20, T-21, and T-22

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

According to the EIR, traffic generated by buildout of the General Plan will adversely impact Interstate 5 (I-5). The mitigation recommended by the traffic study prepared for the General Plan EIR was to add an additional lane in each direction on I-5 from north of Zacharias Avenue to south of Fink Road. However, since the California Department of Transportation (Caltrans) has decision-making authority over improvements to the freeway segments, the City of Patterson cannot guarantee implementation and/or the timing of this mitigation measure. Therefore, the project-level impact was considered to be significant and unavoidable.

Master Plan Impact

The proposed Master Plan would not change the development assumptions from those assumed in the EIR and would therefore not increase traffic volumes or otherwise adversely impact freeway operations. There would be no new or additional impacts. This is an impact for which the General

Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.6-10 Impacts to transit facilities

Applicable General Plan Policies and Implementation Measures

Policies: T-2.1, T-2.2, T-2.3, AQ-1.11, AQ-1.12, AR-3.2, AR-3.3, and LU-1.1
Implementation Measures: T-13 and T-14

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that buildout of the General Plan will significantly increase the population and number of jobs, which will result in increased demand for transit services in the city. Policies in the General Plan facilitate the expanded use of alternate forms of transportation, including public transit. Moreover, the development strategy envisioned in the Land Use Element emphasizes the creation of "complete" neighborhoods in which the day-to-day needs of residents can be provided within a short walk or bike ride. The General Plan designated additional land for employment opportunities in Patterson as a means of improving the ratio of jobs to housing, with a goal to reduce area-wide home-to-work motor vehicle trips and facilitate the use of transit for these trips. The EIR found that with implementation of General Plan policies and implementation measures, the impacts to transit could be reduced to less than significant. However, because improvements to transit facilities are dependent on funding and approvals from other jurisdictions, the City of Patterson cannot control their implementation or timing. Therefore, these impacts were considered significant and unavoidable.

Master Plan Impact

The proposed Master Plan would not increase the population in the city compared to that analyzed in the EIR and would therefore not increase demand for transit services. There would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.6-11 Project impacts to pedestrian facilities

Applicable General Plan Policies and Implementation Measures

Policies: T-1.4, T-1.14, T-7.1, T-7.2, T-7.5, T-7.10, LU-1.1, AQ-1.12, and AR-3.2
Implementation Measures: T-3, T-4, T-10, T-15, and T-16

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

As identified in the EIR, the General Plan would accommodate a significant increase in population, employment, and retail development, which will result in an overall increase in the generation of pedestrian trips in the city. Although a precise measure of current levels of pedestrian activity is not available, pedestrian trips may be expected to grow proportionally with population and employment. The construction of additional pedestrian facilities was identified to potentially result in adverse physical impacts. In addition, new or expanded pedestrian facilities may require construction in roadways outside the City's jurisdiction.

Land Use Element policies encourage the development of "complete" neighborhoods in which more of the day-to-day needs of residents are provided within a short walk or bicycle ride. Thus, an increase in pedestrian traffic is an expected and encouraged outcome of the General Plan. In addition, the General Plan designates land for additional employment-generating land uses, which in turn is expected to help reduce motor vehicle use for home-work trips. In addition, the City's development regulations provided in Municipal Code Chapter 15.26 require the installation of curbs, gutters, and sidewalks in new development. Together the recommended policies, implementation measures, and provisions of the Patterson Municipal Code would reduce potential impacts to pedestrian systems. However, new or expanded pedestrian facilities may require construction in roadways outside the City's jurisdiction. Because some pedestrian improvements necessary to serve the General Plan are dependent on the funding and approvals from other jurisdictions, the City of Patterson cannot control their implementation or timing. Therefore, the project-level impacts were considered significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not increase the population in the city compared to that analyzed in the EIR and would therefore not increase pedestrian trips or require the construction of new or expanded pedestrian facilities. No additional facilities beyond those anticipated in the General Plan EIR would occur. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plans; no additional analysis or mitigation measures are required.

Impacts 5.6-12 Project impacts to bicycle facilities

Applicable General Plan Policies and Implementation Measures

Policies: T-1.4, T-1.10, T-5.1, T-5.2, T-7.1, T-7.3, T-7.4, T-.5, T-7.6, T-7.7, T-7.8, T-7.9, T-7.10, and LU-1.1
Implementation Measures: T-3, T-4, T-8, T-9, T-13, and T-14

General Plan EIR Mitigation Measures

Adopt the recommended bicycle circulation plan as provided in the EIR.

Previously Identified Impacts

The General Plan will accommodate a significant increase in population, employment, and retail development over current levels. As with transit and pedestrian systems, bicycle ridership is expected to increase proportionately to population, employment, and shopping. The construction of additional bicycle facilities has the potential to result in adverse physical impacts. In addition,

new or expanded bicycle facilities may require construction in roadways outside the City's jurisdiction.

Land Use Element policies encourage the development of "complete" neighborhoods in which more of the day-to-day needs of residents are provided within a short walk or bicycle ride. Thus, an increase in bicycle traffic is an expected and encouraged outcome of the General Plan. In addition, the General Plan designates land for additional employment-generating land uses, which in turn is expected to help reduce motor vehicle use for home-work trips and facilitate the use of alternate modes of travel such as bicycles. Implementation of policies and implementation measures and compliance with provisions of the Patterson Municipal Code would reduce potential impacts to bicycle systems. However, new or expanded bicycle facilities may require construction in roadways outside the City's jurisdiction. In addition, because some bicycle improvements necessary to serve the General Plan are dependent on funding and approvals from other jurisdictions, the City of Patterson cannot control their implementation or timing. For these reasons, project-level impacts to bicycle facilities were considered significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not increase the population in the city compared to that analyzed in the EIR and would therefore not increase bicycle trips or require the construction of new or expanded bicycle facilities. Therefore, there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.6-13 Increased demand for parking facilities

Applicable General Plan Policies and Implementation Measures

Policies: T-6.1, T-6.2, T-6.3, T-6.4, T-6.5, T-6.6, T-7.1, T-7.2, T-7.3, T-7.4, T-7.5, T-7.6, T-7.7, T-7.8, T-7.9, and T-7.10
Implementation Measures: T-3 and T-15

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

As identified in the EIR, the General Plan would accommodate a significant increase in population, employment, and retail development. This increase is expected to result in a corresponding increase in the demand for on-street and off-street parking in the city. Chapter 18.72 of the Patterson Municipal Code (Title 18, Zoning) sets forth the City's parking standards for new development. All new development is required to comply with the off-street parking and loading requirements with respect to the number, location, and size of required spaces, including spaces for the handicapped. Continued compliance with these regulations would reduce potential impacts to parking to less than significant. The policies and implementation measures in the General Plan ensure adequate parking is provided to serve new development.

Master Plan Impact

To the extent that facilities identified in the Wastewater Master Plan are constructed, these facilities would be required to comply with parking requirements set forth in Chapter 18.72 of the Patterson Municipal Code. Because the Master Plan does not change the development assumptions from those assumed in the EIR and would be required to provide parking per the Municipal Code, there would be no new or additional impacts. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.6-14 Potential increase in traffic hazards

Applicable General Plan Policies and Implementation Measures

Policies: T-1.1, T-1.2, T-1.5, T-1.6, T-1.7, T-1.9, T-1.10, T-1.12, T-1.13, T-1.14, T-5.1, T-5.2, T-7.1, T-7.3, T-7.4, T-7.7, T-7.8, T-7.9, and T-7.10
Implementation Measures: T-3, T-4, T-8, T-9, T-13, T-14, T-19, T-20, T-21, and T-22

General Plan EIR Mitigation Measures

Additional recommended implementation measures: 5.6-1, 5.6-2, 5.6-3, 5.6-4, 5.6-5, 5.6-6, 5.6-7, 5.6-8, 5.6-9, 5.6-10, 5.6-11, 5.6-12, 5.6-13, 5.6-15, T-19, T-20, T-21, and T-22 as noted above under Impact 5.6-3

Previously Identified Impacts

According to the EIR, development accommodated by the General Plan will significantly increase the volume of traffic on city streets and intersections. As a result, the number and frequency of traffic related accidents and the overall hazards associated with motor vehicle and bicycle traffic could increase.

Recommended roadway and intersection improvements (as described under Impacts 5.6-3 and 5.6-16) would ensure that roadways and intersections operate at safe and efficient levels of service. However, none of these improvements have been fully funded and future funding cannot be guaranteed. In addition, several of the intersections and roadways on the list of improvements fall under the jurisdiction of other agencies, such as the State or the County. Improvements to these roadways would require approvals and/or funding that cannot be guaranteed by the City. Therefore, the impacts are considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not result in increased traffic hazards. Any roadway improvements would be subject to review by the City to ensure the improvements would not result in a hazardous condition. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.6-15 Impacts related to the construction of roadway and intersection improvements

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.3, AQ-1.14, AR-5.1, NR-1.3, and HS-2.9
Implementation Measures: AR-1, AR-2, HS-6, PS-6, and PS-7

General Plan EIR Mitigation Measures

AR-6 and HS-10 as described under Impact 5.5-2

Previously Identified Impacts

The EIR identified that roadway and intersection improvements would be necessary to achieve and maintain an acceptable level of service on roadways and intersections serving the General Plan area, which is largely in agricultural use. Roadway improvements to serve expansion areas will require the construction of new or expanded roadways, intersections, and bridges and would be subject to project-specific environmental review.

The recommended policies and implementation measures identified above will help reduce impacts related to the construction of roadway infrastructure.

City policies and implementation measures address the range of potential environmental impacts that may be associated with the construction and operation of roadways. Nonetheless, the ability to mitigate certain potential impacts, such as the permanent loss of agricultural land and habitat for sensitive species, is contingent on a number of factors including the severity of the impact, existing land use conditions, and the technical feasibility of the proposed mitigation measures. Because of these contingencies, the potential impacts of construction of new road improvements were identified to remain significant. Since no additional measures were available to reduce impacts to a less than significant level, this impact was considered significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not involve any roadway or intersection improvements. Because the Master Plan addresses the same population and distribution of uses as was assumed in the General Plan EIR, impacts associated with the Master Plan would be the same as those identified in the EIR. No additional facilities beyond those anticipated in the General Plan EIR would occur; therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.6-16 Cumulative impacts to streets and intersections serving the project

Applicable General Plan Policies and Implementation Measures

Implementation Measures: T-19, T-20, T-21, and T-22

General Plan EIR Mitigation Measures

Additional recommended implementation measures: 5.6-1, 5.6-2, 5.6-3, 5.6-4, 5.6-5, 5.6-6, 5.6-7, 5.6-8, 5.6-9, 5.6-10, 5.6-11, 5.6-12, 5.6-13, 5.6-15, T-18, T-19, and T-20 as noted above under Impact 5.6-3

Previously Identified Impacts

As noted above under Impact 5.6-3, the General Plan would generate approximately 38,897 trips during the AM peak hour and 68,660 trips during the PM peak hour. Implementation of the roadway and intersection improvements recommended by the General Plan and the Draft EIR would reduce potential impacts to intersections and roadways serving the General Plan area through buildout. Although the City has adopted a development impact fee ordinance and has included the partial cost of these improvements in currently collected fees on new development, future funding of these improvements cannot be guaranteed. For these reasons, cumulative traffic impacts associated with the General Plan are considered cumulatively considerable and significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not change the development assumptions from those considered in the EIR and would therefore not increase traffic volumes or otherwise adversely impact roadways or intersections. The Wastewater Master Plan would not result in any new or additional impacts to streets or intersections. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impacts 5.6-17 Cumulative impacts to roadways of other jurisdictions

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

Additional recommended implementation measures: 5.6-1, 5.6-2, 5.6-3, 5.6-4, 5.6-5, 5.6-6, 5.6-7, 5.6-8, 5.6-9, 5.6-10, 5.6-11, 5.6-12, 5.6-13, 5.6-15, T-18, T-19, T-20, T-21, and T-22 as noted above under Impact 5.6-8

Previously Identified Impacts

As identified under Impact 5.6-8, buildout of the General Plan will adversely impact roadways under the jurisdiction of other agencies, including Stanislaus County. Since Stanislaus County has decision-making authority on implementing improvements to county roadways, the City of Patterson cannot guarantee implementation and/or the timing of the mitigation measures listed above for roadways outside the city. Therefore, cumulative traffic impacts to county roadways were considered to be cumulatively considerable and significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not change the development assumptions from those considered in the EIR and would therefore not increase traffic volumes or otherwise adversely impact the roadways of other jurisdictions. The Master Plan would not result in any new or additional impacts. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impacts 5.6-18 Cumulative traffic impacts on freeway operations

Applicable General Plan Policies and Implementation Measures

Policies: T-1.10, T-1.13, T-2.1, T-2.2, T-2.3, T-3.1, T-3.2, T-3.3, T-5.1, T-.5.2, AQ-1.11, AQ-1.12, AR-2.1, AR-2.2, AR-2.3, AR-2.4, AR-2.5, AR-3.1, AR-3.2, AR-3.3, AR-3.4, and NR-3.3
Implementation Measures: T-3, T-4, T-5, T-6, T-7, T-11, T-12, T-13, T-14, T-19, T-20, T-21, and T-22

General Plan EIR Mitigation Measures

Add an additional lane in each direction on I-5 from north of Zacharias Avenue to south of Fink Road.

Previously Identified Impacts

As identified in the EIR, cumulative traffic generated by buildout of the General Plan will adversely impact Interstate 5. The mitigation recommended by the traffic study is to add an additional lane in each direction on I-5 from north of Zacharias Avenue to south of Fink Road. However, since Caltrans has decision-making authority over the improvements to the freeway segment described above, the City of Patterson cannot guarantee implementation and/or the timing of this mitigation measure. Therefore, this impact would be considered cumulatively considerable and significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not change the development assumptions from those assumed in the EIR and would therefore not increase traffic volumes or otherwise adversely impact freeway operations. No additional facilities beyond those anticipated in the General Plan EIR would occur. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.6-19 Cumulative impacts to transit, bicycle, and pedestrian facilities

Applicable General Plan Policies and Implementation Measures

Policies: T-1.4, T-1.10, T-1.14, T-5.1, T-5.2, T-7.1, T-7.2, T-7.4, T-7.5, T-7.6, T-7.7, T-7.8, T-7.9, T-7.10, LU-1.1, AQ-1.12, and AR-3.2
Implementation Measures: T-3, T-4, T-8, T-9, T-10, T-13, T-15, T-14, and T-16

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

As noted above, the General Plan will accommodate a significant increase in population, employment, and retail development over current levels. As with transit and pedestrian systems, bicycle ridership is expected to increase proportionately to population, employment, and shopping. The construction of additional bicycle, pedestrian, and transit facilities has the potential to result in adverse physical impacts. In addition, new or expanded facilities may require construction in roadways outside the City's jurisdiction.

The development strategy embodied by policies in the Land Use Element encourage the development of "complete" neighborhoods in which more of the day-to-day needs of residents are provided within a short walk or bicycle ride. Thus, an increase in bicycle traffic is an expected and encouraged outcome of the General Plan. In addition, the General Plan designates land for additional employment-generating land uses, which in turn is expected to help reduce motor vehicle use for home-work trips and facilitate the use of alternate modes of travel such as bicycles. Together the recommended policies, implementation measures, and provisions of the Patterson Municipal Code could reduce potential impacts to bicycle systems from the General Plan to a less than significant level. However, new or expanded facilities may require construction in roadways outside the City's jurisdiction. In addition, because some improvements necessary to serve the General Plan are dependent on funding and approvals from other jurisdictions, the City of Patterson cannot control their implementation or timing. For these reasons, impacts to bicycle, pedestrian, and transit facilities were considered cumulatively considerable and significant and unavoidable.

Master Plan Impact

Because the population and distribution of land uses considered in the Wastewater Master Plan is the same as the General Plan, the Master Plan does not consider facilities beyond those anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.7 Air Quality and Climate Change Impacts

Impact 5.7-1 Urban development accommodated by the General Plan may expose sensitive receptors to short-term particulate matter emissions resulting from construction activities.

Applicable General Plan Policies and Implementation Measures

Policies: NR-4.7 and AR-5.1
Implementation Measures: AR-1 and AR-2

General Plan EIR Mitigation Measures

AR-6 The City shall require all of the following as a condition of project approval:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, track-out (earth material deposited on City streets by construction equipment) shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day shall prevent carryout and track-out.
- Limit traffic speeds on unpaved roads to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;
- Install wind breaks at windward side(s) of construction areas;
- Suspend excavation and grading activity when winds exceed 20 mph; and
- Limit area subject to excavation, grading, and other construction activity at any one time. Regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.

Previously Identified Impacts

The EIR identified that construction activities associated with buildout of the General Plan would generate exhaust emissions from construction equipment and vehicles, evaporative emissions from coatings, and particulate matter (fugitive dust). These emissions may contribute to exceedances of particulate matter ambient air quality standards. Although the San Joaquin Valley Air Pollution Control District (SJVAPCD) has not adopted standards of significance for construction-related emissions, the potential exists for such emissions to adversely impact air quality on a temporary and short-term basis.

General Plan policies were developed to comply with criteria established by the SJVAPCD in order to minimize future increases in vehicle travel and to assist in implementing appropriate

indirect source regulations. In addition, Policy AR-5.1 requires the City to work with the SJVAPCD to reduce particulate emissions from construction. Implementation of the 2010 Patterson General Plan was determined to result in a less than significant impact.

Master Plan Impact

The Master Plan would not result in additional development and/or construction beyond that assumed in the General Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.7-2 Buildout of the land uses accommodated by the General Plan may create objectionable odors or expose sensitive receptors to toxic air contaminants.

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.0, AR-1.2, AR-1.3, AR-4.1, AR-4.2, AQ-1.4, and AQ-1.10
Implementation Measures: AR-1 and AR-2

General Plan EIR Mitigation Measures

AIR-9 The following measures shall be required as a condition of approval for development projects with the potential to have adverse air quality impacts to sensitive land uses:

- Maintain a minimum 500 foot separation between sensitive land uses and the Interstate 5 freeway;
- Maintain a minimum 1,000 foot separation between sensitive land uses and major rail yards;
- Maintain a minimum 1,000 foot separation between sensitive land uses and major distribution centers (more than 100 trucks per day);
- Maintain a minimum 300 foot separation between sensitive land uses and dry cleaning operations (500 feet for operations with two or more machines); and
- Maintain a minimum 50 foot separation between sensitive land uses and gasoline dispensing facilities (300 feet if throughput exceeds 3.6 million gallons per year).

AIR-10 When a project could expose sensitive receptors to toxic air contaminants the City shall require an applicant to perform a prioritization on all sources of emissions in accordance with guidelines adopted by the San Joaquin Valley Air Pollution Control District to determine if it is necessary to conduct a Health Risk Assessment. If a project has a prioritization score of 10 or more, the project has the potential to exceed the District's significance threshold for health impacts of 10 in a million and a Health Risk Assessment shall be performed.

Previously Identified Impacts

The EIR identified that as the city's population grows in accordance with the buildout of the General Plan, the number and distribution of sensitive receptors such as schools, day care facilities, nursing homes, and health care facilities is likely to grow proportionately. New sensitive

land uses may be sited near existing sources of odors and toxic air contaminants (TACs). TAC emissions from mobile and stationary sources may result in elevated ambient concentrations of TACs at these sensitive land uses, which may significantly increase human health risk. In addition, new commercial and industrial land uses may generate TAC emissions and may be located near existing sensitive land uses, which may significantly increase human health risk.

General Plan policies and implementation measures minimize the potential impact of toxic air contaminants on sensitive receptors. Policy AR-4.1 states that the City shall, to the extent practicable, separate sensitive land uses from significant sources of air pollutants or odor emissions. Implementation measure AR-1 requires the City to submit development applications to the SJVAPCD for review as part of the CEQA compliance process. Therefore, implementation of the 2010 Patterson General Plan was determined to result in a less than significant impact.

Master Plan Impact

The Master Plan would not alter the land use pattern as envisioned in the General Plan and would not result in additional sources of TACs. While the Master Plan includes expansion of the existing WQCF, the Master Plan would not create and new odor sources or new sensitive land uses beyond those already anticipated in the General Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.7-3 Emission of ozone precursors

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.0, AR-1.2, AR-1.3, AR-2.1, AR-2.2, AR-2.3, AR-2.4, AR-2.5, AR-3.1, AR-3.2, AR-3.3, AR-3.4, AR-5.2, AR-5.3, AR-6.1, AR-6.2, AR-6.3, AQ-1.4, AQ-1.5, AQ-1.6, AQ-1.7, AQ-1.8, AQ-1.9, AQ-1.10, AQ-1.11, AQ-1.12, AQ-1.13, AQ-1.14, and AQ-1.14
Implementation Measures: AR-1 and AR-2

General Plan EIR Mitigation Measures

AR-8 The following measures shall be incorporated into the design of projects to be constructed within the City of Patterson to minimize operational emissions:

- Bike racks shall be provided at proposed commercial land uses and schools, at a minimum rate of one bike rack space per 20 vehicle parking spaces;
- Non-residential projects shall include facilities for bike commuters including showers, lockers and changing space.
- Multi-unit residential projects shall include long-term bike parking facilities (locker, locked room or standard bike rack under surveillance);
- Bike lanes (Class II) shall be provided on all arterials and linked to a regional bikeway network;
- Sidewalks shall be provided on all roadways to facilitate pedestrian access to land uses;
- New roads and major roadway improvements shall provide adequate roadway widths to safely accommodate buses and provide bus turn-outs and shelters as needed to serve proposed commercial and industrial land uses, and schools;

- Commercial projects shall charge for parking (if determined to be feasible by the City Council) to entice use of the transit system;
- Parking lots shall provide pedestrian pathways that connect to transit facilities;
- Facilities for charging electric vehicles shall be provided as an amenity for residential land uses;
- Electrical outlets shall be provided to facilitate use of electrical landscape maintenance equipment;
- Residential units shall be pre-wired with internet cables/lines to facilitate telecommuting;
- Wood-burning heaters and fireplaces shall be prohibited; and
- Energy conservation measures shall be implemented to exceed Title 24 requirements, and may include reflective roofing materials, energy efficient lighting, appliances, heating and cooling systems, use of natural lighting (skylights or solar tubes), and use of awnings and overhangs.

Previously Identified Impacts

The EIR identified that development of land uses accommodated by the General Plan would generate motor vehicle emissions and area source emissions (from sources such as natural gas combustion, fireplaces, woodstoves, landscaping maintenance, consumer products, and architectural coatings). The incremental increase in operational emissions of reactive organic gases (ROG) and nitrogen oxides (NOx) would exceed the thresholds of 10 tons per year established by the SJVAPCD.

Although General Plan policies and implementation measures, on-site emissions reductions, and off-site emissions reductions required by the district's Indirect Source Rule, as well as the recommended additional mitigation, help to reduce emissions associated with development accommodated by the General Plan, operational emissions were determined to remain significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan provides for the infrastructure needs of development anticipated in the General Plan. Consequently, the Master Plan would not result in additional development or sources of ROG or NOx beyond those already anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.7-4 Consistency with Extreme Ozone Attainment Demonstration Plan

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.0, AR-1.2, AR-1.3, AR-2.1, AR-2.2, AR-2.3, AR-2.4, AR-2.5, AR-3.1, AR-3.2, AR-3.3, AR-3.4, AR-5.2, AR-5.3, AR-6.1, AR-6.2, AR-6.3, AQ-1.4, AQ-1.5, AQ-1.6, AQ-1.7, AQ-1.8, AQ-1.9, AQ-1.10, AQ-1.11, AQ-1.12, AQ-1.13, AQ-1.14, and AQ-1.14
Implementation Measures: AR-1 and AR-2

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that the General Plan would accommodate a population of approximately 47,831 by 2030, which is higher than StanCOG's population forecasts and those estimates used by the SJVAPCD in the Extreme Ozone Attainment Demonstration Plan (39,067).

