

**RUTHRAUFF  
BASIN MANAGEMENT PLAN**

**VOLUME I OF II**

**DRAINAGE IMPROVEMENT PLAN**

**Appendix F – Outreach**

Contains documents and records pertaining to past and ongoing public outreach performed for this project.

**RUTHRAUFF  
BASIN MANAGEMENT PLAN**

**VOLUME I OF II**

**DRAINAGE IMPROVEMENT PLAN**

**F.1 Public Open House Meetings**

This appendix contains agendas and summary reports compiled by the Gordley Group for both Open House meetings on December 4, 2014 and November 16, 2016.

Pima County Regional Flood Control District  
**Ruthrauff Basin Management Plan**

Public Involvement Report

December 8, 2016



Prepared by Stantec and Gordley Group

Pima County Regional Flood Control District  
Ruthrauff Basin Management Plan  
Public Involvement Report

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# Ruthrauff Basin Management Plan Public Involvement Report

## Executive Summary

The Public Involvement Plan for this project was designed to fulfill the promise of “consult” on the International Association for Public Participation (IAP2) Spectrum of Public Participation: to keep the public informed, listen to and acknowledge concerns and aspirations and provide feedback on how the public input was considered in the decision. The goal of the plan was to bring more information into the study for consideration, provide additional perspectives on alternatives in order to reach the best outcome, and achieve greater public understanding, support and acceptance of the study and its final outcome. The plan included a government agency stakeholder meeting; a neighborhood leader stakeholder meeting; an alternatives workgroup meeting including stakeholders from neighborhoods, government agencies and technical team, and two open house meetings.

Pima County Regional Flood Control District  
**Ruthrauff Basin Management Plan**

Open House #1 Summary

December 4, 2014



Prepared by Stantec and Gordley Group

## RUTHRAUFF BASIN MANAGEMENT PLAN

### OPEN HOUSE MEETING AGENDA

**LOCATION:** Ellie Towne Flowing Wells Community Center  
**DATE:** Thursday, December 4th, 2014  
**TIME:** 6:00 – 7:30 pm

1. 6:00 - Open House to Review Exhibits
  
2. 6:30 - Opening Comments Evan Canfield  
Project Manager
  
3. 6:40 – Agenda Review & Meeting Purpose Chuck Williams  
Facilitator
  - Agenda Review
  - Meeting Purpose
  - Public & Stakeholder Involvement
  - Project Objectives and Overview
  - Questions & Answer
  - Summary & Next Steps
  
4. 6:45 - Project Overview John Wise  
Project Manager  
Evan Canfield  
Project Engineer
  - Scope Review and Status
  - Schedule
  - Deliverables
  
5. 7:05 – Public Input-Questions Chuck Williams
  - Individual Comments
  
6. 7:25 - Summary/Next Steps Evan Canfield
  
6. 7:30 – Adjourn Evan Canfield

## RUTHRAUFF BASIN MANAGEMENT PLAN

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**OPEN HOUSE SUMMARY:** Prepared by Lori Lantz from Gordley Group with edits by Chuck Williams from Stantec and Evan Canfield from the Pima County Regional Flood Control District (RFCD) - finalized 12-22-14 allowing two weeks following the meeting for comment forms to be mailed.

**LOCATION:** Ellie Towne Flowing Wells Community Center Multipurpose Room

**DATE:** Thursday, Dec. 4, 2014

**TIME:** 6:00 p.m. – 7:30 p.m.

### **PROJECT TEAM**

Evan Canfield, Project Manager, RFCD  
Mindy Cox, Pima County RFCD  
Terry Hendricks, Pima County RFCD  
Akitsu Kimoto, Pima County RFCD  
Francisco Ramirez, Pima County RFCD  
Julie Simon, Pima County Department of Transportation  
Diane Luber, Pima County Communications  
Jason Green, City of Tucson Planning & Development  
Jim Vogelsberg, City of Tucson Planning & Development  
John Wise, Project Manager, Stantec Consulting  
Janice Mock, Stantec  
Sandy Steichen, Stantec  
Chuck Williams, Stantec  
Jan Gordley, Gordley Group  
Lori Lantz, Gordley Group  
Ian Sharp, JE Fuller  
John Wallace, JE Fuller