The EIR determined that General Plan policies and implementation measures help to minimize air quality impacts associated with buildout of the General Plan; however, because the population at buildout will exceed the population assumptions used in the Extreme Ozone Attainment Demonstration Plan, this impact was considered significant and unavoidable.

Master Plan Impact

The population assumptions in the EIR would not increase due to the Wastewater Master Plan. Therefore, the extent to which development of the General Plan would exceed assumptions in the Extreme Ozone Attainment Demonstration Plan would not be changed with the Master Plan. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.7-5 Carbon monoxide hotspots

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.0, AR-1.2, AR-1.3, AR-2.1, AR-2.2, AR-2.3, AR-2.4, AR-2.5, AR-3.1, AR-3.2, AR-3.3, AR-3.4, AR-5.2, AR-5.3, AR-6.1, AR-6.2, AR-6.3, AQ-1.4, AQ-1.5, AQ-1.6, AQ-1.7, AQ-1.8, AQ-1.9, AQ-1.10, AQ-1.11, AQ-1.12, AQ-1.13, AQ-1.14, and AQ-1.14
Implementation Measures: AR-1 and AR-2

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that implementation of the roadway and intersection improvements recommended by the General Plan will achieve and maintain a level of service below LOS D on area roadways and intersections; however, several of the intersections fall under the jurisdiction of other agencies where approval for improvements cannot be guaranteed. Therefore, intersection levels of service below LOS D are possible, which in turn could result in carbon monoxide hotspots. The potential for carbon monoxide hotspots was determined to be a significant and unavoidable impact.

Master Plan Impact

The proposed Wastewater Master Plan would not result in additional population, trips, or improvements beyond those already anticipated in the General Plan. Therefore, the Master Plan would not result in additional growth that would contribute to carbon monoxide hotspots. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.7-6 Project and cumulative impacts relating to climate change

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.10, LU-2.3, LU-7.4, CD-1.1, CD-1.8, CD-3.2, CD-4.1, ED-1.5, ED-3.1, ED-4.4, T-2.1, T-2.2, T-2.3, T-3.1, T-3.2, T-3.3, T-7.1, T-7.2, T-7.3, T-7.5, T-7.6, T-7.11, NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.7, NR-2.9, NR-4.1, NR-4.2, NR-4.3, NR-5.1, NR-5.2, NR-5.3, NR-6.1, NR-6.2, NR-6.3, NR-6.4, NR-6.5, NR-6.6, PR-1.14, PS-4.3, AR-2.1, AR-2.2, AR-2.3, AR-2.4, AR-2.5, AR-3.1, AR-3.2, AR-3.3, AR-6.1, AR-6.2, AR-6.3, AR-7.2, AR-7.3, AR-7.4, AR-7.5, AR-7.6, AR-7.7, AR-7.8, AR-7.9, AR-7.10, AR-7.11, and AQ-1.12
Implementation Measures: CD-1, T-3, T-4, T-6, NR-3, NR-8, NR-9, NR-11, NR-12, NR-14, and PR-6

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that the General Plan would result in an increase in population, housing, commercial and industrial development, vehicle trips, and solid waste generation that would generate additional greenhouse gases (GHGs) through fuel combustion, electricity usage, and other sources.

The GHG reduction targets established by Assembly Bill (AB) 32 and Executive Order S-03-05 are as follows: by 2010, reduce greenhouse gas emissions to 2000 levels; by 2020, reduce greenhouse gas emissions to 1990 levels (or 15 percent below 2010 levels); and by 2050, reduce greenhouse gas emissions to 80 percent of 1990 levels. According to the Climate Change Scoping Plan prepared by the California Air Resources Board and adopted in December 2008, reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 15 percent from 2010 levels. Accordingly, reducing the City's 2009 GHG emissions by 15 percent was assumed to achieve the 1990 GHG emission level required by AB 32. For 2050, Executive Order S-3-05 establishes a reduction target of 80 percent below 1990 levels. For purposes of the General Plan EIR analysis, the 2050 reduction target was assumed to be a 35 percent reduction from the 2009 baseline emissions.

GHG emissions for the year 2020 would be about 317,744 metric tons carbon dioxide equivalent ($MTCO_2e$), which represents a significant increase over the 2009 baseline of 287,494 $MTCO_2e$ for year 2020, which exceeds the reduction target of 15 percent required by AB 32. In addition, GHG emissions projected for the year 2050 would be about 913,706 $MTCO_2e$, which represents a significant increase over the 2009 baseline of 287,494 $MTCO_2e$ for year 2050, which exceeds the reduction target of 35 percent required by Executive Order S-3-05.

The General Plan includes a wide range of policies and implementation measures intended to reduce the effect of future development on climate change as noted above. However, even with the potential reductions associated with policies and programs of both the City and the State, the net GHG emissions for the years 2020 and 2050 are expected to greatly exceed the GHG reduction targets for these years. Thus, impacts on climate change were considered to be cumulatively considerable and significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not result in additional population, housing, commercial or industrial development, vehicle trips, or solid waste generation beyond that anticipated in the General Plan EIR. In addition, where applicable, the Master Plan is consistent with the General Plan policies and implementation measures designed to reduce GHG emissions. The Master Plan would not generate additional greenhouse gases through fuel combustion, electricity usage, and other sources. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.7-7 Risks associated with climate change

Applicable General Plan Policies and Implementation Measures

Policies: NR-1.1, NR-2.1, NR-2.4, NR2.5, NR-2.10, NR-6.1, NR-3.2, AR-7.1, and AR-7.2
Implementation Measures: NR-3, NR-8, and N-9

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that existing and new development and the natural environment in Patterson will be subject to climate change impacts resulting from past, present, and future GHG emissions, regardless of the success of local, state, national, or international efforts in reducing future GHG emissions. Due to the existing concentrations of GHG emissions in the atmosphere and the inevitable additional emissions before GHG reduction plans result in reductions, a known amount of warming in the lower atmosphere and consequent changes in historical climate patterns will occur.

The EIR found that changes to the city's agriculture, water supplies, flooding, wildfire potential, environmental health, air quality, and other areas are reasonably foreseeable, although not quantifiable in some aspects at present. New development allowed by the General Plan could place people and property at higher levels of risk to climate change effects if it does not anticipate reasonably foreseeable changes in environmental conditions. Without further planning, current requirements may provide inadequate protection against adverse physical impacts and may not anticipate different conditions resulting from climate change. However, General Plan policies and implementation measures would help to minimize the impacts of climate change on the city's economy and natural resources and promote a climate-resilient community. Policy AR-7.1 and implementation measure NR-7 require the preparation of a climate action plan within 24 months of General Plan adoption. Implementation measure NR-7 requires the climate action plan to address (among other things) resiliency and adaptation programs to prepare for potential impacts of climate change and to provide a phased implementation plan to achieve these goals. These policies and implementation measures reduce the risk of exposing future populations accommodated by the General Plan to impacts resulting from climate change. However, the range of potential environmental impacts and the potential responses that may be enacted over time cannot be identified with certainty. For these reasons, this impact was considered to be cumulatively considerable and significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not alter the amount of existing or new development or the natural environment beyond that anticipated in the General Plan EIR. Therefore, the climate change impacts resulting from past, present, and future GHG emissions would remain the same for the Master Plan as they would for the General Plan. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.7-8 Cumulative emission of air pollutants

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.0, AR-1.2, AR-1.3, AR-2.1, AR-2.2, AR-2.3, AR-2.4, AR-2.5, AR-3.1, AR-3.2, AR-3.3, AR-3.4, AR-5.2, AR-5.3, AR-6.1, AR-6.2, AR-6.3, AQ-1.4, AQ-1.5, AQ-1.6, AQ-1.7, AQ-1.8, AQ-1.9, AQ-1.10, AQ-1.11, AQ-1.12, AQ-1.13, AQ-1.14, and AQ-1.14
Implementation Measures: AR-1 and AR-2

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that the population accommodated by the General Plan would exceed the population projections used to prepare the Extreme Ozone Attainment Demonstration Plan. General Plan development and resulting populations that exceed anticipated projections were not accounted for in the Extreme Ozone Attainment Demonstration Plan. Accordingly, these emissions, together with emissions associated with regional development, would hinder efforts to achieve and maintain federal and state air quality standards. Although General Plan policies and implementation measures would help to mitigate regional air quality impacts related to increased population and housing, cumulative impacts were determined to remain cumulatively considerable and significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not increase population beyond that anticipated in the General Plan EIR; therefore, the cumulative air pollutant emissions would remain the same for the Master Plan as for the General Plan. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.8 Noise Impacts

Impact 5.8-1 Construction activities could result in elevated noise levels at noise-sensitive land uses. Increases in ambient noise levels, particularly during the nighttime hours, could result in increased levels of annoyance and potential sleep disruption.

Applicable General Plan Policies and Implementation Measures

Policy: HS-4.9

Implementation Measures: HS-5, HS-6, and HS-7

General Plan EIR Mitigation Measures

The EIR recommended additional implementation measure HS-10.

Previously Identified Impacts

Construction activities associated with buildout of the General Plan would include the use of heavy equipment for grading and other activities, through completion of streets, buildings, bridges, public facilities, utilities, and landscaping. Heavy trucks would travel to and from, and within, the development areas to perform earthwork and to move equipment and building materials. Smaller equipment, such as jackhammers, pneumatic tools, and saws, could also be used throughout the construction phases. The noise associated with these activities would be generated within the entire Planning Area and at off-site locations near any infrastructure improvements.

The EIR found that existing residences and other sensitive receptors located adjacent to a particular project site with direct line of sight to construction activities and construction traffic would be affected along with new residences as they are developed within the General Plan area. Utility improvements (e.g., water, gas, electrical) and widening of roadways adjacent to sensitive receptors would also affect these residences. Residences at increased setback distances from the roadways bordering the project site would be buffered and shielded from construction activities by buildings closer to the roadways and thus would not be significantly impacted by these construction activities.

For any one receptor location or residence, construction noise would be an intermittent, short-term impact, corresponding with the development schedule for the nearby project components. Because some construction equipment causes intermittent noise levels up to 89 dBA [A-weighted decibels] at a distance of 50 feet, any noise-sensitive locations that would be in close proximity to project-related construction noise could experience a recognizable noise increase. However, compliance with Chapter 6.44 of the Patterson Municipal Code would discourage construction-related noise-generating activities at nearby noise-sensitive land uses during the hours between 8:00 p.m. and 10:00 p.m. and typically prohibit these activities between the hours of 10:00 p.m. and 6:00 a.m.

Master Plan Impact

The Wastewater Master Plan would not result in additional development and/or construction beyond that assumed in the General Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.8-2 Traffic noise

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.9, HS-4.10, HS-4.11, HS-4.12, HS-4.13, and HS-4.14
Implementation Measures: HS-5, HS-6, HS-7, and HS-8

General Plan EIR Mitigation Measures

The EIR recommended implementation of the following mitigation measure:

HS-10 Noise contours derived from the acoustical analysis prepared by Brown Buntin Associates, Inc., entitled *Noise Element Update, City of Patterson, Stanislaus County, California, May 2010* shall be incorporated into the General Plan Noise Element.

Previously Identified Impacts

Future transportation-related noise levels at a point 75 feet from the centerline of several streets in the Study Area will exceed the 60 Ldn/CNEL standard for outdoor activity areas. A comparison of the resulting noise levels within the right-of-way width reveals that the outdoor activity areas for existing residential neighborhoods adjoining these rights-of-way will exceed the 60 Ldn/CNEL standard established by the Patterson General Plan Noise Element.

The EIR found that implementation of policies in the General Plan would minimize traffic-related noise impacts from new development as a result of General Plan buildout. However, existing development will experience an increase in noise, especially from traffic. Therefore, the General Plan would allow for a substantial increase in traffic which will expose the outdoor activity areas in existing residential neighborhoods to noise levels that exceed the City's currently adopted standard. Therefore, this impact was considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not result in increased development or traffic beyond that assumed in the General Plan EIR; therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.8-3 Development accommodated by the project would expose future land uses and residents to increased train- and rail-related noise

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.9, HS-4.10, HS-4.11, HS-4.12, HS-4.13, and HS-4.14
Implementation Measures: HS-5, HS-6, HS-7, and HS-8

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The General Plan designates land for additional residential development near the existing railroad tracks. Rail activity in Patterson is likely to increase in the future. Development of the West Park Specific Plan at the former Crows Landing Airfield Facility (CLAF) is expected to generate approximately six train operations per day that would pass through the Study Area. This would represent more than double the number of trains currently passing through the city. According to the EIR, noise levels at future residential outdoor activity areas would be exposed to temporary noise levels that exceed the 60 dB Ldn standard established by the City's currently adopted Noise

Element. Assuming six trains per day, the generalized 60 dB Ldn contours would be located at approximately 900 feet from the center of the tracks near grade crossings and 450 feet from the tracks at distances greater than 1,000 feet from an at-grade crossing. Calculated distances do not take into consideration site-specific conditions such as acoustic shielding or reflections caused by nearby buildings.

The General Plan policies and implementation measures are intended to ensure that noise levels associated with rail activities do not adversely impact noise-sensitive land uses. Policy HS-4.11 prohibits development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation noise sources that exceed the levels specified in Table HS-3 of the Noise Element, unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table HS-1. Policies HS-4.9 and HS-4.13 require an acoustical analysis to be performed to ensure compliance with the noise standards in the Noise Element. Lastly, implementation measure HS-7 requires continued compliance with noise insulation standards provided in Chapter 35 of the Uniform Building Code. Consequently, the EIR found that the noise impact from rail activities would be less than significant.

Master Plan Impact

The Wastewater Master Plan would not change the development assumptions from those assumed in the EIR and would not increase rail traffic or result in development of sensitive uses closer to rail locations than assumed in the EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.8-4 Exposure to aircraft-related noise

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.7, HS-4.8, HS-4.9, H-4.10, HS-4.11, LU-9.1, and LU-9.2

General Plan EIR Mitigation Measures

No additional feasible mitigation has been identified.

Previously Identified Impacts

Buildout of the General Plan could expose future sensitive receptors to aircraft-related noise generated at the Patterson Airport and the Crows Landing Airfield. The EIR assumed that the Patterson Airport would be converted to a non-airport use in the near future. However, the Crows Landing Airfield Facility may be reopened as a general aviation airport as part of the Stanislaus County public airport system. According to the January 2009 draft of the Crows Landing Airport Land Use Compatibility Plan (ALUCP), the airport would reopen with a single 5,300-foot-long runway with approximately 4,000 annual aircraft operations. In the "ultimate" configuration (20 years+), the airfield would have two parallel runways 6,300 feet long and 200,000 annual operations. Operations would be mostly single- and twin-engine propeller or turboprop aircraft and helicopters, with approximately 10 percent business jet operations. The airport design aircraft for the ultimate development of the airport is the Gulfstream III business jet.

Buildout of the General Plan would allow approximately 30 acres of estate residential development within the 55–60 CNEL dB contour of the Crows Landing Airfield. The draft ALUCP contains noise compatibility criteria for a wide variety of residential and nonresidential land uses based on guidelines established by the Federal Aviation Administration (FAA) and the California Department of Transportation (Caltrans). According to Table 1 on page 2-18 of the draft Crows Landing Airport Land Use Compatibility Plan, single-family dwellings of the type that would be accommodated by the Estate Residential land use category are considered "normally compatible" in this area. Thus, impacts relating to aircraft noise were considered less than significant in the EIR.

Master Plan Impact

The Wastewater Master Plan would not alter anticipated development patterns adjacent to the Patterson Airport or the Crows Landing Airfield and would not increase aircraft operations or alter the types of aircraft flying into Patterson. Therefore, the Master Plan would not result in a change related to potential exposure to aircraft noise. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.8.5 Encroachment of noise from stationary sources

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.9, HS-4.10, HS-4.11, HS-4.12, HS-4.13, HS-4.14. LU-9.1, and LU-9.2
Implementation Measures: HS-5, HS-6, HS-7, and HS-8

General Plan EIR Mitigation Measures

Implementation of mitigation measure HS-10 as noted above in Impact 5.8-2

Previously Identified Impacts

Buildout of the General Plan may result in the future development of land uses that generate noise levels in excess of applicable City noise standards. Such land uses may include commercial, industrial, and public and quasi-public uses and could expose existing noise-sensitive land uses to noise levels that exceed the adopted standards listed on Table H-1 of the Noise Element. In addition, new noise-sensitive land uses could be located in areas of existing stationary noise sources that exceed noise standards.

The EIR found that implementation of General Plan policies and measures would reduce potential noise impacts at new stationary noise sources and the placement of new noise-sensitive land uses over which the City has jurisdiction (e.g., commercial and industrial sites, residential uses). However, some stationary noise impacts cannot be mitigated to a less than significant level due to limitations on the City to control the exact placement of substantial noise-generating uses (e.g., school facilities) in proximity to noise-sensitive land uses (e.g., residential). Accordingly, stationary source noise levels from activities on uses for which the City has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact was considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not alter assumptions in the General Plan related to development of noise-sensitive land uses and would not increase the noise levels of noise-generating uses beyond those assumed in the EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.8-6 Exposure to groundborne vibration impacts

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

Development accommodated by the General Plan could be exposed to groundborne vibration impacts associated with railroad operations and construction activities.

Groundborne vibration levels associated with railroad operations are dependent on various factors, including track type and condition, train speeds, site conditions, and train characteristics, such as the number of engines, number of cars, weight, and wheel type and condition. Site and geologic conditions can also influence how vibration propagates at increasing distance from the track. Based on Caltrans vibration measurement data, the highest train vibration level measured was 0.36 inches per second at 10 feet. Based on this level, Caltrans prepared a "drop-off curve" used to estimate maximum train vibration levels at distance from the track centerline. The curve represents maximum expected vibration levels from trains and thus is considered by Caltrans to be "very conservative." Based on the Caltrans drop-off curve for train vibration levels, predicted maximum groundborne vibrations levels along the California Northern railroad corridors would not exceed 0.20 inches per second peak particle velocity (ppv) beyond approximately 7.5 feet from the track centerline. Any vibrations above this level may cause architectural damage for typical building construction or increased levels of annoyance for individuals in buildings. The project does not designate land for the development of new land uses within 7.5 feet of railroad corridors. As a result, this impact was considered less than significant.

Construction-generated noise levels can result in a high potential for human annoyance, and pile-driving activities are typically considered as potentially significant if these activities are performed within 200 feet of permanent structures. The EIR found that this would be mitigated through continued compliance with Chapter 6.44 of the City's Municipal Code, which restricts construction activities to between the hours of 6:00 a.m. and 8:00 p.m.

Master Plan Impact

The Wastewater Master Plan would not alter railroad or construction operations assumed under the General Plan, and any construction of improvements associated with the Master Plan would comply with all applicable regulations related to noise. Therefore, this is an impact for which the

General Plan EIR adequately addresses the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.8-7 Cumulative noise impacts

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.9, HS-4.10, HS-4.11, HS-4.12, HS-4.13, HS-4.14. LU-9.1, and LU-9.2
Implementation Measures: HS-5, HS-6, HS-7, and HS-8

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that future noise would increase with buildout of the General Plan due to increased motor vehicle, rail, and aircraft noise sources. Buildout of the General Plan area would result in additional traffic along area roadways and result in increased noise. Furthermore, buildout could result in additional stationary noise conflicts. The cumulative impact of the growth in background noise, together with noise associated with regional development, was identified to be cumulatively considerable and significant and unavoidable.

Master Plan Impact

As noted above, the Wastewater Master Plan would not increase development in the city or result in increases in motor vehicle, rail, or aircraft noise sources beyond those identified in the EIR. Therefore, the Master Plan would result in no change with regard to exposure to noise. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

5.9 Geology and Soils Impacts

Impact 5.9-1 Implementation of the project and the resulting increase in population, employment, and development activity within the Study Area, would expose people, structures, and development to ground shaking and seismic hazards as a consequence of earthquakes that could result in the risk of loss, injury, or death

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.4, HS-1.1, and HS-1.2
Implementation Measure: HS-A

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

Hazards related to ground shaking include the risk of loss, injury, or death. Buildings that were constructed within the Study Area prior to 1930, including unreinforced masonry buildings that

have not been seismically retrofitted, are most likely to have structural failure or collapse occur. Buildings that have been seismically retrofitted would have a decreased chance of failure. However, even structurally enhanced buildings and newer buildings could experience significant damage and present a hazard to occupants.

The City of Patterson adopted the California Code of Regulations (CCR), Title 24, also known as the California Building Code or CBC. The EIR identified that a combination of the area's characteristics and compliance with the CBC would be sufficient to prevent significant damage from ground shaking during movement from seismic events on any of the nearby faults or fault systems. In addition, General Plan policies and implementation measures address potential impacts from seismic events. Therefore, the 2010 Patterson General Plan was determined to result in a less than significant impact with regard to seismic safety.

Master Plan Impact

The Wastewater Master Plan would have no impact on existing structures, and any future construction related to the Master Plan would be required to comply with the CBC and General Plan policies and implementation measures to ensure seismic safety. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.9-2 Adoption and implementation of the General Plan will result in urban development in the foothills of the Diablo Range, which is known to contain areas of geologic instability.

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.4, HS-1.1, and HS-1.2
Implementation Measure: HS-A

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The General Plan designated the area west of Interstate 5 between Sperry Avenue and Zacharias Road as Mixed-Use Hillside Development. According to the Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan (Volume One, page 29), virtually the entire area located west of Interstate 5 is composed of geologic formations that, due to structure, slope, runoff, lack of vegetation, earthquake, and human activity, are considered extremely susceptible to failure and sliding. In the winter of 1982–83, saturation of the soil in this area resulted in a considerable amount of damage to Del Puerto Canyon Road. There is a history of a number of slides throughout the Diablo Range in Stanislaus County. It is evident that the steep slopes and underlying geology of the area on the west side of the county, even without considering the very real possibility of an earthquake, present substantial risks in certain conditions. On a California Geological Survey scale used to rate landslide potential, this area is rated at five, on a scale where six is the highest rating. The remainder of the area is rated at six. The prime reason is the generally unstable formation comprising the underlying geologic structure of the Diablo Range.

General Plan policies and implementation measures reduce the potential for risk associated with these geologic hazards. Policy LU-1.4 requires a geotechnical investigation to be performed for each development proposed in an area with a designation of Mixed-Use Hillside Development. In addition, Policy HS-1.2 requires underground utilities to be constructed to be resistant to seismic events. Therefore, the EIR determined that the General Plan would result in a less than significant impact related to geologic instability.

Master Plan Impact

The Wastewater Master Plan would not alter development anticipated in the General Plan, and any future construction related to the Master Plan would be required to comply with the CBC and General Plan policies and implementation measures to ensure geologic stability. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.9-3 The General Plan will accommodate subsequent development activities that may include construction and site preparation activities such a grading and excavation. These activities can increase the potential for soil, wind, and water erosion, due to minor or major grading over large areas of land.

Applicable General Plan Policies and Implementation Measures

Policies: NR-1.2, NR-1.3, NR-1.4, NR-1.5, and NR-2.11

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that continued development of the city would include new roadways, improvements to existing roadways, new bridges, substantial infrastructure (water, storm drainage, and sanitary sewer facilities), and additional commercial, residential, and industrial development. Grading and site preparation activities associated with development would remove topsoil, disturbing and potentially exposing the underlying soils to erosion from a variety of sources, including wind and water. In addition, construction activities generally involve the use of water, which may further erode the topsoil as the water moves across the ground.

Construction activities involving clearing, grading, or excavation that causes soil disturbance on 1 or more acres (or any project involving less than 1 acre that is part of a larger development plan and includes clearing, grading, or excavation) would be subject to coverage under the State's National Pollutant Discharge Elimination System (NPDES) General Construction Storm Water Permit. Project applicants are required to prepare and comply with a stormwater pollution prevention plan (SWPPP) that specifies best management practices (BMPs) to avoid soil erosion and associated pollution of waterways and are also required to report any water pollution and remediate the pollution occurrence.

The Storm Water Phase II Final Rule applies to operators of regulated small municipal separate storm sewer systems (MS4s). Under the NPDES stormwater program, operators of large, medium, and regulated small MS4s require authorization to discharge pollutants under an NPDES permit. Medium and large operators are required to submit comprehensive permit applications

and are issued individual permits. Patterson is a regulated small MS4 operator and submitted an application to be covered under the General Permit in January 2004. A Storm Water Management Program (SWMP) to comply with the Small MS4 General Permit was prepared and submitted to the State Water Resources Control Board by the co-permittees (the participating city agencies). The SWMP describes the program to be implemented by the city agencies. The City of Patterson is legally obligated to implement the requirements of the SWMP and to comply with the requirements of the small MS4 General Permit.

The General Plan also includes policies and programs to reduce the effects of soil erosion associated with new development. Therefore, erosion generated by buildout of the General Plan was determined to have a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not result in increased development beyond that anticipated in the General Plan, and any future construction related to the Master Plan would be subject to the NPDES requirements and General Plan policies and implementation measures. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.9-4 Urban development accommodated by the General Plan could place development in areas with unstable soils or expose buildings, pavements, and utilities to significant damage as a result of underlying expansive or unstable soils.

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.4, HS-1.1, and HS-1.2
Implementation Measure: HS-A

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that continued development of the city would result in construction activities overlying expansive or unstable soils. Newly constructed buildings, pavement, and utilities could be damaged by differential settlement due to soil expansion and contraction. When structures are located on expansive soils, foundations have the tendency to rise during the wet season and shrink during the dry season. Movement can vary under the structures, which in turn creates new stresses on various sections of the foundation and connected utilities. These variations in ground settlement can lead to structural failure and damage to infrastructure. Development on soils west of Interstate 5 could pose additional constraints related to shallow bedrock, steep and unstable slopes, expansive soils, and the potential for landslides.

The CBC includes common engineering practices requiring special design and construction methods that reduce or eliminate potential expansive soil–related impacts. Compliance with the CBC would ensure the adequate design and construction of building foundations to resist soil movement. In addition, the CBC contains drainage-related requirements to control surface drainage and reduce seasonal fluctuations in soil moisture content.

The General Plan contains policies and implementation measures to minimize the impact of expansive or unstable soils on new development. Therefore, exposure of urban development to unstable and/or expansive soil during buildout of the General Plan was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not result in increased development beyond that anticipated in the General Plan. Any future construction related to the Master Plan would be subject to CBC requirements and General Plan policies and implementation measures to reduce impacts associated with expansive or unstable soils. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.9-5 New roadway and/or pedestrian bridges may be required over Diablo Creek, Salado Creek, the Delta-Mendota Canal, California Aqueduct, and/or the San Joaquin River. The construction of new bridges may result in significant grading, excavation, fill, and boring activities which in turn could result in unstable cut and fill slopes, the placement of structures on expansive soils, and the potential for increased erosion.

Applicable General Plan Policies and Implementation Measures

Policy: HS-1.1
Implementation Measure: HS-A

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that implementation of the General Plan will involve the construction of new roadway bridges to complete the circulation system. Bridge construction involves activities such as bridge demolition; structural excavation and backfill; erecting falsework; forming and pouring concrete for footings columns and superstructures; the placement of sheet piles; and boring, drilling, grinding, mortar mixing, blasting, and bridge cleaning. Grading and site preparation activities associated with development activities would remove topsoil, disturbing and potentially exposing the underlying soils to erosion. In addition, construction activities generally involve the use of water, which may further erode the topsoil as the water moves across the ground.

The General Plan includes policies and implementation measures to ensure that geologic impacts associated with the construction of bridges are reduced to less than significant level. In addition to compliance with the CBC, Policy HS-1.1 requires a geotechnical report to be prepared to ensure new structures are designed to withstand the effects of seismic activity. Therefore, the potential for increased erosion due to new bridge construction during building of the Patterson General Plan was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not result in and new roadways or pedestrian bridges. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.9-6 Cumulative seismic hazards, expansive soils, and soil erosion impacts

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that implementation of the General Plan, in combination with existing, planned, proposed, and reasonably foreseeable development, would result in cumulative impacts relating to seismic hazards, expansive soils, and soil erosion. However, continued compliance with the City's NPDES permit would reduce Patterson's contribution to cumulative soil erosion impacts. Development projects are analyzed on an individual basis and must comply with established requirements of the City and the CBC as they pertain to protection against known geologic hazards and potential geologic and expansive soil–related impacts. There are no known active faults in the General Plan area, there is a low incidence of historical geologic activity in the vicinity, and there is no contribution with other regional geologic impacts. Therefore, the General Plan's contribution to cumulative geology-related impacts was considered to be less than cumulatively considerable.

Master Plan Impact

The Wastewater Master Plan would not result in increased development beyond that anticipated in the General Plan, and any future construction related to the Master Plan would be subject to requirements of the CBC, best management practices as part of an NPDES permit, and General Plan policies and implementation measures. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

5.10 Biological Resource Impacts

Impact 5.10-1 Potential loss of aquatic habitat within concrete- and soil-lined laterals and irrigation ponds

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan would result in the permanent loss of approximately 15.23 acres of aquatic habitat in concrete- and soil-lined laterals and irrigation ponds. These ponds were artificially created for the conveyance and storage of irrigation water and did not appear to be waters of the United States subject to US Army Corps of Engineers jurisdiction or subject to Section 1600 provisions of the California Fish and Game Code administered by the California Department of Fish and Game (CDFG) [now the California Department of Fish and Wildlife]. Therefore, the impacts associated with converting the exposed canals to closed conveyance features or removing the ponds was considered to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development or the potential loss of aquatic habitat beyond that anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-2 Permanent loss of orchard, vineyard, irrigated agriculture/other, ruderal, redwood plantation, and developed habitats

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.7, NR-2.8, NR-2.9, NR-2.10, and NR-2.11

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that urban development accommodated by the General Plan would result in the loss of orchard, vineyard, irrigated agriculture/other, ruderal, redwood plantation, and developed habitats that predominantly support common plant and wildlife species. The biotic resources associated with these habitats will continue to be abundant following development in the General Plan area. Biological impacts associated with converting these habitats were therefore considered to be less than significant.

The US Department of Agriculture, Natural Resources Conservation Service has classified nearly all of the land between Interstate 5 and the San Joaquin River in Stanislaus County as prime agricultural land. Prime agricultural land is defined as "land that has the best combination of physical and chemical characteristics for producing ...agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion..." (7 U.S.C. Section 4201 (c)(1)(A)). Prime farmland does not include land already in, or committed to, urban development. General Plan policies and implementation measures help reduce potential impacts associated with the loss of orchards and other agricultural habitat to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development or the potential loss of habitat beyond that anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-3 Permanent loss of California annual grassland habitat

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.3 and NR-3.4

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that urban development west of Interstate 5 would result in the loss of California annual grassland habitat, which is moderately disturbed by grazing and predominantly supports common plant species. Because of this habitat's abundance throughout this region and the state (a contiguous band stretching over 100 miles to the north and south west of Interstate 5), impacts associated with converting annual grassland habitat are considered to be less than significant. General Plan policies and implementation measures help to reduce potential impacts associated with the loss of this habitat to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development or the potential loss of grassland habitat beyond that anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-4 Permanent loss of foraging habitat for greater sandhill crane and American peregrine falcon

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.3 and NR-3.7

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan will result in the loss of foraging habitat for greater sandhill crane and American peregrine falcon. However, the greater sandhill crane and American peregrine falcon may only occur as occasional visitors, migrants, transients, or foragers within the General Plan area. According to the EIR, anticipated

development would have no effect on the breeding success of either of these species, although it could potentially result in a small reduction of foraging or wintering habitat available to them regionally.

According to the International Crane Foundation, "Loss and degradation of riverine and wetland ecosystems are the most important threats to sandhill crane populations. For the migratory populations, this is of greatest concern in staging and wintering areas. Spring staging areas along the Platte River in Nebraska are of special concern because of their importance to the migratory subspecies and the development pressures facing this region. Approximately 80% of all sandhill cranes utilize a 75-mile stretch of the Platte River in spring migration. Elsewhere, small breeding populations can face disproportionate mortality on fall staging areas due to over-hunting. Residential and commercial development pressures facing lands occupied by birds belonging to non-migratory subspecies in Mississippi, Florida, and Cuba also pose significant threats."

Critical habitat area for the American peregrine falcon has been designated in Northern California, near the city of Santa Rosa (Federal Register, Vol. 42, No. 155, p. 40685). There are no areas of appropriate breeding habitat (especially steep cliffs) in the Planning Area. The species is known to exist throughout North America and was "de-listed" from the federal Endangered Species Act due to recovery; however, it is listed as endangered under the California Endangered Species Act.

Due to the abundance of similar habitats regionally, the development accommodated by the General Plan is expected to have a less than significant impact on these species. In addition, General Plan policies and implementation measures reduce potential impacts associated with the loss of foraging habitat for greater sandhill crane and American peregrine falcon to a less than significant level.

Master Plan Impact

Because the Wastewater Master Plan would not increase development compared to that analyzed in the EIR, the Master Plan would not result in the potential loss of foraging habitat for greater sandhill crane or American peregrine falcon beyond that anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-5 Permanent loss of habitat for certain special-status wildlife species

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.3 and NR-3.7

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan would result in the loss of habitat for certain special-status wildlife species. Some special-status wildlife species may occasionally visit the Planning Area during migration or during transient movements. Similarly, some species may occasionally forage in small numbers on the site. These species include the

American peregrine falcon, greater sandhill crane, foothill yellow-legged frog, mountain plover, tricolored blackbird, short-eared owl, yellow warbler, and pallid bat. According to the EIR, development of the General Plan study area would have no effect on the breeding success of any of these species, although it may result in a small reduction of foraging habitat and a small reduction in the value of roosting habitat available to some of these species on a regional level. Habitat loss associated with the future projects covered by the General Plan would constitute a less than significant effect to these species due to the abundance of similar habitats regionally and the infrequency with which these species might occur in the Planning Area.

In addition, the Planning Area is outside the known distribution of, or there is a lack of suitable habitat for, the giant garter snake and the western mastiff bat. No impacts would occur to these species, as they are absent from the Planning Area.

Some special-status wildlife species may be present within the Planning Area in small numbers, though the quality of habitat is already diminished by existing human disturbance. These species include the San Joaquin whipsnake, northern harrier, loggerhead shrike, American badger, western red bat, and hoary bat. The EIR found that development accommodated by the General Plan will have no effect on the breeding success of any of these species, although it may result in a small reduction of foraging habitat and a small reduction in the value of roosting habitat available to some of these species on a regional level. Habitat loss associated with the buildout of the General Plan would constitute a less than significant effect to these species due to the abundance of similar habitats regionally.

General Plan policies and implementation measures would reduce the potential impacts associated with the permanent loss of habitat for these special-status wildlife species to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR; therefore, the Master Plan would not result in new or more severe impacts related to the potential loss of habitat for special-status wildlife. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-6 Development west of Interstate 5 accommodated by the General Plan may result in the loss of vernal pool habitat.

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.4 and NR-3.9
Implementation Measure: NR-13

Implement the requirements of BIO-1 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

Although the single vernal pool in the Planning Area is heavily disturbed with little ability to support sensitive plant or animal species, the CDFG asserts jurisdiction over stream courses and waterways as stated in Sections 1600–1607 of the California Fish and Game Code. The US Army Corps of Engineers (USACE) also has jurisdiction and maintains a "no net loss" policy related to wetlands. Where avoidance of these habitats is not feasible, full mitigation at ratios required by the USACE will be required, in addition to a 404 permit and 401 certification. A Section 1602 streambed alteration agreement would also be required from the CDFG. General Plan policies and implementation measures would reduce potential impacts associated with the loss of vernal pool habitat to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development compared to that analyzed in the General Plan EIR, so there would be no new or more severe impacts related to the potential loss of vernal pool habitat west of I-5. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-7 Urban development accommodated by the General Plan could result in the loss of riparian habitat.

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.1, NR-3.2, NR-3.7, NR-3.8, and NR-3.11
Implementation Measure: NR-13

Implement the requirements BIO-2 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

Implement the following additional recommended mitigation measure:

BIO-34 A no-disturbance area of 100 feet shall be established from the high water mark, or outside edge of existing riparian vegetation, whichever is greater, along Del Puerto Creek and Salado Creek, and existing wetland and vernal pool habitats.

Previously Identified Impacts

The EIR identified that there are approximately 16 acres of riparian habitat in the General Plan study area, of which approximately 5 acres may be adversely impacted by development accommodated by the General Plan. Construction activities associated with the General Plan may result in the loss of riparian habitat occurring along Del Puerto Creek and Salado Creek, on Elfers Road adjacent to an irrigation pond, along the San Joaquin River where bridges would be constructed or widened, and along an unnamed drainage west of I-5, resulting in significant impacts to sensitive habitats.

Both Salado Creek and Del Puerto Creek meet the regulatory definition of waters of the United States. Therefore, project activities within the tributary must comply with Section 404 of the Clean

Water Act. The boundary of the areas falling under USACE jurisdiction is defined by the ordinary high water mark (OHWM) of the waters of the United States in areas without adjacent wetlands. When adjacent wetlands are present, USACE jurisdiction extends to the boundary of the wetlands, which is defined by the limits of wetland soils, hydrology, and vegetation. The San Joaquin River, Salado Creek, Del Puerto Creek, and an unnamed ephemeral drainage within the Study Area are also subject to the regulatory jurisdiction of the CDFG under Section 1602 of the Fish and Game Code.

The EIR found that General Plan policies and implementation measures would reduce potential impacts associated with the loss of riparian habitat. Policy NR-3.8 requires the City to preserve the integrity of riparian resources. Policy NR-3.9 states that the City shall preserve and protect wetlands to the extent feasible. Appendix NR of the Natural Resources Element requires preconstruction surveys for activities that may adversely impact Del Puerto Creek, Salado Creek, and Elfers Creek. The EIR found that compliance with these requirements would ensure that implementation of the General Plan would result in a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that analyzed in the General Plan EIR including areas along Del Puerto Creek and Salado Creek, so there would be no new or more severe impacts on riparian habitat along these two creeks. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-8 Permanent loss of irrigated agriculture/alfalfa habitat

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that urban development accommodated by the General Plan could result in the loss of irrigated agriculture/alfalfa habitat, which is a common habitat type in the region, and the loss of this habitat alone is not significant. Therefore, this impact was determined to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development compared to the General Plan, so it would not result in the loss of irrigated agriculture/alfalfa habitat beyond that anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-9 The General Plan could accommodate individual projects near Del Puerto Creek that could disturb valley elderberry longhorn beetle (VELB) and result in the loss of suitable habitat.

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.1, NR-3.2, NR-3.6, NR-3.7, NR-3.8, NR-3.10, and NR-3.11
Implementation Measure: NR-13

Implement the requirements of BIO-3, BIO-4, and BIO-5 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that the federally threatened valley elderberry longhorn beetle (VELB) may occur within the General Plan Study Area. An elderberry shrub was observed near Del Puerto Creek in the area west of I-5 and elderberry shrubs may also be present downstream along the boundary of this area. Physically damaging the elderberry shrubs, causing dust or other debris to cover foliage, or otherwise harming the shrubs in any manner during project activities would constitute a potentially significant impact. Requirements in Appendix NR of the General Plan's Natural Resources Element call for a qualified biologist to conduct preconstruction surveys in accordance with the USFWS's Conservation Guidelines for Valley Elderberry Longhorn Beetle to ensure that projects occurring within or adjacent to suitable habitat do not disturb VELB.

Master Plan Impact

The Wastewater Master Plan would not increase development in the vicinity of Del Puerto Creek beyond that anticipated in the General Plan EIR, so there would be no new or more severe impacts related to the potential loss of suitable VELB habitat. Any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-10 Individual projects in the area west of Interstate 5 could disturb California tiger salamander and result in the loss of suitable habitat.

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.1, NR-3.2, NR-3.7, NR-3.8, NR-3.10, and NR-3.11
Implementation Measure: NR-13

Implement the requirements BIO-6, BIO-7, and BIO-8 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that there is potential breeding habitat for California tiger salamander (CTS) in the form of a vernal pool present on the western edge of the area west of I-5. Although this pool could not be definitively determined to be capable of providing CTS breeding habitat, there was suitable aestivation habitat surrounding this pool in the area west of I-5 and off site to the west. Therefore, potential CTS aestivation habitat was present should the vernal pool support CTS breeding. Natural Resources Element Appendix NR requires preconstruction surveys, compensatory habitat mitigation, and implementation of avoidance and minimization measures. Therefore, the EIR the determined that the General Plan would result in a less than significant impact on CTS breeding habitat.

Master Plan Impact

The Wastewater Master Plan would not increase development west of Interstate 5 beyond that anticipated in the General Plan EIR, so it would not result in new or more severe impacts related to the potential loss of suitable habitat for California tiger salamander. Any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-11 Individual projects accommodated by the General Plan could disturb California red-legged frog and result in the loss of suitable habitat. This impact is considered potentially significant.

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.1, NR-3.2, NR-3.7, NR-3.8, NR-3.10, and NR-3.11
Implementation Measure: NR-13

Implement the requirements of BIO-9, BIO-10, and BIO-10 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that there was potential habitat for California red-legged frog (CRLF) in Del Puerto Creek west of I-5. The quality of this habitat was low due to the ephemeral flow of the creek and lack of vegetative cover present along the creek, and was further reduced by the presence of bullfrogs in Del Puerto Creek. However, due to the presence of suitable habitat and connectivity to occupied red-legged frog habitats via Del Puerto Creek, the presence of red-legged frogs in the vicinity of Del Puerto Creek west of I-5 cannot be ruled out without surveys.

In addition, the San Joaquin River in the vicinity of potential bridge widening and/or construction provides suitable habitat for red-legged frog and its presence cannot be ruled out without surveys. Natural Resources Element Appendix NR requires preconstruction surveys, compensatory

habitat mitigation, and implementation of avoidance and minimization measures. Therefore, the EIR determined that implementation of the General Plan would result in a less than significant impact to CRLF.

Master Plan Impact

The Wastewater Master Plan would not increase development in the vicinity of Del Puerto Creek or the San Joaquin River beyond that anticipated in the General Plan EIR, so there would be no new or more severe impacts related to the potential loss of suitable habitat for California red-legged frog. Any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-12 Individual projects accommodated by the General Plan could disturb nesting Swainson's hawk and result in the loss of foraging habitat.

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.1, NR-3.2, NR-3.7, NR-3.10, and NR-3.11
Implementation Measure: NR-13

Implement the requirements of BIO-12, BIO-13, and BIO-14 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that Swainson's hawk nests occur in areas such as riparian woodlands, roadside trees, trees along field borders, and the edges of remnant oak woodlands. Suitable nesting and foraging habitat for Swainson's hawk exists in the General Plan area, especially in areas adjacent to alfalfa fields in the eastern and southern portions of the Plan area. Therefore, it is likely that nesting Swainson's hawks would be present within the General Plan area. Construction activities (noise, human activity) could result in disrupted foraging activities, incidental loss of fertile eggs or nestlings, or nest abandonment. The CDFG recommends that the buffer zone in nesting areas be increased to 0.5 mile in areas of urban development. These buffer zones may be adjusted as appropriate in consultation with a qualified ornithologist and the CDFG.

The General Plan area includes 4,533.4 acres of irrigated row crops, 1,898 acres of which are alfalfa, which may serve as foraging habitat for Swainson's hawks. Swainson's hawks may also forage in non-native annual grassland in this area. Loss of these habitats could represent a significant impact if active Swainson's hawk nests are present within 10 miles (the average maximum distance from nests that pairs are known to forage).

Natural Resources Element Appendix NR requires preconstruction surveys, prohibits the removal of nest trees, and requires compensation for loss of foraging habitat. Therefore, this impact was determined to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR, so there would be no new or more severe impacts related to the potential loss of suitable habitat for Swainson's hawks. Any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-13 Individual projects accommodated by the General Plan could result in the loss of habitat for, and potential take of, San Joaquin kit fox.

Applicable General Plan Policies and Implementation Measures

Implementation Measure: NR-13

Implement the requirements of BIO-15, BIO-16, and BIO-17 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that some potential impacts to San Joaquin kit fox (SJKF) may occur in the General Plan Study Area near the Delta-Mendota Canal, particularly between the Delta-Mendota Canal and the California Aqueduct. Kit foxes in other portions of their range use canals of this type on occasion. These linear features are potential travel corridors for kit foxes during dispersal or exploratory forays. Impacts as a result of future projects covered by the General Plan, including construction activities associated with future development projects, may contribute to the injury and mortality of or loss of habitat for SJKF. However, Natural Resources Element Appendix NR would reduce any potential impacts to kit foxes to a less than significant level by requiring focused surveys, preservation of off-site habitat, and implementation of avoidance and minimization measures.

Master Plan Impact

The Wastewater Master Plan would not increase development along the Delta-Mendota Canal and the California Aqueduct or disturb travel corridors for kit foxes beyond the level anticipated in the General Plan EIR. There would be no new or more severe impacts related to San Joaquin kit fox habitat. In addition, any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-14 Individual projects accommodated by the General Plan could result in the mortality or injury of, and loss of habitat for, southwestern pond turtles.

Applicable General Plan Policies and Implementation Measures

Implementation Measure: NR-13

Implement the requirements of BIO-18, BIO-19, BIO-20, and BIO-21 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that impacts as a result of buildout of the General Plan, including construction activities associated with future development projects, may contribute to the injury and mortality of or loss of habitat for southwestern pond turtle. Future construction projects may contribute to the loss of this species through mechanical crushing; loss of nesting, breeding, or basking sites; and human trampling. Induced indirect impacts of future specific projects could contribute to a decline in water quality, temporary loss of upland nesting sites and foraging habitat, disruption of breeding activity, or disturbance of basking sites. Natural Resources Element Appendix NR requires focused surveys (individuals and nesting sites); monitoring, avoidance, and minimization measures; and relocation of nests and individual from construction zones. With implementation of requirements in Natural Resources Element Appendix NR, impacts to southwestern pond turtles were determined to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR, so there would be no new or more severe impacts related to injury or loss of habitat for southwestern pond turtle. In addition, any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-15 Individual projects accommodated by the General Plan could disturb nesting burrowing owls and result in the loss of occupied burrowing owl habitat.