### **Overview**

Pima County Regional Flood Control District held a public meeting on Thursday, Dec. 4 at Ellie Towne Flowing Wells Community Center, 1660 W. Ruthrauff Road, Tucson, Ariz. The purpose of the meeting was to inform stakeholders about the Ruthrauff Basin Management Plan project and receive input about areas of concern and suggestions. About 46 members of the public attended. 14 comment forms were received from the public between Dec. 4 and Dec. 18.

### **Meeting Format, Materials and Presentation**

At the public meeting, participants were provided an agenda, project information sheet, comment form, frequently asked questions and news release. Participants were asked to:

- Sign in.
- Fill out and leave completed comment forms at the meeting or send them in by Dec. 18, 2014 to be included in the meeting summary.
- Proceed to the tables with displays of aerial maps of County or City project areas to indicate property location, areas of concern, and discuss with team members.

Staffed information stations with aerial plan-view maps were provided on tables, to allow participants to ask questions specific to the location of their concern. Participants were encouraged to view the displays, ask questions and provide feedback. Tables included Pima County, City of Tucson, and Floodplain Regulation.

## RUTHRAUFF BASIN MANAGEMENT PLAN

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### Handouts:

Each participant was provided the following handouts when they entered:

- December 2014 Ruthrauff Basin Management Plan Project Update
- Ruthrauff Basin Management Plan Frequently Asked Questions
- Ruthrauff Basin Management Plan Comments/Concerns Form

### Presentation (start at 6:30):

#### 1.) **Introductions and Opening Comments**

*Evan Canfield*

Evan Canfield opened the meeting by welcoming everyone. He introduced Jeannie Davis, representing Pima County Supervisor Ally Miller from District 1, who expressed support of the flood control program. Because Pima County Regional Flood Control District continues to exceed National Flood Insurance Program requirements, residents who live in a FEMA floodplain are eligible for up to a 25 percent discount on their insurance over other communities. Evan also thanked City Council Member Karin Uhlich and Aide Matt Kopec who was present, and who assisted with a resident's concern about debris in the wash by getting it cleaned up right away.

#### 2.) **Agenda Review and Meeting Purpose**

*Chuck Williams*

- The project purpose is to develop a comprehensive flood control program, develop cost-effective drainage alternatives and provide a balanced multi-objective approach, as well as provide a basis for implementation cost estimates and phases. These efforts should produce a report that Pima County and City of Tucson can approve and adopt.
- The purpose of this meeting is to inform the public of the project objectives and overview, receive input and identify any other related issues.

#### 3.) **PowerPoint Presentation: Project Overview**

*John Wise, Evan Canfield*

The project overview included the historical changes in land use leading to changes in water flow and flooding, current areas designated as floodplains, problem areas and drainage complaints. Existing conditions analysis, floodplain mapping and FEMA map review are in process, with public involvement outreach ongoing, and alternatives analysis and remediation forthcoming. The project began in April 2014 and is scheduled for completion in approximately 24 months. The public is being asked to provide input to help identify the problems and suggest solutions.

#### 4.) **Public Involvement/Input (Discussion)**

*Chuck Williams, Facilitating*

- Comment: When the City and County have road improvements like Prince Road, can you tie in to existing drainage structures that are there now?
  - Response: We are working on this over time. Some roads already have storm drains or culverts. We are conducting existing conditions analysis, which includes generating maps with every known storm drain in this project area. We will use this existing conditions information to understand the system as it is today and how to best utilize any future additions to the system.