Applicable General Plan Policies and Implementation Measures

Implementation Measure: NR-13

Implement the requirements of BIO-22 and BIO-23 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that burrowing owl, a CDFG Species of Special Concern, has been observed in the General Plan Study Area and that there is suitable habitat throughout the western edge of the area west of I-5 and in the margins of irrigated crops. Buildout of the General Plan, including associated construction activities, may contribute to the loss of habitat or injury and mortality of burrowing owls. Disturbance of habitat during the breeding season could also result in the displacement of breeding birds and the abandonment of active nests. Ground disturbance from future construction projects could contribute to the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Requirements in Appendix NR of the Natural Resources Element include CDFG protocol surveys and compensation for loss of habitat. The EIR found that with implementation of these requirements, impacts to burrowing owls would be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development or disturbance to burrowing owl habitat beyond that anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-16 Individual projects accommodated by the General Plan could disturb nesting avian "species of special concern."

Applicable General Plan Policies and Implementation Measures

Implementation Measure: NR-13

Implement the requirements of BIO-24 and BIO-25 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that loggerhead shrike has been identified as nesting within the General Plan area, and there is marginal nesting habitat for tricolored blackbirds. The grasshopper sparrow is also considered a Species of Special Concern and has been documented in Del Puerto Canyon; however, no evidence of nests has been documented.

The area west of Interstate 5 in the General Plan area contains about 415 acres of California annual grasslands, which could serve as habitat for the grasshopper sparrow. While the grasshopper sparrow was not listed in the California Natural Diversity Database or listed as a species with the likelihood to occur in the area, the loss of California annual grassland could have a cumulative impact on this species. While individual projects would not substantially reduce habitat available for these species, restrict their range, or cause their regional populations to drop below self-sustaining levels, the direct or indirect loss of nests through physical removal, nest abandonment, or reproductive suppression of these regionally rare species would constitute a

significant impact without mitigation if large numbers of nests or unique isolated breeding populations are affected. However, the EIR found that General Plan policies and implementation measures would reduce potential impacts to nesting avian species to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR, so there would be no new or more severe impacts related to loss of nesting avian species or habitat. In addition, any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-17 Individual projects accommodated by the General Plan could disturb raptors.

Applicable General Plan Policies and Implementation Measures

Implementation Measure: NR-13

Implement the requirements of BIO-26 and BIO-27 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that the northern harrier, a Species of Special Concern, and white-tailed kite, a state fully protected species, are known or have the potential to nest in the vicinity of the General Plan Study Area. While individual development projects would not substantially reduce habitat available for these species, restrict their range, or cause their regional populations to drop below self-sustaining levels, the direct or indirect loss of nests through physical removal, nest abandonment, or reproductive suppression of these regionally rare species would constitute a significant impact if large numbers of nests or unique isolated breeding populations are affected without mitigation. As a state fully protected species, the white-tailed kite is protected from take of any kind. Additionally, all raptors (i.e., eagles, hawks, and owls) and their nests are protected under both federal and state law. Impacts as a result of approval of the General Plan, including construction activities associated with future development projects, may contribute to the injury and mortality of or loss of habitat for nesting raptors. Disturbance of habitat during the breeding season could also result in the displacement of breeding raptors and the abandonment of active nests. The EIR found that General Plan policies and implementation measures would reduce potential impacts to nesting raptors to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR, so there would be no new or more severe impacts related to disturbance or loss of raptors. In addition, any improvements associated with the Master Plan would be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is

an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-18 Individual projects accommodated by the General Plan could result in impacts to special-status plants.

Applicable General Plan Policies and Implementation Measures

Policy: NR-3.6
Implementation Measure: NR-13

Implement the requirements of BIO-28, BIO-29, BIO-30, BIO-32, and BIO-33 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that the showy madia is a state rare species that may occur within the California annual grassland habitat west of Interstate 5. The nearest records of the species are from approximately 8 miles northwest of the General Plan Study Area. Delta button-celery is a state endangered species that, although reportedly extirpated from San Joaquin County, may still occur in vernally mesic clay depressions in the Study Area. The nearest records of the species are from approximately 1 mile southeast and 1 mile north of the General Plan Study Area. Several California Native Plant Society (CNPS) listed species also have the potential to occur within the General Plan Study Area. List 1B species are rare throughout their range and include big tarplant, round-leaved filaree, Lemmon's jewelflower, diamond-petaled California poppy, and red-flowered lotus. List 4 species include California androsace, Oakland star-tulip, small-flowered morning glory, gypsum-loving larkspur, stinkbells, hogwallow starfish, serpentine leptosiphon, and delta woolly-marbles. List 4 species are of limited distribution in California and may be significant locally.

The EIR found that construction activities associated with buildout of the General Plan may reduce the number or restrict the range of a rare or endangered plant. However, General Plan policies and implementation measures reduce potential impacts to special-status plant species to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR, so there would be no new or more severe impacts related to loss of special-status plant species. Any improvements associated with the Master Plan would also be subject to the same requirements in Appendix NR of the Natural Resources Element. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-19 Future projects accommodated by the General Plan have the potential to degrade water quality within the irrigation laterals, within Del Puerto Creek in the area west of Interstate 5, in the San Joaquin River, and at the terminus of

the laterals and within Salado Creek as a result of pollution, sedimentation, and litter stemming from site construction. These factors could result in significant indirect effects to downstream biological resources.

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that future projects would have to comply with state and federal water quality regulations, including California's General Construction Stormwater Permit, which requires preparation and implementation of a stormwater pollution prevention plan (SWPPP). SWPPPs are designed to manage stormwater quality degradation through best management practices during and after construction. These practices may include temporary drainage ditches, culverts, berms, and/or straw bales that confine stormwater and prevent it from carrying sedimentation off the project site. The EIR found that project compliance with the SWPPP would ensure that indirect impacts to biological resources are reduced to less than significant levels.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be subject to the General Construction Stormwater Permit requirements. Therefore, there would be no new or more severe impacts related to water quality effects on biological resources. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.10-20 Cumulative impacts to sensitive biological resources

Applicable General Plan Policies and Implementation Measures

Policies: NR-3.1, NR-3.2, NR-3.3, NR-3.4, NR-3.5, NR-3.6, NR-3.7, NR-3.8, NR-3.9, NR-3.10, and NR-3.11
Implementation Measure: NR-13

Implement the requirements of BIO-1 through BIO-33 in Appendix NR of the General Plan Natural Resources Element.

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that future development activities in the vicinity of the General Plan Study Area would result in considerable disturbance to special-status wildlife and plants, their habitats, and

other sensitive biological resources. The incremental effect of the proposed project, when combined with the effects created by other past and reasonably foreseeable projects, would be cumulatively considerable even though project applicants will be required to obtain regulatory approvals and implement the mitigation measures previously described to address direct and indirect effects of individual projects.

The EIR found that General Plan policies, implementation measures, and additional mitigation measures recommended by the General Plan EIR and incorporated into Appendix NR of the Natural Resources Element reduce regional impacts relating to habitat loss for plant and animal species. However, cumulative impacts were determined to remain cumulatively considerable and significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be subject to the General Plan policies, implementation measures, mitigation measures, and requirements in Appendix NR. Implementation of these measures would ensure that no new or more severe impacts related to cumulative effects on biological resources would result from the Master Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

5.11 Agricultural Resource Impacts

Impact 5.11-1 Permanent loss of prime agricultural land and other Important Farmland

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.7, NR-2.8, NR-2.9, NR-2.10, and NR-2.11
Implementation Measures: NR-C and NR-F

General Plan EIR Mitigation Measures

None identified.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan would permanently convert approximately 8,826 acres of prime and other Important Farmland to nonagricultural uses. General Plan policies help to minimize impacts relating to the permanent conversion of productive agricultural lands. Nevertheless, buildout of the General Plan would result in the permanent loss of productive agricultural land. Therefore, this impact was considered significant and unavoidable.

Master Plan Impact

Any improvements associated with the Wastewater Master Plan would be subject to the General Plan policies, implementation measures, and mitigation measures provided in the General Plan EIR to reduce impacts related to the loss of agricultural land. The Master Plan would not increase development beyond that anticipated in the General Plan EIR, so additional farmland would not be converted and there would be no new or more severe impact related to conversion of Important

Farmland. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.11-2 Permanent loss of prime agricultural land for road widenings

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.7, NR-2.8, NR-2.9, NR-2.10, and NR-2.11
Implementation Measures: NR-C and NR-F

General Plan EIR Mitigation Measures

No feasible mitigation identified.

Previously Identified Impacts

The EIR identified a number of roadway improvements outside the General Plan Study Area that would result in the permanent conversion of Important Farmland. The permanent loss of Important Farmland for roadway improvements outside the General Plan Study Area would range from 113.3 to 122.6 acres.

Almost all of the land surrounding the city is classified as Important Farmland by the State. Accordingly, there are no feasible alternative alignments that would avoid these resources. Although the roadway improvements would be constructed within existing right-of-way wherever possible, portions of each roadway improvement will be constructed outside of existing rights-of-way, which would likely result in the conversion of Important Farmland.

General Plan policies and implementation measures would apply to the conversion of agricultural land for roadway improvements. However, the result was that the permanent loss of prime farmland was considered to be a significant and unavoidable impact.

Master Plan Impact

The proposed Wastewater Master Plan would not involve any roadway improvements beyond those evaluated in the General Plan EIR. In addition, any improvements associated with the Master Plan would be subject to the General Plan policies, implementation measures, and mitigation measures in the General Plan EIR to reduce effects related to the loss of agricultural land. Because there would be no additional roadways and Master Plan development would be required to implement General Plan policies and mitigation measures, the Master Plan would not have new or more severe impacts. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.11-3 Permanent loss of prime agricultural land to construct a regional park

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.7, NR-2.8, NR-2.9, NR-2.10, and NR-2.11
Implementation Measures: NR-C and NR-F

General Plan EIR Mitigation Measures

No feasible mitigation identified.

Previously Identified Impacts

The EIR identified that buildout of the General Plan will include a site for a regional park in the vicinity of the San Joaquin River. Although a specific parcel (or parcels) has not been chosen for this facility, all of the properties near the river are classified as Important Farmland by the State. Assuming a regional park is about 50 acres in size, any location for a park in this area would result in the permanent conversion of about 50 acres of prime farmland (this acreage is already assumed in the overall General Plan impact on 8,826 acres of Important Farmland).

General Plan policies and implementation measures would apply to the conversion of agricultural land for a regional park. However, the net result was determined to remain a permanent loss of prime farmland, which was identified as a significant and unavoidable.

Master Plan Impact

The proposed Wastewater Master Plan would not involve construction of any park facility. Consequently, there would be no new or more severe impacts associated with conversion of Important Farmland due to park construction. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.11-4 Conflicts between urban land uses and ongoing agricultural operations

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.2, NR-2.4, and NR-2.10

General Plan EIR Mitigation Measures

Additional recommended implementation measure:

5.11-2(a) Buffering Techniques. As residential or school development occurs adjacent to agricultural uses, such development shall implement one or more of the following buffering techniques in its design:

- Roadways, creeks or canals shall be used as buffers where feasible;
- Where incompatible uses directly abut, fences shall be installed on the non-agricultural use, which shall be designed to limit the drift of pesticides or other sprays, and shall discourage climbing and graffiti to the extent possible;
- If additional non-residential development is anticipated in an area that is currently in agricultural use, fencing at the current interface of conflict shall be removed if requested by the current property owner on which the fence is located. The cost for the fence removal must be borne by the developer of the land being converted from agriculture to urban uses.

Previously Identified Impacts

The EIR identified that future development under the General Plan would place residences and businesses in close proximity to ongoing agricultural operations, potentially burdening local agricultural operations. The dust, noise, odors, chemicals, aircraft and other machinery, and hours of operation associated with agricultural operations may be perceived as a nuisance to residents and merchants. This in turn may give rise to complaints and lead to an increase in public support for conversion of surrounding agricultural lands. Developing urban land uses at the edge of agricultural land uses may also increase the potential for trespass on agricultural land, as well as crop pilfering, crop damage, and potential personal injury liability associated with trespass.

Other indirect impacts to agriculture from nearby urban uses can affect the long-term viability of such operations. Increased regulations and liability insurance to protect the farmer from adjacent urban uses cost time and money. Some farmers sensitive to nearby public uses voluntarily limit their hours of operation and do not intensively use the portions of their property closest to urban uses, in effect establishing informal buffer zones on their own property. This has the effect of lowering the crop yield and therefore the long-term economic viability of the agricultural operation. Over time, this may provide an incentive for the property owners of adjacent lands under Williamson Act contract to file a Notice of Non-Renewal.

The EIR found that General Plan policies would help to minimize agricultural land use conflicts. However, the conversion of agricultural land to urban uses is expected to occur over the planning horizon, during which conflicts between urban development and ongoing agricultural operations will continue to occur. As a result, impacts relating to conflicts between urban development and ongoing agricultural operations were determined to be significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not increase development or agricultural operations beyond those anticipated in the General Plan EIR. Master Plan improvements could potentially cause temporary conflicts with agricultural operations if they restrict agricultural operations during construction when improvements are placed in nearby roadways. However, since the Master Plan improvements would not introduce sensitive land uses, the conflicts of Master Plan improvements with agricultural operations would be less than those identified for other uses in the General Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.11-5 Conflicts between urban land uses and land zoned for agricultural operations as well as land governed by existing Williamson act contracts

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.7, NR-2.8, NR-2.9, NR-2.10, and NR-2.11
Implementation Measures: NR-C and NR-F

General Plan EIR Mitigation Measures

No feasible mitigation identified.

Previously Identified Impacts

The EIR identified that development of the General Plan Planning Area with urban uses would result in conflicts between urban uses and land zoned for agricultural uses and land governed by existing Williamson Act contracts. The Planning Area contains approximately 5,216 acres of land subject to Williamson Act contracts, with 3,209 nonrenewal acres. The majority of acreage outside of the existing city limits and in the county is designated and zoned for agricultural use.

General Plan goals, policies, and action items assist in reducing the loss of Williamson Act contracted lands and the conversion of agriculturally zoned lands to urban land uses. Nevertheless, implementation of the General Plan was identified to result in additional land use conflicts with land zoned for agriculture and potentially pressure existing Williamson Act contracted lands to file for nonrenewal. Therefore, this impact was considered to be significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan improvements could potentially conflict with land zoned for agricultural use or governed by existing Williamson Act contracts. However, the Master Plan would not directly increase development on land zoned for agricultural use or under a Williamson Act contract beyond that anticipated in the General Plan EIR. In addition, because the Master Plan would not include land uses that are considered sensitive to agricultural activities, the potential for indirect pressure to convert existing Williamson Act contracted lands to file for nonrenewal would be lower overall than for other uses identified in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.11-6 Cumulative loss of Important Farmland

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.7, NR-2.8, NR-2.9, NR-2.10, and NR-2.11
Implementation Measures: NR-C and NR-F

General Plan EIR Mitigation Measures

No feasible mitigation identified.

Previously Identified Impacts

The EIR identified that most of the agricultural land in the western Stanislaus region is considered prime farmland. Cumulative development throughout Stanislaus County and Patterson would impact the region's agricultural resources and convert prime farmland to urban uses. Future development in accordance with the General Plan would incrementally contribute to this substantial change.

General Plan policies help minimize impacts relating to the permanent conversion of productive agricultural lands. Nevertheless, implementation of the General Plan was identified to result in the permanent loss of productive agricultural land, which was considered cumulatively considerable and significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not contribute to the cumulative permanent conversion of productive agricultural lands beyond that anticipated in the General Plan EIR. As previously discussed, improvements associated with the Master Plan were considered in the General Plan EIR as part of the infrastructure necessary to support the population growth that would occur in the city. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.11-7 Cumulative conflicts between urban land uses and ongoing agricultural operations

Applicable General Plan Policies and Implementation Measures

Policies: NR-2.2, NR-2.4, and NR-2.10

Plus additional recommended implementation measure:

5.11-2(a) Buffering Techniques. As residential or school development occurs adjacent to agricultural uses, such development shall implement one or more of the following buffering techniques in its design:

- Roadways, creeks or canals shall be used as buffers where feasible;
- Where incompatible uses directly abut, fences shall be installed on the non-agricultural use, which shall be designed to limit the drift of pesticides or other sprays, and shall discourage climbing and graffiti to the extent possible;
- If additional non-residential development is anticipated in an area that is currently in agricultural use, fencing at the current interface of conflict shall be removed if requested by the current property owner on which the fence is located. The cost for the fence removal must be borne by the developer of the land being converted from agriculture to urban uses.

General Plan EIR Mitigation Measures

No feasible mitigation identified.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan, together with development throughout the region, would result in compatibility conflicts between urban development and ongoing agricultural operations. General Plan policies help to minimize impacts relating to the permanent conversion of productive agricultural lands. Nevertheless, implementation of the General Plan would result in potential incompatibilities that could affect operations on existing agricultural land, which was considered cumulatively considerable and significant and unavoidable.

Master Plan Impact

As discussed above, the Wastewater Master Plan would not include land uses that are considered sensitive to agricultural activities, so the Master Plan would not contribute to compatibility conflicts between urban development and ongoing agricultural operations in the region beyond those

anticipated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

5.12 Hazards and Hazardous Materials Impacts

Impact 5.12-1 Transport of hazardous materials on Study Area roadways could result in exposure of such materials to the public either through routine use or due to accidental release.

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.1, HS-4.2, HS-4.3, HS-4.4, HS-4.5, and HS-4.6

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan could include the transport of hazardous materials on Planning Area roadways, which could result in the public's exposure to such materials either through routine use or due to accidental release.

Developers, contractors, business owners, and others using, storing, and transporting hazardous materials are required to comply with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards and regulations designed to avoid hazardous material releases. All existing and future development would be required to comply with federal, state, and local regulations regarding the handling and transportation of hazardous materials. The EIR also found that General Plan policies would contribute to reductions in hazards associated with the transport of hazardous materials through the Planning Area. Therefore, this impact was determined to be less than significant.

Master Plan Impact

Construction of improvements included in the Wastewater Master Plan was assumed as part of the General Plan, so the Master Plan would not increase the transport of hazardous materials beyond that anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be required to comply with existing local, state, and federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-2 Release of hazardous materials into the environment under reasonably foreseeable upset or accident conditions

Applicable General Plan Policies and Implementation Measures

Policies: HS-3.6, HS-3.8, HS-4.1, HS-4.2, HS-4.4, HS-6.3, HS-6.4, HS-6.5, HS-6.6, HS-6.7, HS-6.8, HS-6.9, and HS-7.1

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan could result in the release of hazardous materials into the environment under reasonably foreseeable conditions. The transportation of hazardous materials on area roadways is regulated by the California Highway Patrol (CHP), US Department of Transportation (Hazardous Materials Transportation Act), and Caltrans, and use of these materials is regulated by the California Department of Toxic Substances Control (DTSC) (22 California Code of Regulations Section 66001, et seq.). Developers, contractors, business owners, and others using, storing, and transporting hazardous materials are required to comply with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases. The EIR disclosed that all existing and future projects in the Planning Area would be required to comply with federal, state, and local regulations regarding the handling, transportation, disposal, and cleanup of hazardous materials. General Plan policies ensure that hazards associated with the transport of hazardous materials through the Planning Area are reduced. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR. As noted above, the EIR states that all existing and future projects in the Planning Area would be required to comply with federal, state, and local regulations regarding the handling, transportation, disposal, and cleanup of hazardous materials. These regulations have a mitigating effect related to the handling of hazardous materials and reduce the potential for accidental release. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-3 The General Plan would accommodate urban land uses that would potentially expose construction workers and future residents to potentially hazardous concentrations of environmentally-persistent pesticides (e.g., DDT, toxaphene).

Applicable General Plan Policies and Implementation Measures

Policies: HS-6.5, HS-6.7, HS-6.8, and HS-6.9

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that surface and shallow-surface soils in the Planning Area that have historically have been used for intensive agricultural production may contain residual concentrations of environmentally persistent pesticides or heavy metals (lead or arsenic) above adopted human health thresholds. Chlorinated pesticides, such as DDT and toxaphene, were

extensively used throughout California farmlands prior to their prohibition in the mid-1970s. The US Environmental Protection Agency, Region IX, has developed risk-based screening levels (RBSLs) for toxic compounds in soil for residential and commercial properties. The RBSLs are health risk standards that have been developed for a wide range of toxic compounds, including volatile organic compounds, metals, semi-volatile organic compounds, and pesticides. The Stanislaus County Department of Environmental Health Services applies RBSLs to cleanup sites when reviewing site remediation and development proposals. General Plan policies also contribute to a reduction in potential hazards associated with exposure to hazardous materials in the soil. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

As noted above, the Stanislaus County Department of Environmental Health Services applies RBSLs to cleanup sites when reviewing site remediation and development proposals. Therefore, any improvements associated with the Wastewater Master Plan that could result in human exposure to hazardous materials in the soils would be subject to review and remediation as determined by the Stanislaus County Department of Environmental Health Services. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-4 The General Plan designates areas for urban development in the vicinity of the Patterson Airport and the Crows Landing Air Facility, which may expose people or property to hazards associated with aircraft operations.

Applicable General Plan Policies and Implementation Measures

Policies: LU-9.1 and LU-9.2

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that the Planning Area is subject to two airport land use plans: the Patterson Airport and the Crows Landing Naval Airfield. Appropriate land uses and densities were chosen for the General Plan to be consistent with the restrictions of each airport land use plan. Future development within each airport plan area must comply with the restrictions associated with the applicable airport plan. The General Plan designates land for additional residential development to the south of the city and north of the Delta-Mendota Canal. A portion of the land designated by the General Plan for estate residential development is located in safety zones 3 and 4. Rural residential development of 10 acres or more is considered a conditionally approvable use in zone 3, and residential development up to multi-family densities is considered a compatible use in zone 4. The General Plan also designates additional land for industrial and residential development north of the Patterson Airport. These uses are consistent with the adopted airport land use plan for the Patterson Airport. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not increase development within the Patterson Airport and the Crows Landing Naval Airfield land use planning areas beyond that anticipated in the General

Plan EIR and would not include uses that conflict with airport land use plans such that there would be a safety hazard. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-5 The Equal-Weight Alternatives may be inconsistent with the draft Airport Land Use Plan for the Crows Landing Airfield.

Applicable General Plan Policies and Implementation Measures

None identified.

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that the Land Use Plan for the Crows Landing Airfield (draft) sets forth revised safety compatibility requirements and safety zones. The areas designated for urban development lie outside the recommended safety zones. Therefore, the General Plan was determined to be consistent with safety standards recommended by the Airport Land Use Plan for the Crows Landing Airfield. This impact was considered to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development within the safety zones of the Crows Landing Airfield beyond that anticipated in the General Plan EIR. In addition, any improvements associated with the Master Plan would be subject to review to determine consistency with the airfield's safety zones. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-6 Proposed land uses and/or changes in land use patterns would not interfere with adopted emergency response or evacuation plans.

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.1, HS-4.2, and HS-4.4
Implementation Measures: HS-3 and HS-4

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that proposed land uses and/or changes in land use patterns that would occur as a result of the General Plan would not interfere with adopted emergency response or evacuation plans. The General Plan would not alter Patterson's overall land use pattern or land use designations to such an extent that it would conflict with the City's emergency response and/or evacuation plans. The roadway improvements recommended by the Circulation Plan incorporate

the recommendations of the City Fire Department and Police Department with regard to emergency access to all parts of the Planning Area. Where necessary, additional fire and police substations would be provided to serve the growing population accommodated by the General Plan. The proposed roadway system would improve city roadway connectivity, allowing better emergency vehicle access to residences as well as evacuation routes for area residents. In addition, General Plan policies and implementation measures ensure consistency with adopted emergency response plans. Therefore, this impact was determined to be less than significant.