## RUTHRAUFF BASIN MANAGEMENT PLAN

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- Comment: Who is a stakeholder?
  - Response: Stakeholders include members of the public, residents, business owners, property owners and agencies such as Arizona Department of Transportation and the railroad. If you own property in the project area, you are considered a stakeholder.
  
- Comment: If you complain too much, FEMA can put your property in a floodplain. This happened to my property, which made it worthless. I sued the City and eventually I was partially reimbursed when the City bought back the property. Be careful not to complain too much.
  
- Comment: Why is Tucson Mall not in the project study area?
  - Response: The Tucson Mall is not in the project study for technical reasons. The large areas of buildings create errors in the survey data, which makes it look like there is a 40-foot hole there, so the Mall was taken out of the study.
  
- Comment: Where does Flowing Wells Wash start and where does it empty out?
  - Response: Flowing Wells Wash begins at the confluence of Cemetery Wash and Navajo Wash near Fairview Avenue, drains under the interstate and into the Santa Cruz River.
  
- Comment: I have a floodplain on my property. Water flows around my property, which has been elevated, and the neighbors complain that they're going to sue me because water flows onto their property.
  - Response: Part of the study is to collect and evaluate information regarding drainage problems and complaints. Write the information on the comment form so that we can include it and follow up on it.
  
- Comment: Will this project interfere with the groundwater table for wells in the Flowing Wells Irrigation District and impact water level underground?
  - Response: Most of the recharge for groundwater in regional aquifers is from water infiltrated at the Santa Cruz or Rillito rivers. Evaporation is so great and occurs so fast, water can't get into the aquifers very well. We need to get water into the rivers and into the aquifer. The Flowing Wells Irrigation District has been at previous stakeholder meetings and we will continue to ask for their input in the future.
  
- Comment: If we are in a basin, where does the basin drain to?
  - Response: From around Campbell Avenue, water drains east to west. About half drains to the north and the Rillito River, while the rest drains westward to the railroad and I-10. Whatever can go under I-10 drains to the Santa Cruz River.
  
- Comment: What does the project do to prevent flooding on the Rillito and Santa Cruz rivers?
  - Response: We are not evaluating the Rillito and Santa Cruz as part of the study. This study is focused on the area inside these boundaries because there are so many drainage and flooding problems here. Big flooding on the Rillito or Santa Cruz is from lots of regional rainfall and previous improvements have been made on those systems over the years. It will have to rain for hours or days to get this type of flooding.

## RUTHRAUFF BASIN MANAGEMENT PLAN

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- Comment: So in this area are you not concerned about flooding, but rather ‘puddling’?
  - Response: No, we are concerned about flooding within the basin. You don’t have to have 15 feet of water for flooding to cause damages and threats to life. Flooding can be three to four feet in some of these areas, but two feet of water is enough to cause damage and create a flood hazard.
  - Other Audience Member Response: My car was flooded with four feet of water. This is real flooding.
  
- Comment: There are berms by the railroad that can collect or pond water and cause flooding.
  - Response: We are working to get drainage under the railroad and I-10.
  
- Comment: Will a culvert be put in at Ruthrauff, like they did at Orange Grove, to help?
  - Response: Along the railroad embankment, ADOT is planning to upgrade the drainage near Ruthrauff Rd as part of the I-10 improvements. This upgrade is planned several years in the future. In other places along Ruthrauff we don’t know yet, since we have not completely identified problems and solutions.
  
- Comment: Any thought of cleaning the river bottom in the Rillito by dredging?
  - Response: No. We recognize it is a potential problem. We won’t evaluate that option as part of this project, but the Flood Control District is aware of these issues on the Rillito. It is on the radar and we have to look at cost and the amount of sediment that needs to be removed to pass the flow. We have removed sediment from the Rillito following the 2006 flood, and we are evaluating whether we need to do so again.
  
- Comment: Over 20 years ago I suggested that the County sell sediment in the Rillito to the sand and gravel company or lease the area to them and let them do the dredging and sell the materials.
  - Response: While there is clearly material in the Rillito it may not be profitable for a sand and gravel company to mine it, because it may not be suitable for use.
  