Master Plan Impact

The proposed Wastewater Master Plan would not change the development assumptions from those anticipated in the EIR and would not interfere with adopted emergency response or evacuation plans. Furthermore, implementation of the General Plan policies identified above would ensure that adequate emergency access is provided throughout the city. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-7 Increased rail operations over time, combined with an increase in population, employment, and motor vehicle, pedestrian, and bicycle traffic associated with the project, will increase the risk associated with at-grade railroad crossings.

Applicable General Plan Policies and Implementation Measures

Policies: HS-7.1 and HS-7.2

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that future train traffic through the Planning Area could increase from one to two trains per day to as many as six per day over the next 20 or more years. In addition, the increase in motor vehicle trips generated by development will result in an increase in the number of vehicles on city roadways and the potential hazard associated with at-grade railroad crossings. The annual rate of at-grade rail crossings accidents per 100,000 residents has remained fairly constant since 1998, with a high of 1.39 accidents per 100,000 in 1999 and a low of zero in 2001. During the same period, the county population grew by about 97,000 residents.

When considering the safety of at-grade crossings, it is important to distinguish between the hazard associated with the crossings and the actual risk. The hazard associated with the crossings is an accident involving a train and a motor vehicle, pedestrian, or bicycle. The risk, however, is the likelihood that an accident will occur. Although the hazard associated with at-grade railroad crossings is likely to increase over time as population and employment in the city grows, the rate of accidents per 100,000 residents (the risk) will likely exhibit similar characteristics as over the 1998 to 2009 time frame and remain low. The historical risk associated with at-grade railroad crossings has been relatively low in the Planning Area. While the potential increase in train trips in the future is large when compared with current conditions, the risk associated with trains passing through the city will remain low. In addition, General Plan policies ensure the continued safety of at-grade railroad crossings. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not increase train traffic or motor vehicle, pedestrian, or bicycle trips beyond that anticipated in the General Plan EIR. Therefore, no new or more severe impacts would occur. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-8 Future residents and property could be isolated from emergency services as a result of a train blocking one or more of the at-grade railroad crossings.

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.2 and HS-4.4
Implementation Measures: HS-2, HS-3, and HS-4

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that future residents and property accommodated by the General Plan could be isolated from emergency services as a result of a train blocking one or more of the at-grade railroad crossings. The General Plan designates land for additional development on both the east and west sides of the existing railroad right-of-way. A train parked or stalled on the tracks by an accident could result in areas on the east side of the tracks being isolated from emergency services originating at the existing police station located at 33 S. Del Puerto Avenue and the Fire Station located at 344 W. Las Palmas Avenue. Discussions with the Police and Fire departments suggest that additional substations for emergency personnel and equipment will be needed to serve the General Plan buildout over time. However, to address the potential isolation of the east side of the city from emergency services, land has been designated for a fire station in The Villages of Patterson project approved in 2006. The City's Capital Improvement Program and development impact fees will fund construction of the fire station when needed. In addition, General Plan policies ensure the continued safety of residents and property isolated by a train blocking at-grade railroad crossings. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The proposed Wastewater Master Plan would not change the development assumptions of the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-9 Development west of Interstate 5 in the foothills of the Diablo Range could place residents and property at risk from wildland fires.

Applicable General Plan Policies and Implementation Measures

Policies: PS-6.1, PS-6.2, PS-6.3, and PS-6.4
Implementation Measures: PS-8, PS-9, and PS-11

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR disclosed that land west of Interstate 5, considered to be at "high" and "moderate" risk to wildland fires, has been designated for Mixed-Use Hillside Development in the General Plan. The City of Patterson and the West Stanislaus Fire Protection District have a mutual aid agreement and share administrative duties, and the California Division of Forestry and Fire Protection (Cal Fire) operates a fire station on Sperry Avenue just west of Baldwin Road. The EIR found that General Plan policies and implementation measures intended to maintain an acceptable response time to all areas of the city, an additional fire protection substation and secondary vehicular access route, and enforcement of applicable fire protection building codes would reduce the risk associated with wildland fires to a less than significant level.

Master Plan Impact

The Wastewater Master Plan would not increase development west of Interstate 5 beyond that anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be subject to the General Plan policies, implementation measures, and mitigation measures provided in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-10 Implementation of the General Plan together with regional development through buildout will contribute to the cumulative increase in the use, storage, and transport of hazardous materials and the risk associated with these materials.

Applicable General Plan Policies and Implementation Measures

Policies: HS-3.6, HS-3.8, HS-4.1, HS-4.2, HS-4.4, HS-6.3, HS-6.4, HS-6.5, HS-6.6, HS-6.7, HS-6.8, HS-6.9, and HS-7.1

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan could result in increased hazard-related impacts; however, these impacts would be specific to individual sites in the Planning Area and would not be tied to any regional hazard or contamination issues. Federal, state, and local regulations would determine appropriate land uses in the vicinity of airports affecting the Planning Area. The EIR anticipated that not only development projects (e.g., residential, commercial, park, and recreational land uses) would occur under the General Plan, but there would also be infrastructure projects, such as public and utility extension projects, roadway widenings and extensions, intersection improvements, water system distribution improvements, and trail extensions. The EIR determined that the nature of these projects would

not significantly increase human health or safety risks, and the impact was determined to be a less than significant.

Master Plan Impact

As discussed above, the EIR considered the effects of infrastructure-related impacts such as would occur under the Wastewater Master Plan. Therefore, the Master Plan would not result in additional impacts beyond those anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be subject to the General Plan policies, implementation measures, and mitigation measures provided in the General Plan EIR, as well as existing regulations that reduce the potential for exposure to hazards. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-11 Exposure of additional people and property to the hazards associated with aircraft operations at the Patterson Airport and the Crows Landing Airfield

Applicable General Plan Policies and Implementation Measures

Policies: HS-6.5, HS-6.7, HS-6.8, HS-6.9, LU-9.1, and LU-9.2

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that implementation of the General Plan together with regional development through 2050 may expose additional people and property to the hazards associated with aircraft operations at the Patterson Airport and the Crows Landing Airfield. Development accommodated by the General Plan will increase the number of dwellings, businesses, schools, and other uses in the city which, together with other development in the region, will be exposed to an increased hazard of aircraft operations. However, the land use designations of the General Plan are consistent with the adopted Airport Land Use Plans for the Patterson Airport and the Crows Landing Airfield. Cumulative impacts were therefore considered less than cumulatively considerable.

Master Plan Impact

The Wastewater Master Plan would not result in development of uses within airport land use planning areas that would result in increased exposure to aircraft operations hazards. Any improvements associated with the Master Plan would be subject to review to ensure that they comply with restrictions of these Airport Land Use Plans. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-12 Cumulative development may interfere with adopted emergency response or evacuation plans

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.1, HS-4.2, and HS-4.4
Implementation Measures: HS-3 and HS-4

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that proposed land uses and/or changes in land use patterns that would occur as a result of the General Plan, together with regional growth, may interfere with adopted emergency response or evacuation plans. However, the City's adopted Emergency Operations Plan (EOP) is to be periodically reviewed and updated over time. The EIR found that since the type and nature of hazards affecting the city and the region are not likely to change over time, the procedures provided in the EOP would continue to apply and, should a previously unforeseen potential for emergency arise during the 20-year or 40-year buildout time frames of the General Plan, the policies and implementation measures which require the periodic update of the EOP would ensure continued consistency. Therefore, the EIR found that this impact was less than significant.

Master Plan Impact

The Wastewater Master Plan would not result in development beyond that evaluated in the General Plan EIR or otherwise interfere with emergency response or evacuation. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.12-13 Increased rail operations, combined with an increase in population, employment, and motor vehicle, bicycle, and pedestrian traffic in the region, will increase the risk associated with at-grade railroad crossings.

Applicable General Plan Policies and Implementation Measures

Policies: HS-4.2 and HS-4.4
Implementation Measures: HS-2, HS-3, and HS-4

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that rail traffic may increase in the future along with the population and employment accommodated with the General Plan, in addition to regional development. Together, this will contribute to an increase in the potential exposure of motor vehicles, pedestrians, and bicyclists to hazards associated with at-grade rail crossings. The EIR found that the overall risk

associated with at-grade crossings (the likelihood that an accident at an at-grade crossing will occur) was expected to remain low through the time frame of the General Plan. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not increase the number or amount of rail operations, population, employment, motor vehicle trips, bicycle trips, and pedestrians beyond that anticipated in the General Plan EIR. Therefore, the Master Plan would not increase risks associated with at-grade crossing accidents. This is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

5.13 Hydrology and Water Resource Impacts

Impact 5.13-1 Development activities accommodated by the project could result in the discharge of polluted runoff from the construction of future urban development, potentially causing harm to the biological integrity of waterways, violating water quality standards, or otherwise substantially degrading surface water quality.

Applicable General Plan Policies and Implementation Measures

Policies: NR-1.2, NR-1.3, NR-1.4, NR-1.7, NR-2.11, NR-6.1, HS-2.9, HS-2.14, HS-6.5, PS-2.5, HS-3.13, and PS-3.14
Implementation Measures: HS-1, PS-5, NR-1, PS-6, and PS-7

General Plan EIR Mitigation Measures

Recommended additional policy:

NR-1.4 **New development.** The City shall require new development to protect the quality of water bodies and drainage systems through adaptive site design, stormwater management, and the implementation of best management practices (BMPs). The City shall apply the following principles of Low Impact Development in the review of development projects for purposes of minimizing runoff and potential water quality impacts:

a. Make Sensitive Choices in Site Layout. Identify the most sensitive natural areas and, where possible, leave them undeveloped. To the extent possible, set back development from creeks, wetlands, and riparian habitats. Preserve significant trees. Conform the site along natural land forms, avoid excessive grading and disturbance of vegetation and soils, and mimic the site's natural drainage patterns. Where possible, concentrate development on portions of the site with less permeable soils, and preserve areas that can promote infiltration. To the extent possible, limit overall coverage of paving and roofs by designing compact structures, narrower and shorter streets and sidewalks, smaller parking lots, and indoor or underground parking. Where possible, detain and retain runoff throughout the site. Use drainage design elements such as depressed landscape areas, vegetated buffers, and bioretention facilities (consisting of a shallow surface reservoir, a layer of imported planting medium, and a gravel underlayer with

perforated pipe underdrains) as amenities and focal points within the site and landscape design.

b. Use Pervious Surfaces. In new buildings and major retrofits, evaluate the technical and economic feasibility of green roofs. Identify where permeable pavements, such as crushed aggregate, turf block, unit pavers, pervious concrete, or pervious asphalt could be substituted for impervious concrete or asphalt paving.
c. Disperse Runoff to Adjacent Pervious Areas. Where possible, direct roof downspouts across pervious areas. A maximum 2:1 ratio between impervious and pervious surfaces is recommended. Receiving pervious areas should be relatively flat, and soils should be amended as needed to promote infiltration. Similarly, parking areas should be designed so that runoff can sheet flow to landscaped areas. Where feasible, use curb cuts or no curbs to allow runoff to flow to vegetated areas.
d. Direct runoff to bioretention facilities, flow-through planters, dry wells, or cisterns. On densely developed sites, and where runoff from impervious roofs and paved areas cannot be dispersed to landscaping, consider directing runoff to facilities designed to detain and treat runoff before letting it seep away slowly. Dry wells or infiltration basins may be used if soils are sufficiently permeable and geotechnical considerations allow. Bioretention facilities can be a suitable option for many sites.

Previously Identified Impacts

According to the EIR, construction and grading activities associated with development associated with General Plan buildout could result in the exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff. Soil stockpiles and excavated areas would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation in off-site receiving waters and eventually the San Joaquin River.

However, the EIR found that continued compliance with the relevant provisions of the Clean Water Act relative to the protection of surface water and groundwater quality will ensure impacts to water quality associated with development accommodated by the General Plan will be reduced. Specifically, compliance with the City's Small MS4 General Permit best management practices (BMPs) before, during, and after construction would include:

- Good housekeeping activities such as storing of materials covered and elevated off the ground, in a central location.
- Securely locating portable toilets away from the storm drainage system and performing routine maintenance.
- Providing a central location for concrete washout and performing routine maintenance.
- Providing several dumpsters and trash cans throughout the construction site for litter/floatable management.
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

Projects disturbing more than 1 acre of land during construction would continue to be required to file a Notice of Intent (NOI) with the RWQCB to be covered under the State NPDES General Construction Permit for discharges of stormwater associated with construction activity. Under the provisions of the City's General Permit, a developer must propose control measures that are consistent with the State General Permit. A stormwater pollution prevention plan (SWPPP) must

also be developed and implemented for each site. General Plan policies and implementation measures would also contribute to the protection of water quality. Therefore, this impact was determined to be less than significant.

Master Plan Impact

The proposed Wastewater Master Plan identifies the construction of facilities to serve development in the city, which could result in the discharge of polluted runoff during construction if not properly mitigated. However, the General Plan assumed construction of the necessary facilities to serve the increased population associated with the implementation of the General Plan. Furthermore, General Plan policies and implementation measures and the City's Municipal Code would reduce environmental impacts associated with any physical improvements. This is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-2 Development accommodated by the project could result in the discharge of polluted runoff, potentially causing harm to the biological integrity of waterways, violating water quality standards, or otherwise substantially degrading surface water quality.

Applicable General Plan Policies and Implementation Measures

Policies: NR-1.2, NR-1.3, NR-1.4, NR-1.7, NR-2.11, NR-6.1, HS-2.9, HS-2.14, HS-6.5, PS-2.5, HS-3.13, and PS-3.14
Implementation Measures: HS-1, PS-4, PS-5, NR-1, PS-6, and PS-7

General Plan EIR Mitigation Measures

Recommended additional Policy NR-1.4, as noted in Impact 5.13-1.

Previously Identified Impacts

The EIR found that intensified land uses accommodated by the General Plan would result in increased vehicle use and potential discharge of associated pollutants. Leaks of fuel or lubricants, tire wear, and fallout from exhaust contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff being transported to receiving waters. Runoff from landscaped areas and individual home sites may contain residual pesticides and nutrients. Long-term degradation of the quality of runoff from the site could potentially degrade the quality of receiving waters.

The City of Patterson operates under a State Water Resources Control Board General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems, also known as MS4s. As required for coverage under this permit, the City prepared a Storm Water Management Program to implement and enforce BMPs designed to reduce the discharge of pollutants from the city's municipal separate storm drain systems to protect water quality. These BMPs include public participation and involvement, public education and outreach, construction site runoff control, illicit discharge detection and elimination, pollution prevention and good housekeeping, and post-construction runoff control. In addition, General Plan policies and implementation measures contribute to the protection of water quality. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The proposed Wastewater Master Plan identifies the construction of facilities to serve development in the city, the operation of which could result in the discharge of polluted runoff if not mitigated. However, the General Plan assumed construction and operation of the necessary facilities to serve the increased population associated with the implementation of the General Plan. Furthermore, General Plan policies and implementation measures and the City's Municipal Code would further reduce environmental impacts associated with any physical improvements deemed necessary per the Master Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-3 The expansion of the city's use of recycled water for landscape irrigation and/or groundwater recharge as contemplated under the project could pose a health risk to future residents and visitors.

Applicable General Plan Policies and Implementation Measures

Compliance with US Environmental Protection Agency's (EPA) Surface Water Treatment Rule and state and local regulations

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

According to the EIR, the delivery of recycled water would occur in plumbing systems completely separate from the potable supply. Human health risks from recycled water arise mainly from the presence of microbial pathogens in sewage or greywater. Both of these water sources contain a broad range of pathogenic microorganisms, and Title 22 requires that the levels of these microorganisms be reduced by treatment so that exposure to recycled water does not pose an unacceptable health risk. A diverse range of chemicals may also be present in sewage and greywater.

The reliability or relative safety of water reuse can be assessed in comparison to domestic water supplies that meet the EPA's Surface Water Treatment Rule (SWTR). When the disinfected, filtered secondary effluent (tertiary treatment) is chlorinated at about 10 milligrams per liter (mg/L), there is virtually no difference in the probability of enteric virus infection whether reclaimed water or domestic water is used for golf course irrigation, crop irrigation, or groundwater recharge. However, depending on the water quality of the secondary effluent, health risks associated with exposure to recreational impoundments used for body contact sports and swimming may be higher. Similar observations can be made for the use of chlorinated secondary effluent and the reclaimed water from contact filtration with chlorine doses of below 5 mg/L.

Therefore, as long as the recycled water meets the SWTR and the water remains away from human contact, the microbial risk associated with use for crop or landscape irrigation would be no greater than the risk associated with domestic potable water supplies that meet the SWTR. The human health risk associated with expanded use of recycled water was therefore determined to be less than significant.

Master Plan Impact

The proposed Wastewater Master Plan would not provide infrastructure or facilities beyond those anticipated in the EIR and thus would not result in increased use of recycled water for landscape irrigation beyond the use evaluated in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-4 Degradation of groundwater quality resulting from construction and operation of future land uses

Applicable General Plan Policies and Implementation Measures

Policies: NR-1.2, NR-1.3, NR-1.4, NR-1.5, NR-1.7, NR-1.8, NR-2.11, NR-6.1, HS-2.9, HS-2.14, HS-6.5, PS-2.5, HS-3.13, and PS-3.14
Implementation Measures: HS-1, PS-5, NR-1, PS-6, and PS-7

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan could generate runoff containing oils, grease, fuel, antifreeze, byproducts of combustion (such as lead, cadmium, nickel, and other metals), household pollutants, nutrients (e.g., fertilizers and pet waste), and other chemicals from landscaped areas. In addition, the City has an extensive system of basins to manage runoff and would continue to employ retention and detention basins to manage runoff associated with buildout of the General Plan. Stormwater collected in these basins would likely contain some of the pollutants described above, originating on area streets and developed sites. These pollutants could potentially contaminate groundwater (if not properly treated with water quality controls) as runoff percolates into the soil. However, as noted above, the statewide NPDES permits for construction runoff, dewatering, and other low-threat releases to surface water, and discharges from municipal storm drain systems (MS4s) require the provision of water quality control measures that would protect groundwater quality from future development activities.

The California Storm Water Best Management Practices Handbook prepared by the California Stormwater Quality Association concludes that water quality control features such as infiltration basins have been successful in controlling water quality and avoiding groundwater quality impacts. As runoff infiltrates into the ground, particulates and attached contaminants such as metals and nutrients are removed as they become attached to soil particles. Dissolved constituents are also absorbed by soil particles. Depth to groundwater in the Planning Area varies but is generally greater than 50 feet below ground surface, providing more than sufficient depth for infiltration. Therefore, any remaining pollutants in runoff would not significantly contaminate groundwater supplies. In addition, policies and implementation measures are included in the General Plan to ensure the protection of groundwater quality. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The proposed Wastewater Master Plan would not provide for infrastructure or facilities beyond those anticipated in the EIR and thus would not result in additional impacts related to groundwater quality. General Plan policies and implementation measures and the City's Municipal Code would reduce environmental impacts associated with any physical improvements deemed necessary per the Master Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-5 Impacts relating to the construction of drainage infrastructure

Applicable General Plan Policies and Implementation Measures

Policies: AR-1.3, AR-1.4, AR-5.1, NR-1.3, and HS-2.9
Implementation Measures: AR-1, AR-2, HS-6, PS-6, and PS-7

General Plan EIR Mitigation Measures

Recommended mitigation measures AR-6 and HS-10 as summarized above under Impact 5.3-11

Previously Identified Impacts

According to the EIR, the City does not currently supply stormwater drainage to areas outside the city limits. Supplying drainage to expansion areas will require the construction of stormwater collection, storage/retention, and conveyance infrastructure. Construction of stormwater infrastructure would be subject to project-specific environmental review.

The City would implement General Plan policies and implementation measures to address the range of potential environmental impacts that may be associated with the construction and operation of stormwater facilities. Nonetheless, the ability to mitigate certain potential impacts, such as the permanent loss of agricultural land and habitat for sensitive species, would be contingent on a number of factors including the severity of the impact, existing land use conditions, and the technical feasibility of implementation of the proposed mitigation measures. Due to these contingencies, the potential impacts of construction of new stormwater infrastructure were determined to be significant. Since no additional measures are available to reduce impacts to a less than significant level, this impact is considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not provide for infrastructure or facilities beyond those anticipated in the EIR and thus would not result in additional impacts. Impact 5.13-5 specifically addresses impacts associated with the construction of storm drainage infrastructure. Although the impact was found to be significant and unavoidable, because the location or intensity of development that would be supported by the Master Plan does not exceed that analyzed in the EIR, there would be no new or more severe impacts related to the Master Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-6 Development accommodated by the General Plan would increase impervious surfaces and alter drainage conditions and rates within the Planning Area, which in turn could result in increased runoff and potential flooding impacts.

Applicable General Plan Policies and Implementation Measures

Policies: HS-2.1, HS-2.2, HS-2.3, HS-2.4, HS-2.5, HS-2.6, HS-2.7, HS-2.8, HS-2.9, HS-2.10, HS-2.11, HS-2.12, HS-2.13, HS-2.14, HS-2.15, and HS-4.4

General Plan EIR Mitigation Measures

Recommended additional implementation measures:

PS-5 The City shall prepare, adopt, review, and periodically update Drainage Master Plan for all new development and annexation areas.

PS-9 The City shall periodically update its long-term Capital Improvements Programs (CIPs), including sewer, water, drainage, police and fire protection, and other facility improvements.

PS-11 The City establish and collect development impact fees as needed for public services in accordance with Government Code '66000, et seq.

HS-13 New development shall be required to implement (through installation or the payment of in-lieu fees) relevant portions of the March 2010 City of Patterson General Plan Storm Drainage Study.

Previously Identified Impacts

According to the EIR, development accommodated by the General Plan could result in a significant increase in the amount of impervious surfaces in the Planning Area, with a corresponding increase in the volume and velocity of stormwater runoff. Portions of the Planning Area are currently subject to flooding during severe storm events.

The City has undertaken an ongoing program of storm drainage improvements in order to minimize the threat of flooding on urban development. To address potential drainage impacts, the City of Patterson General Plan Storm Drainage Study was prepared by Boyle Engineering/AECOM in June 2010 (Appendix 5.13 of the Draft EIR), which discusses the collection, detention, and disposal of runoff.