- Comment: My property is not in any floodplain. I live two blocks from Tucson Mall. Will you take my property out of the study like Tucson Mall?
  - Response: Write this on the comment form and we will answer your question.
  
- Comment: Does the study just apply to property owners and businesses or are school districts and irrigation districts subject to the same rules? In this area we have the Sun Tran bus yard and the Amphi School District bus yard, and a lot of our flooding seems to have increased.
  - Response: Yes, school districts and other agencies have the same requirements. We have had meetings with them and with political subdivisions. We want this to be a comprehensive study.
  
- Comment: How is this project coordinated since so much of the flooding is along the railroad and I-10?
  - Response: We have had meetings with Arizona Department of Transportation and will be meeting with the railroad. We will continue to coordinate with them. ADOT has already added culverts and we are looking at more future culverts in the northern area to get water quickly to the Santa Cruz River.

## **RUTHRAUFF BASIN MANAGEMENT PLAN**

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### **5.) Summary/Next Steps**

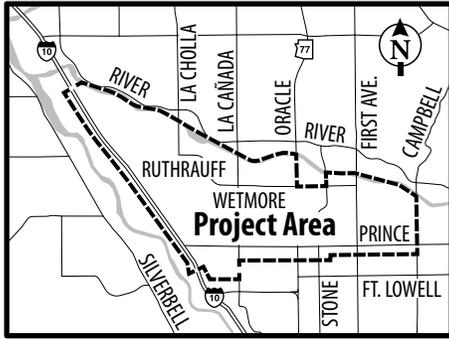
*Evan Canfield*

- Watch for updates on the website and project report document. Go to Pima.gov and search for Ruthrauff Basin.
- If you would like to provide more questions or input, fill out the comment form and mail, fax or email to Evan Canfield.
- Continued stakeholder coordination will include meeting individually and in small groups.
- Production of project maps and reports is ongoing. Good progress is being made on preliminary drafts.
- There will be a future public meeting, tentatively spring of 2016 where we will share information about recommended alternatives.

### **6.) Adjourn**

*Evan Canfield*

- The meeting was adjourned at 7:30 p.m.



## **OPEN HOUSE**

# **Ruthrauff Basin Management Plan**

6-7:30 p.m. Thursday, December 4, 2014

Ellie Towne Flowing Wells Community Center  
1660 W. Ruthrauff Road

Please join the Pima County Regional Flood Control District and the City of Tucson for an Open House for the Ruthrauff Basin Management Plan. This project will identify flood areas and drainage problems, and develop a plan for cost-effective solutions to reduce or manage flooding in the project area.

Representatives from Pima County Regional Flood Control District and the project team will be available to answer questions and address concerns about the project. The meeting will start at 6 p.m. with an opportunity to review project displays and talk to project staff. There will be a brief presentation at 6:30 p.m., followed by a question and answer period.

For more information about the project, visit:

**<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=158694>**

Individuals with disabilities who require accommodations for effective participation and communication may call Community Relations at **724-6410** by Nov. 26, 2014, to make appropriate arrangements.

Para información en español favor de llamar a Francisco Ramirez at **724-4679**. All meeting sites are accessible.

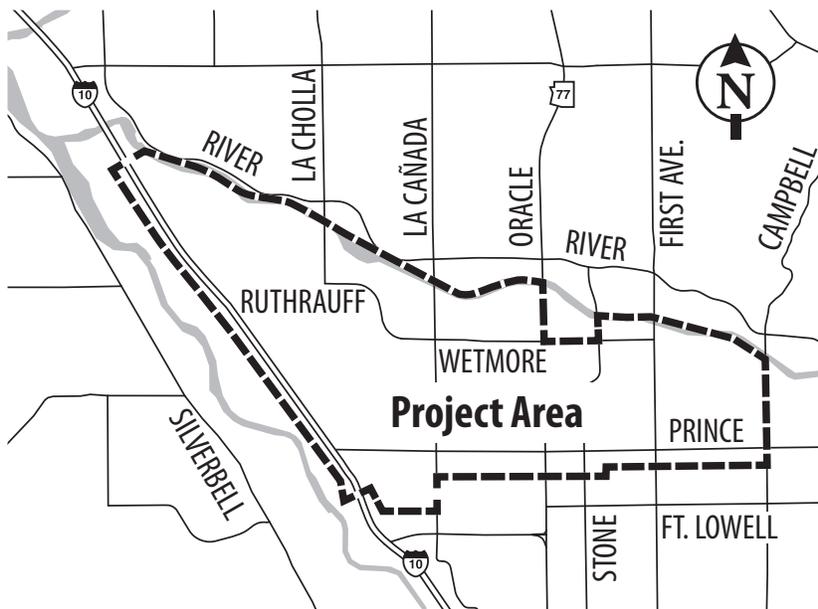
Pima County Regional Flood Control District • City of Tucson

# OPEN HOUSE

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## Frequently Asked Questions

### Ruthrauff Basin Management Plan



#### I – The Ruthrauff Basin Management Plan

**Q. What is the purpose of the Ruthrauff Basin Management Plan?**

A. *The purpose of the Ruthrauff Basin Management Plan is to identify flood areas and drainage problems, and develop a plan for cost-effective solutions to reduce or manage flooding in the project area.*

**Q. When did the project start, and how long will it take?**

A. *The project started in April 2014 and is expected to last two years. When the flooding and drainage problem analysis is completed, the Pima County Regional Flood Control District can move into the solution alternatives analysis.*

**Q. Will this project address flooding from the Rillito and Santa Cruz rivers?**

A. *No, this project will evaluate the drainage flowing into the Rillito and Santa Cruz rivers. Previous flood control projects on the Rillito and Santa Cruz have limited the amount of flooding we have along those watercourses. For example, the July 31, 2006, flood on the Rillito exceeded the estimated 100-year flood, with less flood damage than the floods of 1993 and 1983.*

**Q. If I don't live near a wash or other drainageway that floods, how will this project help me?**

A. *Sheet flow is the most common problem we have observed in the Ruthrauff Basin. Sheet flow is shallow, relatively slow moving floodwater. In many cases, this results in flooding in streets and backyards, which are not washes or drainageways. The project intends to address both sheet flooding and flooding associated with drainageways.*

**Q. What will the completed Plan do to address flooding we see in the Ruthrauff Basin?**

A. *The completed Plan will present a list of possible structural and non-structural solutions to problems identified in collaboration with the community. At this point, there is no specific funding source for paying for these solutions. However, the Plan will include an implementation component that describes possible funding sources and phasing that might be necessary for the solutions to occur.*

#### II – Flooding and Regulatory Floodplain Regulations

**Q. Who do I call if I see a clogged culvert or other drainage problem?**

A. *In unincorporated Pima County call the Pima County Regional Flood Control District at 724-4600. In the City of Tucson call the City Department of Transportation at 791-3154.*

**Q. Are there regular maintenance schedules for inspections on grates and drainage structures, or is maintenance scheduled only after complaints or flood events?**

A. *There are both regular maintenance schedules and maintenance that occurs after complaints. Pima County has limited staff, so people need to call us if they observe problems. Pima County knows many problem areas and checks on them before anticipated events and also follows up on complaints.*

**Q. Where is the existing 100-year floodplain?**

A. *There are both “FEMA” and “local” Regulatory Floodplains, which show the limits of the 1 percent annual chance flood (often called the 100-year flood). The FEMA-adopted floodplain is used for showing flood insurance requirements. The City and County have floodplain maps that extend further than the FEMA maps to regulate in the interest of public safety. New developments in existing floodplains in the City and County must show they can deal with existing drainage water and won’t increase flood hazards on adjacent properties.*