The EIR identified the need for a Storm Drain Master Plan that sets forth a program for the construction of storm drainage collection, detention, and disposal facilities to convey urban runoff to the San Joaquin River. No runoff will be conveyed to Salado Creek or Del Puerto Creek since the runoff capacity of these creeks is periodically exceeded. As development proceeds, new development would be required to install the applicable portions of the Storm Drain Master Plan necessary to serve proposed development and/or to pay development impact fees to fund improvements to serve the community as a whole. The EIR found that the improvements described in the Storm Drain Master Plan, as well as continued compliance with the City's flood hazard regulations, would minimize impacts related to flooding. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not provide for facilities beyond those anticipated in the EIR and thus would not create new impervious surface area or alter drainage patterns or rates. There would be no new or more severe impacts. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-7 Development in areas subject to flooding

Applicable General Plan Policies and Implementation Measures

Policies: HS-2.1, HS-2.2, HS-2.3, HS-2.4, HS-2.5, HS-2.6, HS-2.7, HS-2.8, HS-2.9, HS-2.10, HS-2.11, HS-2.12, HS-2.13, HS-2.14, HS-2.15, and HS-4.4
Implementation Measure: PS-5

General Plan EIR Mitigation Measures

Recommended additional policies as follows:

HS-2.16 **Flood hazard mitigation prior to development**. The City shall not approve new development in areas subject to a 100-year flood event, based on Federal Emergency Management Agency (FEMA) or on other updated mapping acceptable to the City, unless and until the flood hazard has been mitigated, Such mitigation may be accomplished by one, or a combination of, the following:

- Compliance with Title 17 of the City's Municipal Code, Flood Hazard areas.
- Installation of flood control improvements along Del Puerto Creek and/or Salado Creek.
- Avoidance of flood prone areas.

HS-2.17 **Flood hazard mitigation prior to development**. The City shall require any development on land subject to a 100- year flood event, based on Federal Emergency Management Agency (FEMA) or on other updated mapping acceptable to the City, to conform to National Flood Insurance Program (NFIP) standards.

HS-2.18 **Low Impact Development**. New development shall incorporate provisions for low impact development as defined by as minimizing or eliminating pollutants in storm water through natural processes and maintaining pre-development hydrologic characteristics, such as flow patterns, surface retention, and recharge rates.

Recommended additional implementation measures as follows:

PS-11 The City shall establish and collect development impact fees in accordance with Government Code section 66000, et seq. as needed for flood control improvements outlined in the City's 2010 Master Drainage Plan as it may be amended from time to time.

HS-16 Flood mitigation derived by the City's Drainage Master Plan shall address the following objectives:

a. Compliance with relevant flood protection regulations, including:
    1. Those adopted by the City of Patterson;
    2. The National Flood Insurance Program;
    3. The Central Valley Flood Protection Plan;
b. Protection of the biological integrity of natural drainage courses;
c. The incorporation of low impact development requirements for new development;
d. The prevention of downstream flooding impacts;
e. The protection of surface and groundwater quality;
f. Economic feasibility

Previously Identified Impacts

The EIR identified that portions of the Planning Area are subject to flooding during a 100-year storm event. Development areas in the northerly portion of the Planning Area, between the Delta-Mendota Canal (DMC) and State Route (SR) 33, are at risk of flooding to a depth of 1 to 3 feet from a 100-year flood event. Other areas north of Zacharias Road are also prone to flooding at a depth of less than 1 foot from a 100-year flood event. This flood-prone area extends from Del Puerto Creek at the DMC southeasterly toward the northern boundary of the city and covers approximately 883 acres of the Planning Area. This flood zone is contiguous between Del Puerto Creek near Rogers Road and Salado Creek in downtown Patterson. Another smaller area that is identified as at risk for flooding to a depth of greater than 1 foot lies adjacent to SR 33 and south of Del Puerto Creek, and comprises approximately 29 acres in the northern portion of the Planning Area. Another major contiguous area at risk for flooding to a depth of 1 to 3 feet from a 100-year flood event is located adjacent to the north side of the DMC on both sides of Salado Creek and comprises approximately 162 acres of the Planning Area. Most of the area adjacent to Salado Creek may be at risk for flooding during a 100-year event to depths of less than 1 foot.

The drainage system proposed to serve development accommodated by the General Plan does not convey runoff from new urban development to Del Puerto Creek or Salado Creek. Instead, stormwater will be collected in detention basins and piped to the San Joaquin River. However, the areas described above would be subject to flood hazards associated with flood events on Del Puerto Creek and Salado Creek.

General Plan policies and implementation measures help reduce the risk associated with development that may occur in areas subject to flooding. However, the potential impacts associated with floodplain modifications necessary to mitigate potential flooding impacts would not be known until the nature and extent of urban development has been identified through adoption of the General Plan. In addition, approvals necessary from various regulatory agencies, such as the Regional Water Quality Control Board, California Department of Fish and Game, and US Army Corps of Engineers cannot be guaranteed. For these reasons, potential impacts associated with development in areas subject to flooding were considered significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not result in additional development in areas subject to flooding beyond that assumed in the General Plan. The Master Plan would not place housing or other structures within a 100-year flood zone that would expose people or structures to flood-related risks. Therefore, this is an impact for which the General Plan EIR adequately addresses

potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-8 Cumulative degradation of water quality

Applicable General Plan Policies and Implementation Measures

Policies: NR-1.2, NR-1.3, NR-1.4, NR-1.7, NR-2.11, NR-6.1, HS-2.9, HS-2.14, HS-6.5, PS-2.5, HS-3.13, and PS-3.14
Implementation Measures: HS-1, PS-5, NR-1, PS-6, and PS-7

Recommended additional policy NR-1.4.

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

According to the EIR, development accommodated by the General Plan along with foreseeable development in the region would contribute to a cumulative degradation of water quality from construction activities and increased urban runoff. Urban development accommodated by the General Plan would increase the amount of sediments and pollutants in surface waters in the Planning Area and downstream.

However, the EIR found that General Plan policies and implementation measures mitigate regional impacts relating to hydrology and water quality. Continued compliance with existing water quality regulations, including the NPDES program and implementation of the policies and programs recommended for Impact 5.13-1, help reduce cumulative impacts to water quality. However, given the scale of development anticipated in Patterson and in the general plans of surrounding jurisdictions, the potential for the cumulative degradation of water quality was identified. Moreover, the City cannot guarantee compliance with water quality regulations in the region. For these reasons, the cumulative impact to water quality was considered to be cumulatively considerable and significant and unavoidable.

Master Plan Impact

Development in the city, including that associated with the Wastewater Master Plan, would be required to comply with the requirements of the Clean Water Act, the City's Small MS4 General Permit best management practices (BMPs), the State NPDES General Construction Permit, and a stormwater pollution prevention plan, which would minimize the City's contribution to cumulative degradation of water quality. General Plan policies and implementation measures and the City's Municipal Code would further reduce impacts associated with any physical improvements deemed necessary per the Master Plan. The Master Plan would not contribute to the degradation of water quality beyond that assumed in the General Plan EIR. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.13-9 Cumulative increase in runoff and potential flooding

Applicable General Plan Policies and Implementation Measures

Policies: HS-2.1, HS-2.2, HS-2.3, HS-2.4, HS-2.5, HS-2.6, HS-2.7, HS-2.8, HS-2.9, HS-2.10, HS-2.11, HS-2.12, HS-2.13, HS-2.14, HS-2.15, and HS-4.4
Implementation Measures: PS-5 and PS-11

General Plan EIR Mitigation Measures

None available.

Previously Identified Impacts

The EIR identified that development accommodated by the General Plan would increase the amount of impervious surfaces along with a corresponding increase in the volume and velocity of runoff. This increase in runoff, along with the increase associated with other urban development in the region, could contribute to cumulative flood conditions in the region.

Improvements recommended by the 2010 Storm Drain Master Plan were designed to ensure that the contribution of runoff from development of the Planning Area do not worsen downstream flooding or exceed the capacity of receiving waters. Thus, implementation of the Master Plan, together with compliance with existing flood hazard mitigation, would help mitigate potential impacts related to regional flooding and water quality. However, the City cannot guarantee the installation of flood control improvements and continued compliance with water quality protection regulations. For these reasons, cumulative impacts relating to flooding and water quality were considered to be cumulatively considerable and significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would provide for the development of infrastructure and facilities which, if not mitigated, could create new impervious surface area and alter drainage patterns increasing flow rates and contributing to flood conditions. However, the General Plan EIR assumes development of infrastructure to support the city's growth consistent with the General Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.14 Visual and Aesthetic Resource Impacts

Impact 5.14-1 Scenic qualities of the Study Area

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.4, LU-1.6, CD-1.5, CD-1.6, CD-1.7, CD-2.1, CD-3.1, CD-3.2, CD-3.3, CD-4.1, CD-4.2, CD-4.3, CD-4.4, CD-5.1, NR-1.1, NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.9, NR-3.8, NR-3.9, and NR-3.11
Implementation Measures: CD-1, NR-C, and NR-F

General Plan EIR Mitigation Measures

None feasible.

Previously Identified Impacts

According to the EIR, the General Plan would accommodate additional urban development that would permanently and substantially alter the visual character and scenic qualities of the Planning Area. Development accommodated by the General Plan will significantly alter the scenic qualities of views from Interstate 5, which is a designated scenic highway between the Merced County line and the San Joaquin County line. The General Plan designates land for urban development in the foothills of the Diablo Range west of Interstate 5. The foothills serve as the visual backdrop to the city and are visible from a number of vantage points throughout the city, including frequently traveled corridors such as Sperry Avenue.

General Plan policies and implementation measures help minimize impacts relating to visual and aesthetic resources. However, implementation of the General Plan would nonetheless result in the permanent and significant alteration of the area's scenic qualities, including views from a State-designated scenic highway. No feasible mitigation measures were available to mitigate this change. Accordingly, this impact was considered to be significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would not result in additional development beyond that assumed in the General Plan. Most physical improvements associated with the Master Plan would be installed underground and would have minimal visual or aesthetic impacts. General Plan policies and implementation measures would minimize visual and aesthetic impacts associated with implementation of the Master Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.14-2 Introduction of additional light and glare from expanded urban development

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1 and NR-2.3
Implementation Measures: CD-1

Mitigation Provided by Existing Regulations

City of Patterson Zoning Regulations

Development accommodated by the existing General Plan is subject to discretionary review in accordance with the City's Zoning Ordinance (Title 18 of the Patterson Municipal Code). New development is subject to site plan and architectural review. Impacts associated with light and glare are addressed as part of discretionary review, which is also subject to the provisions of the California Environmental Quality Act.

Community Design Guidelines and Downtown Physical Design Plan

The City's adopted Design Guidelines set forth the City's expectations for the visual and aesthetic qualities desired in new development and are intended to ensure new development complements the visual character of the city. The Design Guidelines include the following recommendations for the placement of lighting to mitigate impacts to surrounding land uses:

5. On-site lighting.
    a. Exterior lighting shall be designed to be compatible with the architectural and landscape design of the project.
    b. An appropriate hierarchy of lighting fixtures/structures and intensity shall be considered when designing the lighting for the various elements of a project (i.e., building and site entrances, walkways, parking areas, or other areas of the site).
    c. The use of exterior lighting to accent a building's architecture is encouraged. All lighting fixtures shall be properly shielded to eliminate light and glare from impacting adjacent properties, and passing vehicles or pedestrians. When neon tubing is used to illuminate portions of a building it shall be concealed from view through the use of parapets, cornices or ledges. Small portions of exposed neon tubing may be used to add a special effect to a building's architecture but this must be well thought out and integrated into the overall design of the project.
    d. To achieve the desired lighting level for parking and pedestrian areas, the use of more short, low intensity fixtures is encouraged over the use of a few tall fixtures that illuminate large areas.

West Patterson Business Park Master Development Plan

The West Patterson Business Park Master Development Plan contains design guidelines that apply to all new development. As with the City's Community Design Guidelines, the intent is to ensure new development is consistent with the City's objectives for Patterson's visual quality and character.

General Plan EIR Mitigation Measures

Recommended additional policy as follows:

CD-3.5 **Light and Glare.** To reduce the adverse impact of light and glare associated with new development (including street lighting, recreational facilities and parking), the City shall require new development to be designed to prevent artificial lighting from illuminating adjacent residential neighborhoods or natural areas at a level greater than one foot-candle above ambient conditions.

Previously Identified Impacts

The EIR identified that the General Plan will result in the introduction of additional light and glare from expanded urban development into areas currently dominated by agricultural operations. Expanded urban development accommodated by the General Plan would include new buildings with windows and other reflective materials that will increase the amount of daytime glare. Infill development in the existing urban area would result in a less pronounced change due to additional glare than the development of areas currently in use by agricultural operations. In addition, expanded urban development would introduce new sources of light in areas that currently have few, if any, light sources. Nighttime light levels would increase significantly in these areas over current conditions. These new light sources could result in impacts to adjacent land uses from the "spill over" of light associated with signage, parking lot lighting, and security lights. Traffic generated by new development will result in an increase in nighttime lighting from on-road motor vehicles.

Development accommodated by the General Plan would be subject to discretionary review in accordance with the City's Zoning Ordinance (Title 18 of the Patterson Municipal Code). New development would be subject to site plan and architectural review. Impacts associated with light and glare would be addressed as part of discretionary review. In addition, the City's adopted Design Guidelines set forth the City's expectations for the visual and aesthetic qualities desired in new development and are intended to ensure new development complements the city's visual character. Continued compliance with the Design Guidelines would ensure impacts associated with light and glare are minimized. Lastly, General Plan policies and implementation measures are included to reduce the potential impacts associated with new light and glare sources. For the above reasons, the impacts associated with light and glare were determined to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not result in additional development and/or sources of light and/or glare beyond those assumed in the General Plan. Most physical improvements associated with the Master Plan would be installed underground and would have minimal visual or aesthetic impacts. Any physical improvements associated with the Master Plan would be subject to the requirements of Title 18 of the Patterson Municipal Code, the City's Design Guidelines, and General Plan policies and implementation measures, which would minimize potential impacts associated with light and glare. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

Impact 5.14-3 Cumulative impacts to scenic quality and light and glare

Applicable General Plan Policies and Implementation Measures

Policies: LU-1.1, LU-1.4, LU-1.6, CD-1.5, CD-1.6, CD-1.7, CD-2.1, CD-3.1, CD-3.2, CD-3.3, CD-4.1, CD-4.2, CD-4.3, CD-4.4, CD-5.1, NR-1.1, NR-2.1, NR-2.2, NR-2.3, NR-2.4, NR-2.5, NR-2.6, NR-2.9, NR-3.7, NR-3.8, and NR-3.11
Implementation Measures: CD-1 and NR-14

General Plan EIR Mitigation Measures

None feasible.

Previously Identified Impacts

The EIR identified that implementation of the General Plan together with development in the region would result in the cumulative and permanent alteration of the area's scenic qualities and would result in a cumulative increase in sources of light and glare. However, General Plan policies and implementation measures and continued enforcement of the City's Community Design Guidelines would help to mitigate regional impacts relating to scenic and aesthetic resources and light and glare. However, regional impacts cannot be fully mitigated; therefore, this impact was considered to be cumulatively considerable and significant and unavoidable.

Master Plan Impact

The Wastewater Master Plan would result in the construction of few aboveground structures and would not contribute substantially to cumulative changes in visual quality or an increase in

regional light and glare. As previously discussed, facilities associated with the Master Plan were assumed as part of the General Plan, so there would be no new or more severe impacts beyond that identified in the General Plan. Therefore, this is an impact for which the General Plan EIR adequately addresses potential impacts of the proposed Master Plan; no additional analysis or mitigation measures are required.

5.15 Cultural Resource Impacts

Impact 5.15-1 Development activities accommodated by the General Plan could result in the potential disturbance of cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) and human remains.

Applicable General Plan Policies and Implementation Measures:

Policies: PR-5.1, PR-5.2, PR-5.3, PR-5.4, PR-6.1, PR-6.2, PR-6.3, PR-6.4, and PR-6.5
Implementation Measure: PR-8

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR disclosed five prehistoric archaeological resources, four historic-era archaeological resources, and 25 historic-era built resources (four with potential historic-era archaeological components) that have been recorded or noted in the Planning Area. Three prehistoric resources have been recorded in the Planning Area, and two others have been noted but not recorded. Two of the recorded archaeological sites, P-50-000128 (CA-STA-42) and P-50-000256 (CA-STA-171), are not well documented. Site P-50-000128 is known only from a 1950 site record that indicates that the site was not visited, but rather recorded on the report of a local landowner. It is described as an occupation site, which usually connotes a midden deposit and possibly human remains, upstream from the mouth of Del Puerto Canyon. Bell et al. surveyed the reputed location but could not locate it and suggested it has been buried by alluvium, destroyed by erosion, or the location could be inaccurate. Similarly, site P-50-000256 was not visited when it was recorded in 1971. This site is reported to have been at the location of the Patterson landfill, adjacent to the San Joaquin River, and to have contained human remains and prehistoric artifacts. The site is described as "apparently destroyed" by landfill activities. The third recorded resource (P-50-000007) is an isolate chert flake found along the base of the Diablo Range near the mouth of Black Gulch Canyon. The two resources noted but not formally recorded include an isolated hopper mortar along Del Puerto Creek near the base of the Diablo Range and a quartzite lithic scatter upstream from the mouth of Black Gulch Canyon.

None of the prehistoric resources located in the Study Area have been evaluated for eligibility for the California Register of Historical Resources or the National Register of Historic Places. If archaeological sites such as the occupation deposits with human remains retain sufficient integrity, they are generally considered eligible under Criterion 4 (CEQA) or Criterion D (Section 106).

The EIR found that because General Plan policies directly address the management of development to minimize the impact of future development on cultural resources, this impact was determined to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development or result in ground disturbance in areas beyond that anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be subject to the General Plan policies, implementation measures, and mitigation measures provided in the General Plan EIR to reduce impacts on cultural resources. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.15-2 Development activities accommodated by buildout of the General Plan could result in the potential disturbance of existing historic sites and structures.

Applicable General Plan Policies and Implementation Measures

Policies: PR-4.1, PR-4.2, PR-4.3, PR-4.4, PR-4.5, PR-4.6, and PR-4.7
Implementation Measure: PR-8

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that a records search performed at the Central California Information Center at California State University, Stanislaus, revealed that three National Register and California Register eligible historic resources have been identified in the Planning Area. Two are listed in the National Register and California Register and one has been determined eligible for listing in the National Register and is listed in the California Register. In addition, the records search identified one historic-era resource in the Planning Area that has been identified in a reconnaissance-level survey.

There were also several resources identified by the City of Patterson as locally significant. This includes the Patterson Historic Overlay Zone, which is identified in Municipal Ordinance Chapter 18.70 and includes the area immediately adjacent to the Plaza: 1 Plaza; 2 Plaza (Center Building); 5 Plaza; 13 Plaza; 17 Plaza; 20 Plaza; North Park; South Park; and 355 W. Las Palmas Ave (Carnegie Library). In addition, the City of Patterson Community Design Guidelines identify the historic palms of Las Palmas Avenue in Chapter 6 (Special Design Considerations). Future development and redevelopment of properties accommodated by the General Plan could adversely impact existing historic resources. However, the EIR found that General Plan policies directly address the management of development to minimize the impact of future development on existing historic sites and resources. Therefore, this impact was determined to be less than significant.

Master Plan Impact

The Wastewater Master Plan would not increase development beyond that anticipated in the General Plan EIR, and any improvements associated with the Master Plan would be subject to General Plan policies and implementation measures to reduce impacts on historic resources. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.15-3 Implementation of any of the Equal-Weight Alternatives could result in the potential disturbance of paleontological resources (i.e., fossils and fossil formations). However, policy provisions of the proposed General Plan would mitigate potential impacts to these resources.

Applicable General Plan Policies and Implementation Measures

Implementation Measure: PR-8

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

According to the EIR, a search of the University of California, Berkeley, Museum of Paleontology collections database did not identify any paleontological resources within the Patterson city boundaries and the Planning Area. The sensitivity of the area for paleontological resources, however, has not been assessed and no formal paleontological investigations were identified for the area. Consequently, the EIR found that implementation of the General Plan could impact undiscovered paleontological resources. However, General Plan policies and implementation measures ensure impacts to paleontological resources are minimized. Therefore, this was determined to be a less than significant impact.

Master Plan Impact

The Wastewater Master Plan would not increase development or disturb areas beyond that anticipated in the General Plan EIR. Any improvements associated with the Master Plan would be subject to General Plan policies and implementation measures to reduce impacts on paleontological resources. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

Impact 5.15-4 Development accommodated by the Compact Development, Jobs Emphasis, and PC Environmental Review Plan Alternatives along with foreseeable development in the region could contribute to further disturbance of cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) and human remains.

Applicable General Plan Policies and Implementation Measures

Policies: PR-4.1, PR-4.2, PR-4.3, PR-4.4, PR-4.5, PR-4.6, PR-4.7, PR-5.1, PR-5.2, PR-5.3, PR-5.4, PR-6.1, PR-6.2, PR-6.3, PR-6.4, and PR-6.5
Implementation Measure: PR-8

General Plan EIR Mitigation Measures

None required.

Previously Identified Impacts

The EIR identified that continued urban development in the region accommodated by the County General Plan and the general plans of other jurisdictions could result in the disturbance of cultural

resources. However, General Plan policies and implementation measures reduce the General Plan's potential impacts to cultural resources. Therefore, the EIR found that the General Plan's contribution to cumulative loss of cultural resources would not be substantial and would be less than cumulatively considerable.

Master Plan Impact

The Wastewater Master Plan would not result in development beyond that assumed in the General Plan, so it would not disturb areas beyond those anticipated in the General Plan EIR. Consequently, the Master Plan would not contribute to additional impacts on cultural resources. Therefore, this is an impact for which the General Plan EIR adequately addresses the proposed Master Plan. No additional analysis or mitigation measures are required.

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Tom Hallinan, City Attorney
Douglas Johnson, National Demographics Corporation

MEETING DATE: May 3, 2016

ITEM NO: 6.4

SUBJECT: Motion to Approve Second Reading and Adoption of Ordinance No. 795.

Ordinance No. 795, An Ordinance of the City Council of the City of Patterson, California, Amending Title II: Administration and Personnel, Adding Chapter 2.10: Council Member Elections By-District, to the Patterson Municipal Code, to Establish that Election of Council Members Shall be By-District.

RECOMMENDATION

Mayor: Open/Closed the Public Hearing

Council: Read Ordinance No. 795, title as listed above.

Council: Motion to approve Second Reading of Ordinance No. 795, reading by title only, waiving further reading.

Council: Motion to Adopt Ordinance No. 795, reading by title only, waiving further reading.

ATTACHMENT

Ordinance No. 795

NDC 4 District Option 4 Map and Street by Street Description

ORDINANCE NO. 795

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF PATTERSON, CALIFORNIA, AMENDING TITLE II: ADMINISTRATION AND PERSONNEL, ADDING CHAPTER 2.10: COUNCIL MEMBER ELECTIONS BY-DISTRICT, TO THE PATTERSON MUNICIPAL CODE, TO ESTABLISH THAT ELECTION OF CITY COUNCIL MEMBERS SHALL BE BY-DISTRICT

WHEREAS, The City of Patterson ("City") has determined that it is in the best interest of the City to move from its current "at-large" election system to a "by-district" election for members of the Patterson City Council ("Council"); and

WHEREAS, the City values and supports the full participation of all City residents in electing members of the Council; and

WHEREAS, the City hired consulting firm National Demographic Corporation ("NDC") to assist the City in evaluating the City's current at-large system and assist the City in its transition to a by-district electoral system pursuant to state law; and

WHEREAS, NDC developed several voter district boundary maps for consideration by the citizens of the City and the Council; and

WHEREAS, the Council conducted three separate noticed public hearings on March 30, 2016, April 5, 2016, and April 19, 2016 pursuant to Elections Code Section 10010(a) to receive public input on the proposed district maps; and

WHEREAS, on April 19, 2016, the Council directed NDC to create additional revised maps; and

WHEREAS, on April 25, 2016, the Council selected NDC 4 District Option 4 Map depicting the boundaries of the four (4) districts for City elections moving forward; and

WHEREAS, this Ordinance provides for the election of the members of the Council by district in four (4) districts with a separately elected Mayor, elected at-large; and

WHEREAS, in good faith, the City has publicized and conducted several public hearings in an effort to include the City's residents in the discussion of the transition plan to district elections, and in the decision-making process of the proposed district boundary maps developed by NDC; and

WHEREAS, pursuant to Government Code Section 34886, a city council of a general law city may by ordinance change the method of electing members of the council without submitting the question to the voters; and

WHEREAS, pursuant to Government Code Section 34886, a city council of a general law city that has a population of less than 100,000 people, is authorized to adopt an ordinance that

requires the members of the city council to be elected by-district in four (4) districts with a Mayor elected at-large; and

WHEREAS, pursuant to Government Code Section 34886, subdivision (a), the change in the method of electing members of the Council is being made in furtherance of the purposes of the California Voting Rights Act of 2001 (Chapter 1.5 (commencing with Section 14025) of Division 14 of the Elections Code.)