**Q. If my property is removed from the 100-year floodplain during the proposed remapping, does it mean it will never flood?**

A. *Not necessarily. Storms do occur that have intensities greater than the 100-year event. In addition, changes in river or watershed characteristics could increase flood depths and discharges.*

**Q. How do the floods we had last summer compare with what to expect in the 100-year flood?**

A. *The September 8, 2014, rainfall was a little over 1 inch in three hours. The rainfall that causes the 100-year flood is estimated to be about 3.2 inches in three hours. Therefore, we expect much more flooding in a 100-year flood.*

**Q. Older commercial developments were built before requirements to capture water on property. Properties downstream experience sheet flooding. What public policy frameworks or solutions exist to take care of this?**

A. *The implementation plan will have recommended alternatives, which can either be structural, like a channel; or non-structural, like an ordinance. Since the early 1980s, all new developments have been required to have drainage detention basins, which reduce flood peaks, or retention basins which hold the water on site.*

### **III – Alternatives Analysis and Recommended Solutions**

**Q. How do you gather interested stakeholders?**

A. *We are beginning to meet with interested stakeholders now, including local government, regulatory agencies, elected officials, utilities, wastewater, neighborhood associations and interested citizens’ groups.*

**Q. We live in a desert where water is scarce. How will you consider that stormwater is a resource, even though too much of it at a time causes flooding?**

A. *During the Alternatives Analysis process the Flood Control District will consider options that utilize stormwater as part of the drainage solution. In addition, we will evaluate more frequent floods, such as the 5-year and 25-year events, which may be reduced by using water harvesting techniques. These techniques are now included in the Pima County Regional Flood Control District’s guidance for stormwater management.*



# Ruthrauff Basin Management Plan

## Project Update – December 2014

### Expected Improvements

The Arizona Department of Transportation (ADOT) recently told us that the new culverts planned for the Union Pacific Railroad at the Flowing Wells Wash (shown in photo above) are anticipated to be installed in January or February of 2015. This improvement should reduce the depth of flooding upstream of the railroad embankment at the wash.

Following this improvement, the Ruthrauff Basin Team will prepare new FEMA floodplain maps, which are expected to reduce the size of the mapped FEMA 100-year floodplain.

### Project Contacts

Please contact us if you would like more information or have photos or information on flooding or erosion issues within these watersheds that you would like to share with the District.

**Evan Canfield**, PhD, PE, Project Manager for the District [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

**John Wise**, PE, Project Manager for Stantec [john.wise@stantec.com](mailto:john.wise@stantec.com)

### Past and Upcoming Events

1. The Pima County Regional Flood Control District held a Local Government Sector Stakeholder Meeting on July 24, 2014, to review the project and share information on the drainage situation in the watershed. The meeting summary is available under the "Public Involvement" tab on the project website: <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=158694>
2. A Private Sector Stakeholder Meeting was held on Oct. 23, 2014, at the Ellie Towne Flowing Wells Community Center.
3. An open house on the project will be held Dec. 4, 2014, from 6 to 7:30 p.m. at the Ellie Towne Flowing Wells Community Center. A second open house will be held following the development of proposed alternatives.



### Project Location

The Ruthrauff Basin is located in both the City of Tucson and unincorporated Pima County adjacent to Interstate 10 and the Union Pacific Railroad. The Ruthrauff Basin drains into the Santa Cruz River from the east just upstream of the confluence with the Rillito River.

### Project Description

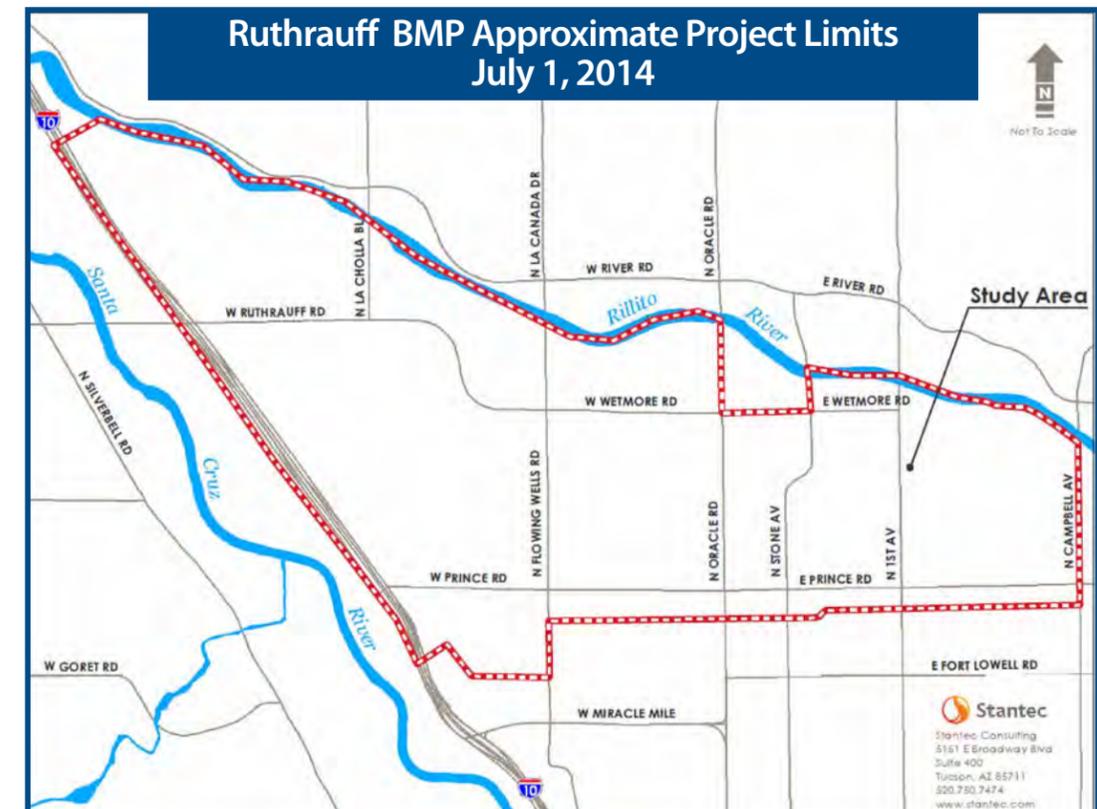
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent and substantial sheet flow and ponding of stormwater

as a result of the minimal topographic relief and inadequate drainage structures. Historically, flood flows have ponded on the east side of the Union Pacific Railroad embankment.

This project will develop a Ruthrauff Basin Management Plan that will identify flood hazard areas and drainage problems, and cost-effective solutions to alleviate or manage flooding in the project area.

### What's Next:

An open house will be held on Thursday, Dec. 4, from 6 to 7:30 p.m. at Ellie Towne Flowing Wells Community Center.



## Project Elements and Timeline

**Existing Conditions Analysis:** Review previous studies, perform hydrologic and hydraulic analysis that incorporates drainage improvements, and identify areas of drainage and erosion hazards.

**FEMA Floodplains will be Mapped:** The new culvert crossing at Flowing Wells Wash is anticipated to reduce flooding on the Flowing Wells Wash and the FEMA Floodplain, which currently shows water ponding behind the railroad track embankment. Therefore, a new floodplain map for this area will be prepared for approval by FEMA.

**Alternative Analysis and Recommended Solutions:** Alternative analysis for the General Study Area is to identify flood hazard solutions based on the data gathered and produced during the previous elements effort.

Develop structural and non-structural alternative solutions for mitigating the floodplain and erosion hazards identified in the existing conditions analysis, including cost effectiveness, and recommend an alternative for each flood hazard.