THE CITY COUNCIL OF THE CITY OF PATTERSON, CALIFORNIA DOES ORDAIN AS FOLLOWS:

SECTION 1: Chapter 2.10: Council Member Elections By-District of Title II, Administration and Personnel, of the Patterson Municipal Code shall be added to read as follows:

2.10.010 Method of Election of Mayor and City Council. The elective officers of the City of Patterson shall be a Mayor and four (4) Council members. The Council shall consist of the Mayor elected at-large, and four (4) Council members, each of whom, including the Mayor, shall have the right to vote on all questions coming before the Council.

A. Council members. Each member of the Council shall serve a four (4) year term until his or her successor is elected and qualified. Members of the Council shall be elected by-district and each district shall elect one Council member. Only voters who live in a district shall be eligible to vote in the election for Council member of that district.

B. Residency. The Council member elected to represent a district shall reside in that district and be a registered voter in that district, and any candidate for the Council must live in, and be a registered voter in, the district in which he or she seeks election. Each Council member shall reside within the district for the full term of office. Termination of residency in a district by a Council member shall create an immediate vacancy for that Council district unless a substitute residence within the district is established within fourteen (14) days of the termination of residency. In the event that a Council member fails to provide evidence of a substitute residency in the district within fourteen (14) days of a change in residency, the Council shall presume the seat to be abandoned and vacant.

C. Mayor. The term of office of the Mayor shall be two (2) years until his or her successor is elected and qualified. The Mayor shall be elected by the voters of the City at-large. The Mayor shall reside within the City limits and be a registered voter of the City for the full term of office. Termination of residency by the Mayor shall create an immediate vacancy in office unless a substitute residence within the City limits is established within fourteen (14) days of the termination of residency. In the event that the Mayor fails to provide evidence of a substitute residency in the district within fourteen (14) days of a change in residency, the Council shall presume the seat to be abandoned and vacant. The Mayor in office at the time this Ordinance takes effect shall continue in office until the expiration of the full term to which he or she was elected.

2.10.20 Establishment of Council Districts. Beginning with the general municipal election in November 2016, members of the Council shall be elected on a by-district basis from four (4) Council districts.

A. Boundaries and numbering of each district. Each Council district shall be assigned a district letter, with districts lettered A through D. The boundaries and the letter of each of the four (4) electoral districts for the Council are set forth in Exhibit A, including a map of the districts, which is incorporated herein by reference. The electoral districts may be subsequently reapportioned as provided by state law.

   The Council members of Districts A and C shall be elected by-district in November 2016 for a term of four (4) years. The Council members of Districts B and D shall be elected by-district in November 2018 for a term of four (4) years. After the adoption of this Ordinance all persons appointed to fill vacancies on the Council and all persons elected to fill vacancies on the Council at a special municipal election shall reside within the district to which they are appointed or elected.

B. Technical changes to Council districts. If necessary to facilitate the implementation of this section, the City Clerk is authorized to make technical adjustments to the district boundaries that do not substantively affect the populations in the districts, the eligibility of candidates, or the residence of elected officials within any district. The City Clerk shall advise the Council of any such adjustments that are found to be required in the implementation of the district.

C. Amendment of district boundaries. Pursuant to Elections Code section 21602, as it may be amended, the Council shall adjust the boundaries of any or all of the districts following each decennial federal census. Using the census as a basis, the Council shall adjust the boundaries so that the districts shall be as nearly equal in population as practicable and in compliance with all applicable provisions of law. Any adjustment of district boundaries shall be made by ordinance adopted by the Council before the first day of November of the year following the year in which each decennial federal census is taken. Prior to the public hearing approving the adjustment of the district boundaries, the City Council shall hold a public hearing on the proposed district boundaries as required by Election Code section 21601.

D. Transition period. A period of transition from at-large elections to by-district elections will occur from the time of adoption of the first districting plan to the time that the by-district elections are held for all Council member districts. During this period of transition, each Council member elected at-large in the regular municipal election of November 2014 will be designated by the Council as the Council member representing one of Districts A and C in the districting plan whether or not that Council member resides in the district. The first by-district elections for Districts A and C shall occur during the regular municipal election in November 2016. The first by-district elections for Districts B and D shall occur during the regular municipal election in November 2018. Nothing contained herein shall prevent an incumbent Council member at the time of the effective date of this Ordinance from running for a Council district in which that Council member resides other than the district for which that member currently

holds office, if the Council member is otherwise eligible to run in that district and vacates the office of Council member for the district of non-residency if elected. No Council member may hold office in more than one district. Each incumbent Council member elected at-large shall be allowed to complete the term for which they were elected regardless of the district of residency so long as they otherwise remain eligible to hold the office and have not been removed for cause or elected to another office.

SECTION 2: If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The Council declares that it would have adopted this Ordinance, and each and every section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional, without regard to whether any portion of the Ordinance would be subsequently declared invalid or unconstitutional.

SECTION 3: This Ordinance shall be published by one insertion in The Patterson Irrigator, a newspaper of general circulation, printed and published in the City of Patterson, within fifteen (15) days after its final passage, and shall take effect and be in force thirty (30) days after its final passage.

Introduced at a regular meeting of the City Council of the City of Patterson, held on the 19th day of April, 2016, and given its first reading and introduction at said meeting. Said Ordinance was given a second reading and adopted at a regular meeting of the City Council held on the 3rd day of May, 2016, and after such reading, _____, who moved its adoption, seconded by _____, and said Ordinance was thereupon adopted by the following roll call vote:

AYES:
NOES:
EXCUSED:

APPROVED:

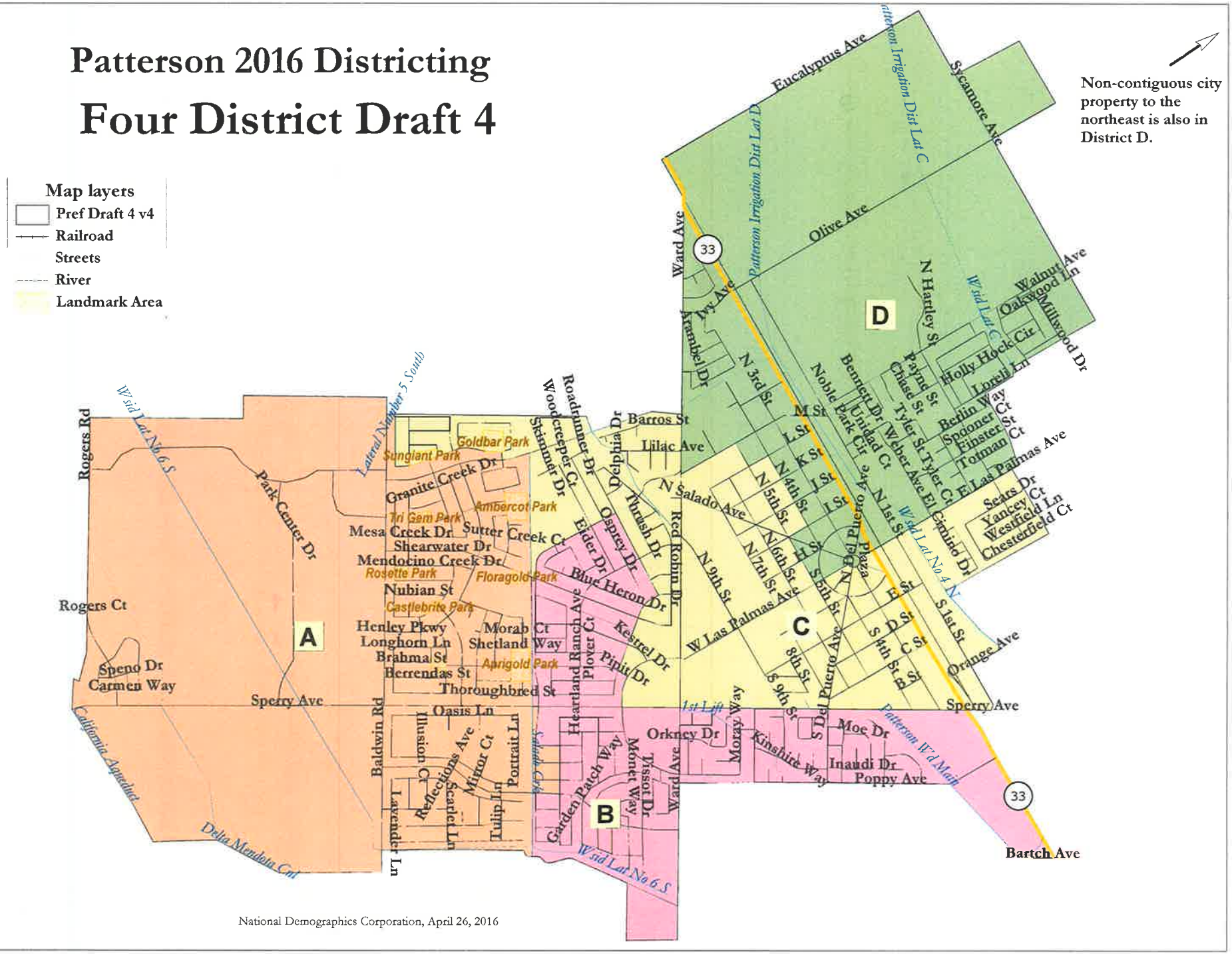
_____
Luis I. Molina
Mayor of the City of Patterson

ATTEST:

_____
Maricela L. Vela
City Clerk of the City of Patterson

Patterson 2016 Districting

Four District Draft 4



National Demographics Corporation, April 26, 2016

EXHIBIT A

Patterson 2016 Districting Plan "4 District version 4"
Street by Street Boundary Description

District A: Beginning at the intersection of the City's northern border and Bear Creek Ln; thence proceeding southerly along Bear Creek Ln to Samantha Creek Dr; thence proceeding easterly along Samantha Creek Dr to Gold Creek Dr; thence proceeding southerly along Gold Creek Dr to Cliff Swallow Dr; thence proceeding easterly along Cliff Swallow Dr to the walking path and creekbed on the eastern edge of Census Block 060990032023027; thence proceeding southerly along that path and creekbed along the eastern edge of Census Blocks 060990032023027 and 060990032023059 to Sperry Ave; thence proceeding easterly along Sperry Ave to American Eagle Ave; thence proceeding southerly along American Eagle Ave to Fawn Lily Dr; thence proceeding easterly along Fawn Lily Dr to Bella Flora Ln; thence proceeding southerly along Bella Flora Ln to Calvinson Pkwy; thence proceeding westerly along Calvinson Pkwy to the walking path and creekbed on the eastern edge of Census Block 060990032022019; thence proceeding southerly along the eastern edge of Census Block 060990032022019 to the City's southern border; thence proceeding clockwise along the City border to the point of beginning.

District B: Beginning at the intersection of Shearwater Dr and the walking path and creekbed approximately 100 feet west of American Eagle Dr; thence proceeding easterly along Shearwater Dr to American Eagle Ave; thence proceeding northeasterly along American Eagle Ave to Roadrunner Dr; thence proceeding southeasterly along Roadrunner Dr to James Burke Dr; thence proceeding southwesterly along James Burke Dr to Pipit Dr; thence proceeding southeasterly along Pipit Dr to Las Palmas Ave; thence proceeding southwesterly along Las Palmas Ave to Sperry Ave; thence proceeding easterly along Sperry Ave to the City's eastern border; thence proceeding clockwise along the City's eastern border to the walking path and creekbed along the eastern border of Census Block 060990032022019; thence proceeding northerly along the eastern border of Census Block 060990032022019 to Calvinson Pkwy; thence proceeding easterly along Calvinson Pkwy to Bella Flora Ln; thence proceeding northerly along Bella Flora Ln to Fawn Lily Dr; thence proceeding westerly along Fawn Lily Dr to American Eagle Ave; thence proceeding northerly along American Eagle Ave to Sperry Ave; thence proceeding westerly along Sperry Ave to the walking path and creekbed on the eastern border of Census Block 060990032023059; thence proceeding northerly along the eastern border of Census Block 060990032023059 to the point of beginning.

District C: Beginning at the intersection of the City's northern border and Bear Creek Ln; thence proceeding southerly along Bear Creek Ln to Samantha Creek Dr; thence proceeding easterly along Samantha Creek Dr to Gold Creek Dr; thence proceeding southerly along Gold Creek Dr to Cliff Swallow Dr; thence proceeding easterly along Cliff Swallow Dr to the walking path and creekbed on the eastern edge of Census Block 060990032023027; thence proceeding southerly along the eastern edge of Census Block 060990032023027 to Shearwater Dr; thence proceeding easterly along Shearwater Dr to American Eagle Ave; thence proceeding northeasterly along American Eagle Ave to Roadrunner Dr; thence proceeding southeasterly along Roadrunner Dr to James Burke Dr; thence proceeding southwesterly along James Burke Dr to Pipit Dr; thence proceeding southeasterly along Pipit Dr to Las Palmas Ave; thence proceeding southwesterly along Las Palmas Ave to Sperry Ave; thence proceeding easterly along Sperry Ave to the City's eastern border; thence proceeding counter-clockwise along the City's eastern border to Las Palmas Ave; thence proceeding southwesterly along Las Palmas Ave to 5th St; thence proceeding northwesterly along 5th St to I St; thence proceeding northeasterly along I St to 4th St; thence proceeding northwesterly along 4th St to L St; thence proceeding southwesterly along L St to 5th St; thence proceeding northwesterly along 5th St to M St; thence proceeding southwesterly along M St to Ward Ave; thence proceeding northerly along Ward Ave to the City border; thence proceeding counter-clockwise along the City border to the point of beginning.

District D: Beginning at the intersection of the City's eastern border and Las Palmas Ave approximately 400 feet east of Hartley St; thence proceeding southwesterly along Las Palmas Ave to 5th St; thence proceeding northwesterly along 5th St to I St; thence proceeding northeasterly along I St to 4th St; thence proceeding northwesterly along 4th St to L St; thence proceeding southwesterly along L St to 5th St; thence proceeding northwesterly along 5th St to M St; thence proceeding southwesterly along M St to Ward Ave; thence proceeding northerly along Ward Ave to the City border; thence proceeding clockwise along the City border to the point of beginning. District D also includes all of the noncontiguous unpopulated area located to the northeast of the populated portion of the city.

7. CITY STAFF REPORTS

CITY COUNCIL AGENDA REPORT

TO: Mayor Molina and Members of the City Council

FROM: Ken Irwin, City Manager

BY: Michael H. Willett, Director of Public Works MW

MEETING DATE: May 3, 2016

ITEM NO: 7

SUBJECT: Award Contract to RMC Water and Environmental for Preparation of the Chromium 6 Feasibility Study.

RECOMMENDATION

Award Contract to RMC Water and Environmental for Preparation of the Chromium 6 Feasibility Study.

BACKGROUND

On July 1, 2014, the State Water Resources Control Board, Division of Drinking Water (DDW) adopted a maximum contaminant level (MCL) for hexavalent chromium (Chrome 6) of 10 parts per billion (ppb). Although the water quality of the city's water supply has remained unchanged, the seven groundwater wells that constitute the entirety of its potable supply all exceeded the newly adopted MCL. On July 29, 2015, DDW issued a Compliance Order (CO) requiring the city to take measures to meet compliance with the MCL. As part of the CO, a Corrective Action Plan (CAP) outlining the steps and estimated timeframe needed to achieve compliance was submitted to DDW; DDW approval of the CAP was received on October 14, 2015.

The first step of the CAP is to perform a well evaluation to determine if changes to the existing potable well pumping operations can reduce the Chrome 6 concentration in the raw water source. This step is already in progress. The next step will consist of a Feasibility Study to identify potential treatment alternatives available to the city to meet the Chrome 6 MCL and to narrow down the alternatives to one or a few most suitable to address the site-specific conditions in Patterson. An important consideration in the treatment alternatives and associated engineering is the levels of nitrates and Total Dissolved Solids (TDS) in potable wells have the potential to become an issue in the future as well, in addition to the need to treat Chrome 6. This will be taken into account in the development and evaluation of alternatives for the feasibility study.

The Feasibility Study will include evaluation of the following elements:

- Treatment technologies to reduce Chrome 6 from the water source as identified in the California Code of Regulation (CCR) Section 64447.2 as best available technologies (BAT) for Chrome 6 treatment. These technologies include:
  - Reduction/coagulation/filtration (RCF)
  - Strong based anion exchange (SBA)
  - Weak based anion exchange (WBA)
  - Reverse Osmosis (RO).
- The potential treatment for nitrate and/or TDS in addition to Chrome 6 using the technologies listed above. Both nitrate and TDS have been identified as long term water quality improvement goals in the city's Water Master Plan.
- Potential siting options for a treatment facility (i.e., centralized treatment facility or individual well head treatment systems).
- For siting of a potential centralized facility, evaluation of a conceptual alignments for pipelines to convey raw well water from the individual well locations to a centralized location, treated water to the existing potable distribution system, and residuals to the existing system.

Once the alternatives have been identified, a conceptual configuration will be generated for each, using conservative values for design and operating criteria for each technology that are either cited in the existing literature or typically used in the industry. Lifecycle costs will then be developed for each alternative, factoring in capital cost, operational and maintenance (O&M) costs, and residual management costs. The lifecycle costs will be used as a basis to recommend one or more alternatives for the city to consider for pilot testing.

ANALYSIS

A list of the proposed tasks and costs are included below:

Task	Cost
Task 1- Project Management and QA/QC	$26,295
Task 2-Treatment Technology Analysis	$27,480
Task 3-Siting Evaluation	$35,512
Task 4-Conceptual Pipeline Alignment Evaluation	$20,652
Task 5-Cost Analysis	$33,114
Task 6-Report Development	$35,416
Task 7-Meetings	$19,962
Fee Estimate Total	**$198,431**

Due to the constricted timeline for compliance (timeline attached), it is staff's recommendation to accept the proposal and execute a professional services agreement with RMC Water and Environmental for preparation of the Chrome 6 Feasibility Study. RMC has extensive experience integrating complex, specialized water resource projects throughout California. They are especially familiar with the city's water distribution system and it is through their special knowledge of the current water quality conditions, staff feels confident awarding the contract to RMC. RMC is also the engineering firm that wrote the Chrome 6 CAP and is in progress of completing Step 1 of that same plan. According to the CAP approved by DDW, the city has approximately six months to complete the Chrome 6 Feasibility Study and get approval from DDW. By not going through the Request for Proposal (RFP) process, we allow ourselves the complete six months to complete the study. The aggregate time required for the city to achieve compliance with the Chrome 6 MCL is 66 months or May 14, 2021.

FISCAL IMPACT

The cost of this proposal is below the amount that was included in the FY15/16 budget.

March 31, 2016

Mr. Ken Irwin
City of Patterson
1 Plaza
Patterson, CA 95363

Subject: **Proposal for Professional Services – Hexavalent Chromium Treatment Feasibility Study**
Corrective Action Plan for Hexavalent Chromium
Compliance Order No. 01_10_15R_001

Mr. Irwin:

RMC Water and Environment (RMC) is pleased to submit this proposal to the City of Patterson (City) to address the second step identified in the Corrective Action Plan (CAP) for hexavalent chromium (Chrome 6) compliance. This step will consist of developing a Feasibility Study to evaluate treatment and pipeline conveyance options to address hexavalent chromium in the City's potable groundwater wells. This proposal presents the project background as well as the scope of work and fee estimate for this effort.

Project Background

On July 1, 2014, the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) adopted a maximum contaminant level (MCL) for hexavalent Chromium (Chrome 6) of 0.010 mg/L. Although the water quality of the City's water supply has remained unchanged, the seven groundwater wells that constitute the entirety of its potable supply all exceeded the newly adopted MCL. DDW subsequently issued Compliance Order (CO) No. 01_10_15R_001 to the City on July 29, 2015 requiring the City to take measures to meet compliance with the MCL. As part of the CO, a Corrective Action Plan (CAP) outlining the steps and estimated timeframe needed to achieve compliance was submitted to DDW; DDW approval of the CAP was received on October 14, 2015.

The first step in the CAP is to perform a Well Evaluation to determine if changes to the existing potable well pumping operations can reduce the Chrome 6 concentration in the raw source water. This step is already in progress. The next step will consist of a Feasibility Study to identify potential treatment alternatives available to the City to meet the Chrome 6 MCL and to narrow down the alternatives to one or a few most suitable to address the site-specific conditions in Patterson. An important consideration in the treatment alternatives and associated engineering is that levels of nitrates and Total Dissolved Solids (TDS) in potable wells have the potential to become an issue in the future as well, adding to the need to remove Chrome 6. This will be taken into account in the development and evaluation of alternatives for the feasibility study.

The Feasibility Study requires evaluating the following elements:

- Treatment technologies to reduce Chrome 6 from the source water as identified in the California Code of Regulation (CCR) Section 64447.2 as best available technologies (BAT) for Chrome 6 treatment. These technologies include:

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Sacramento, CA 95815 • 916.999.8700 • rmcwater.com

    - Reduction/coagulation/filtration (RCF)
    - Strong based anion exchange (SBA)
    - Weak based anion exchange (WBA)
    - Reverse Osmosis (RO)
- The potential treatment for nitrate and/or total dissolved solids (TDS) in addition to Chrome 6 using the technologies listed above. Both nitrate and TDS have been identified as long term water quality (WQ) improvement goals in the City's Water Master Plan.
- Potential siting options for a treatment facility (i.e., centralized treatment facility or individual well head treatment systems).
- For siting of a potential centralized facility, evaluation of conceptual alignments to for pipelines to convey raw well water from the individual well locations to a centralized location, treated water to the existing potable distribution system, and residuals (e.g. spent backwash, spent regenerants, brine, etc.) to the existing sewer.

Once the alternatives have been conceptually defined, a planning level configuration will be generated for each, using conservative values for design and operating criteria for each technology that are either cited in the existing literature or typically used in the industry. Lifecycle costs will then be developed for each alternative, factoring in capital cost, operational and maintenance (O&M) costs, and residual management costs, as well as the findings as applicable from the Well Evaluation conducted per Step 1 in the CAP. The results from this effort will be used as a basis to recommend one overall alternative for the City to consider for pilot testing.

Scope of Work (SOW)

RMC proposes the following tasks to execute this work. Tasks 1 through 4 pertain to the DSSFS testing for Chrome 6. Task 5 addresses the work for the pre-application documentation for funding.

Task 1 – Project Management and QA/QC

This task includes coordination of project activities, budget tracking, and incidental communication and correspondence, as well as quality assurance and quality control (QA/QC) to execute this project.

Task 2 – Treatment Technology Analysis

For this task, RMC will develop conceptual designs for the following technology alternatives:

- Reduction/Coagulation/Filtration (RCF): Functions by reducing Chrome 6 to Chrome 3, precipitating/coagulating the Chrome 3 to solid form, and removing from the water via filtration. This characterization was initiated as part of the water master plan that RMC is conducting and will be expanded and completed under that contract. The cost of this task is thus not included in the fee for this Feasibility Study.
- Strong Base Anion Exchange (SBA): Functions by passing the raw water through a synthetic anion exchange resin. The Chrome 6 ions swap places with chloride ions present on the bonding surface sites of the resin, affecting the chromium removal. Due to finite removal

capacity of the resin, it must periodically be regenerated with a concentrated salt brine solution to allow continued use.

- Weak Base Anion Exchange (WBA): Functionally the same process as SBA but with a much higher Chrome 6 removal capacity; however, WBA resins cannot be regenerated. Once spent, the exhausted resin bed must be replaced.
- Reverse Osmosis (RO): Functions by allowing water to pass through a semi-permeable membrane, while preventing the passage of Chrome 6 and other ions. In addition to Chrome 6 treatment, this technology can also address nitrate and TDS, both of which have been identified as potential constituents that may require treatment in the future.

Conceptual design information for each technology to be developed in this task include the following:

- Treated water quality objectives.
- Initial and ultimate treatment capacity requirements for centralized facility.
- Establish design raw water quality for use as design basis for treatment, both for individual wells and combined well flow.
- Design criteria as appropriate for each technology (e.g., loading rates, allowable bed volumes for treatment, recovery/brine flow rate, etc.).
- Conceptual process configurations with number of unit operations and redundancy requirements.
- Determine capability to reduce nitrate and/or TDS from the raw water.
- Equipment sizing.
- Process flow schematics.

Task 3 – Siting Evaluation

This task will consider the options of individual wellhead treatment versus a centralized treatment facility. As a screening level analysis, the following methodology is proposed for use as a basis to compare the siting options for each technology:

For Wellhead Options

- Estimate the square footage available for a treatment system at each well site (i.e., Well Nos. 2, 5, 6, 7, 8, 9, and 11).
- For each technology, equipment footprint data for the equipment will be obtained from vendors for standard unit/skid configurations.
- Estimate the treatment system footprint required at each site on a parametric basis to determine if the space available is reasonable compared to system footprint required. It is assumed that the treatment capacity at each site will match the corresponding well capacity.
- Conceptual level layouts will not be generated, as the estimated square footage required versus space available at each well site will be used as a basis to determine feasibility.

For Centralized Facility Options:

- Assume the use of the parcel identified by the City for a centralized treatment facility (i.e. parcel adjacent south of Orange Ave. and Locust Ave. intersection).
- Develop conceptual layouts for each treatment technology system configuration as initial treatment capacity and estimate adequacy for expansion to ultimate capacity. If space if insufficient for ultimate capacity, determine expansion capacity allowable.

Task 4 – Conceptual Pipeline Alignment Evaluation

For this task, RMC will perform a conceptual level evaluation of the raw water, treated water, and residuals management pipelines needed for a centralized treatment facility. Each will be evaluated as described in the subtasks below.

Task 4.1 – Treated Water Pipeline

RMC will develop a treated water pipeline alignment based on available public right-of-way and City land/easements; pipeline length; known utility congestion; major crossings such as highways, railroad tracks, and flood control facilities; general traffic congestion and potential public impacts observed in the field; a cursory review of environmental and permitting constraints; and other constructability challenges. Utility mapping from outside utility agencies will not be obtained for this planning level study; however, RMC will use Google Earth and available City-provided water main as-built drawings to identify major crossings, utility congestion and other potential constructability issues. RMC will also identify easement and right-of-way requirements and identify acceptable pipe materials for the application.

Task 4.2 – Treated Water Pipeline

Based on the current potable water system configuration, RMC will determine a point of connection of the treated water pipeline from the treatment site to the City's potable water distribution system, and will identify a preliminary pipeline route from the treatment plant site to the point of connection. It is assumed that the new treated water pipeline will connect to the existing 24-inch transmission pipelines near the proposed water treatment plant site. As a part of this task, RMC will size a treated water pump station based on system pressure requirements.

This scope assumes that the City's existing potable water system has capacity to accommodate the addition of treated water to the system at a single connection point, and no further upgrades of the existing potable water system will be necessary. This assumption can be verified as part of the feasibility study using the City's hydraulic model. If not a valid assumption, the hydraulic model runs associated with identifying the required improvements to solve hydraulic capacity deficiency are not included in the current scope of work in this proposal.

Task 4.3 – Residuals Management

As part of this Task, RMC will review the City's atlas sewer maps to determine possible points of connection based on the system layout and available gravity pipeline sizes. RMC will provide the additional hydraulic loading (i.e. flow and pattern of disposal) for the City to indicate the best point of connection based on its sewer capacity evaluation and location preference. It is assumed that all residuals flows from the treatment plant will be disposed to the sewer and no other options for residuals disposal will be considered (such as drying beds, deep well injection, haul off, etc.).

RMC's SOW for the pipeline alignment evaluation is based on the following assumptions.

- The City will provide requested and available information in a timely matter and in the format requested by RMC.
- Identification of environmental constraints for the pipeline alignment evaluation consist of a cursory review of the site conditions to identify any fatal flaws or potentially costly mitigation requirements. The work will be limited to the level of effort shown in the fee estimate.
- Geotechnical conditions and soil corrosivity are assumed to be similar across all alignment routes; work to identify alignment specific conditions will not be performed as part of this effort. This assumption should be validated under future phases of work as the project progresses.
- Traffic comparison for pipeline routes will be based on observation and input provided by the City. Traffic studies will not be conducted as part of this SOW.
- The City will provide recent cost of construction for pertinent projects such as pipeline installation, construction of pumping station, connection fees, etc.
- RMC will factor in information (where available/applicable) from the potable water hydraulic model of the City's existing potable water system used for the Master Plan Update work.

Task 5 – Cost Analysis

This task will consist of developing a conceptual level lifecycle cost for each treatment option to determine the most cost effective alternative for the City. Lifecycle costs will be generated for both the wellhead and centralized treatment options for each of the technologies. Lifecycle costs will factor in the following:

- Constructed project capital cost. Wellhead treatment options will not include additional conveyance piping. The centralized treatment facility options will include raw water, treated water, and residual disposal conveyance piping.
- Lifecycle operations and maintenance (O&M) cost. O&M cost will include labor, consumables (e.g., chemicals, power, etc.), residuals management and disposal (e.g., RO

brine, spent salt regenerant, backwash, resin replacement, etc.), and major equipment parts replacements anticipated during the lifecycle of the system.

- Lifecycle costs will be normalized to current year (i.e. 2016) dollars through a net present value analysis. The 20-year U.S. treasury bond and ENR CCI national index rate will be applied in the analysis for discount and escalation rates, respectively.

The lifecycle costs generated for this effort will be developed on a conceptual level (i.e., -50%/+100%) in accordance with the AACE International (formerly the Association for the Advancement of Cost Engineering) for Class 5 planning level projects. To facilitate costing efforts, the City will provide recent cost of construction for pertinent projects such as pipeline installation, construction of pumping station, connection fees, etc.

Task 6 – Report Development

This task will consist of preparing the draft and final reports for this Feasibility Study. The draft report will present the findings of the evaluation along with recommendations and point out any issues that may be outstanding. The draft report will be submitted for City review prior to a formal review meeting to discuss the findings and recommendations. Following the review meeting, comments will be incorporated into a final report for submittal to the City. The final report will be suitable for submittal to the DDW for regulatory review.

Task 7 – Meetings

This SOW assumes nine (9) total meetings for the project – these will consist of the following:

- One (1) kickoff meeting at the City's offices followed by a site visit to the potential treatment facility location and the individual wells.
- Up to six (6) coordination meetings. Each will consist of a conference call with an estimated duration of 1 hour.
- One (1) review meeting at the City's offices to discuss the findings of the draft report.
- Support for one (1) City Council Meeting. Support will consist of RMC development of technical slides in a Powerpoint format for inclusion in the City's overall presentation for the City Council. RMC also proposes to have the lead technical engineer (Sunny Huang) present during the City council meeting to address any technical questions that may be asked.

Note that this SOW does not include formal coordination activities or meetings with the DDW.

Schedule

RMC proposes the following schedule for the Feasibility Study:

- Draft report submittal 5 months from receiving Notice to Proceed (NTP) from the City.
- Two weeks for City review of the draft report followed by a draft report review meeting at a date TBD.
- Two weeks following the draft report review meeting for RMC to incorporate City comments into the final report, followed by submittal of the final report to the City.

Deliverables

Deliverables for this project will consist of the following:

- A PDF version of the draft report for electronic submittal to the City for review.
- A PDF version of the final report along with two P.E. stamped and signed hard copy originals.

Fee Estimate

RMC proposes to complete the above Scope of Work for a not-to-exceed cost of $198,431 as shown in the fee summary table below. Please note that this fee corresponds to a level of effort that has streamlined labor and staffing allowing for cost efficiency, but limiting the flexibility to accommodate scope deviations and contingencies.

Fee Estimate Summary
Hexavalent Chromium Feasibility Study

Task	Cost
Task 1 – Project Management and QA/QC	$26,295
Task 2 – Treatment Technology Analysis	$27,480
Task 3 – Siting Evaluation	$35,512
Task 4 – Conceptual Pipeline Alignment Evaluation	$20,652
Task 5 – Cost Analysis	$33,114
Task 6 – Report Development	$35,416
Task 7 - Meetings	$19,962
Fee Estimate Total	**$198,431**

Work will be billed on a time and materials basis in accordance with the attached RMC rate schedule. A detailed breakdown of the costs by task are attached.

We appreciate this opportunity to work with the City on this important project. If you have any questions, please contact Ali Taghavi at (916) 999-8700 or me at (619) 757-0512.

Sincerely,

Enrique Lopezcalva
RMC Water and Environment
10509 Vista Sorrento Parkway
San Diego CA 92121

Technical Memorandum

City of Patterson - Hexavalent Chromium

Subject:	**Corrective Action Plan (CAP)**
Prepared For:	Mike Willett, City of Patterson
Prepared by:	Sunny Huang, P.E.
Reviewed by:	Alyson Watson, P.E.
Date:	September 28, 2015
Reference:	RMC 0603-001.00

This technical memorandum presents the Corrective Action Plan as required by Directive 5 of Compliance Order No. 01_10_15R_001 issued by the State Water Resources Control Board, Division of Drinking Water (DDW). The compliance order was issued on July 29, 2015 to the City of Patterson (City) for violation of the Hexavalent Chromium (Chrome 6) Maximum Contaminant Level (MCL). This document is organized as follows:

- Section 1: Background
- Section 2: Purpose
- Section 3: Steps to Achieve Compliance
- Section 4: Estimated Time Requirements for Implementation

1 Background

The City Public Works Department is the retail purveyor for drinking water serving the City of Patterson. It currently and has historically relied solely on local groundwater for its drinking water supply. At present, the City operates 7 active potable wells with an aggregate supply capacity of approximately 7,300 gallons per minute (gpm) to meet the City's potable water needs. The City does not have access to surface water or alternate water supplies.

On July 1, 2014, DDW adopted the MCL of 10 micrograms per liter (µg/L) for Chrome 6. The City has implemented quarterly sampling of each well as per regulation, with the analyses for Chrome 6 performed by a State of California certified laboratory facility. The analytical results indicated a running annual average (RAA) for Chrome 6 exceeding the MCL for each well (the RAA for the wells ranged from 11 to 23 µg/L). This prompted DDW to issue a compliance order (CO) to the City on July 29, 2015 for violation of the Chrome 6 MCL.

As required by the CO, the City has formally acknowledged the CO, provided public notification, and continued quarterly monitoring for all impacted wells. In addition to these response actions, Directive 5 of the CO requires the City to develop a Corrective Action Plan (CAP) for submittal to DDW by October 9, 2015. The CAP is contained herein.

2 Purpose

The CAP will serve as a "roadmap" for the City, indicating the steps to be taken that will allow the City to achieve compliance with the Chrome 6 MCL. Additionally, it will indicate the estimated time requirements to implement each step, thus generating an overall timeframe for the City to achieve compliance.

3 Steps to Achieve Compliance

The following steps have been identified as needed to allow the City to reach compliance with the Chrome 6 MCL:

- Field Testing of Wells
- Feasibility Study
- Pilot Testing
- Basis of Design Report
- Engineering Design
- Environmental Documentation (CEQA)
- Permitting
- Funding/Financing
- Construction
- Commissioning/Acceptance

To ensure that each step is adequate in scope, the City will coordinate with DDW throughout the CAP implementation process. These steps are described below.

3.1 Field Testing of Wells

The Chrome 6 concentrations in the City's groundwater are directly proportional to the amount of contact the groundwater has with the formations in the underlying geology that contain Chrome 6. Therefore, it may be possible to reduce Chrome 6 concentrations by confining the pumping of the wells to screen depths that extract from portions of the formations that may potentially contain lower quantities of Chrome 6. This step will consist of conducting field tests of the wells at a number of different screen depths to assess if such changes to pumping operations can yield Chrome 6 reductions in the extracted groundwater.

3.2 Feasibility Study

A Feasibility Study will be conducted to identify the alternatives available to the City to meet the Chrome 6 MCL and to narrow down the alternatives to one or a few that would be most suitable to address the site-specific conditions in Patterson. The alternatives for evaluation would factor in the following:

- Changes to existing pumping operations that can mitigate Chrome 6 concentrations in the source water as identified in the Field Testing of Wells step.
- Treatment technologies to reduce Chrome 6 from the source water. These will include those technologies identified as best available technologies (BAT) for Chrome 6 treatment per California Code of Regulation (CCR) Section 64447.2: reduction/coagulation/filtration (RCF), weak based anion exchange (WBA), and strong based anion exchange (SBA).
- Consideration of treatment for nitrate and/or total dissolved solids (TDS) in addition to Chrome 6. Future reduction of nitrate and TDS have been identified as long term water quality (WQ) improvement goals in the City's Water Master Plan. Depending the feasibility of addressing nitrate and TDS, reverse osmosis (RO) may be considered in addition to RCF, WAB, and SBA, as RO is identified in the CCR as a BAT for Chrome 6 treatment.
- Potential locations for siting of treatment facility.

Once the alternatives have been identified, a conceptual configuration will be generated for each, using conservative values for design and operating criteria for each technology that are either cited in the existing literature or typically used in the industry. Lifecycle costs will then be developed for each alternative, factoring in capital cost, operational and maintenance (O&M) costs, and residual management costs. The lifecycle costs will be used as a basis to recommend one or more alternatives for the City to consider for pilot testing.

3.3 Pilot Testing

For the treatment alternative(s) identified in the Feasibility Study, pilot testing will be performed to meet the following objectives:

- Determine site specific design and operating criteria for each technology tested.
- Confirm usage rates for consumables (e.g., power, chemical(s), etc.) and generation rates for residuals.
- Use pilot data to refine lifecycle costs and select a recommended system alternative for full-scale design and implementation.

Additionally, changes to existing pumping operations to mitigate Chrome 6 source water concentrations as identified in the Field Testing of Wells step will also be factored into the pilot test.

3.4 Basis of Design Report

Using the findings from the Pilot Testing and Field Testing of Wells steps, the Basis of Design Report will establish the final design and operating criteria to be used for the design of a full-scale treatment facility as well as changes in pumping operations that will reduce source water Chrome 6 concentrations. The report will contain a conceptual treatment facility design based on these criteria. The primary components of the conceptual design presented in the report will include:

- Treatment scheme, including blending and/or onsite water storage as needed.
- Number of treatment trains, proposed equipment redundancy or duty/standby arrangements for major unit operations, and primary process piping.
- Site plan, showing a conceptual layout with estimated space requirements for treatment equipment, chemical storage (as needed), and ancillary/support systems.
- Pipeline alignments for source water conveyance, treated water discharge, and residual disposal (i.e., sewer).

3.5 Engineering Design

It is assumed that the City will move forward with a design-bid-build process for the design and construction of the Chrome 6 facility (as opposed to design-build or other project delivery system). This step will consist of the preliminary through detailed design stages for the treatment system and required new pipeline conveyance. The design process will consist of 30%, 60%, 90%, and 100% levels as design stage milestones for review and revision, with a final set of stamped project documents (i.e., drawings and specifications) approved by DDW to release for bid and construction.

3.6 Environmental Documentation (CEQA)

To move forward with the implementation of a Chrome 6 facility, the City will need to fulfill the environmental and approval/permitting requirements stipulated by the California Environmental Quality Act (CEQA). The CEQA statute (California Public Resources Code Section 21000 et seq.) requires that

all state and local agencies must give major consideration to environmental protection prior to approving public and private activities. It is anticipated that the City will need to develop either an initial study/mitigative negative declaration (IS/MD) or an environmental impact report (EIR) to satisfy CEQA requirements. The determination of the document needed will depend on the recommended treatment alternative and the proposed facility design in the Basis of Design Report. It is also anticipated that the City will need to develop CEQA-plus documentation to allow them to apply for California State Revolving Fund (SRF) loans.

It is anticipated that the CEQA process will begin during the Basis of Design Report step and continue through the engineering design.

3.7 Permitting

The permits required to allow for the construction and operation of a new Chrome 6 facility and associated new pipeline conveyance will be identified at the start of the engineering design step. Once identified, the permit application process will proceed in parallel with the engineering design to minimize the potential for delaying the bid, award, and start of construction for the facility. They may include, but not be limited to, permits from DDW, City planning department, local fire department, and the local publicly owned treatment works (POTW).

3.8 Funding/Financing

To help offset the financial burden associated with compliance with the Chrome 6 MCL, the City will seek to apply for grant funding and/or low cost loans. Potential sources of grant and/or loan funding will be identified at the start of the Basis of Design Report step, with the application process proceeding into and through the engineering design. The City will also concurrently conduct a reevaluation its water rate structure which will factor in the cost impacts for Chrome 6 compliance. Adjustments to the water rate structure may be made on an as needed basis to address compliance costs that cannot be recovered through grants and to service debt from loans assumed for compliance activities.

3.9 Construction

Construction will entail bidding, award, and construction of the Chrome 6 facility and related conveyance pipelines.

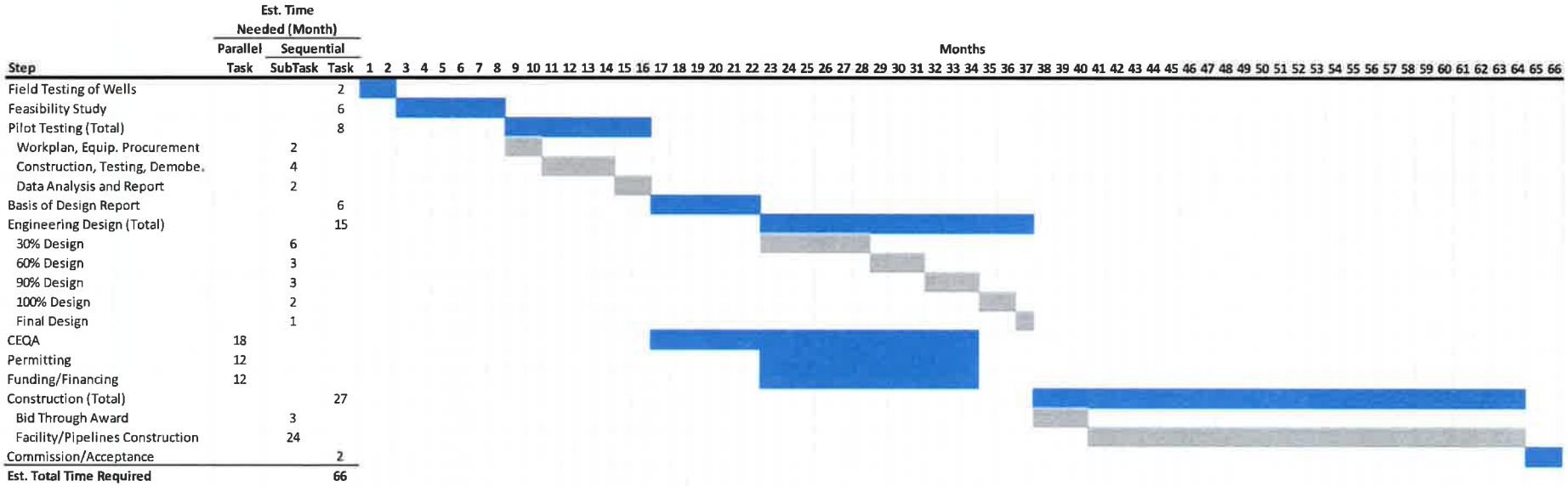
3.10 Commissioning/Acceptance

Upon the completion of construction and testing of the Chrome 6 facility, the City will supply all necessary permits and documents to DDW to obtain acceptance by DDW. Once acceptance is obtained, the City will place the Chrome 6 facility into service and provide public notification that the City is compliance with the Chrome 6 MCL.

4 Estimated Time Requirements for Implementation

Figure 4.1 presents the estimated timeline anticipated to implement and complete each step described in Section 3. As advised by DDW, the time requirements and timeline are presented in cumulative months rather than hard dates.

Figure 4-1. City of Patterson – Chrome 6 Planning Timeline | 2015



Step	Est. Time Needed (Month) Parallel Task	Sequential SubTask	Sequential Task
Field Testing of Wells			2
Feasibility Study			6
Pilot Testing (Total)			8
Workplan, Equip. Procurement		2	
Construction, Testing, Demobe.		4	
Data Analysis and Report		2	
Basis of Design Report			6
Engineering Design (Total)			15
30% Design		6	
60% Design		3	
90% Design		3	
100% Design		2	
Final Design		1	
CEQA	18		
Permitting	12		
Funding/Financing	12		
Construction (Total)			27
Bid Through Award		3	
Facility/Pipelines Construction		24	
Commission/Acceptance			2
Est. Total Time Required			**66**

Based on the individual time estimates, the aggregate time required for the City to achieve compliance with the Chrome 6 MCL is anticipated to be 66 months. Please note the following regarding the estimates of time requirements:

- The duration needed to complete the environmental (CEQA) requirements will depend on whether an IS/MD or an EIR is required. For an EIR with the CEQA-plus requirements, the timeframe is estimated to be 18 months. If an IS/MD with the CEQA-plus requirements is needed, the timeframe may be reduced to 9 months.
- The 12-month duration identified to complete the Funding/Financing step may depend on funding cycle requirements. For SRF loans, loan applications are accepted on a "first come, first served" basis and are not constrained to a calendar cycle. Other grant funding sources may be tied to specific calendar dates which could affect the time requirements of the Funding/Financing step, and thus the start time allowable for construction.
- The 24-month duration for the physical construction of the Chrome 6 facility and conveyance pipelines is an allowance based on the general timeframe for the construction of a facility in this approximate treatment capacity range. A revision to this construction duration may be warranted once the specifics of the recommended facility are fully defined (i.e., siting of facility, treatment process selection and system configuration, equipment sizing, pipeline alignments, etc.).

Upon approval, it is understood that the City will be held to these timelines by DDW as milestones for progress. However, DDW has indicated a willingness to allow adjustments if issues are encountered that necessitate a change in approach or if conditions change over the course of the project. In the event that a time adjustment is needed, the City will coordinate with DDW to determine what may be allowable.