### Two Types of Local Floodplains will be Mapped:

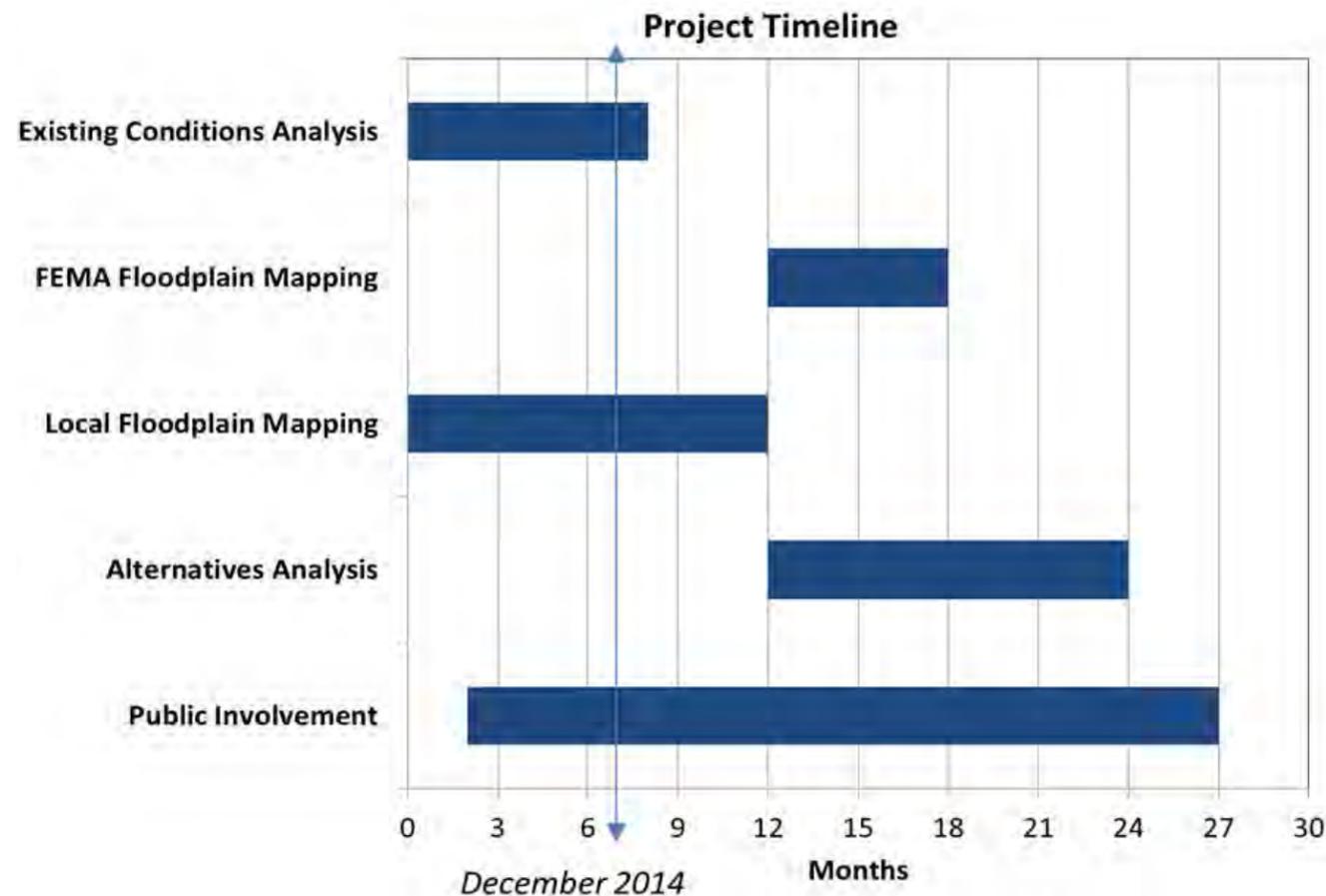
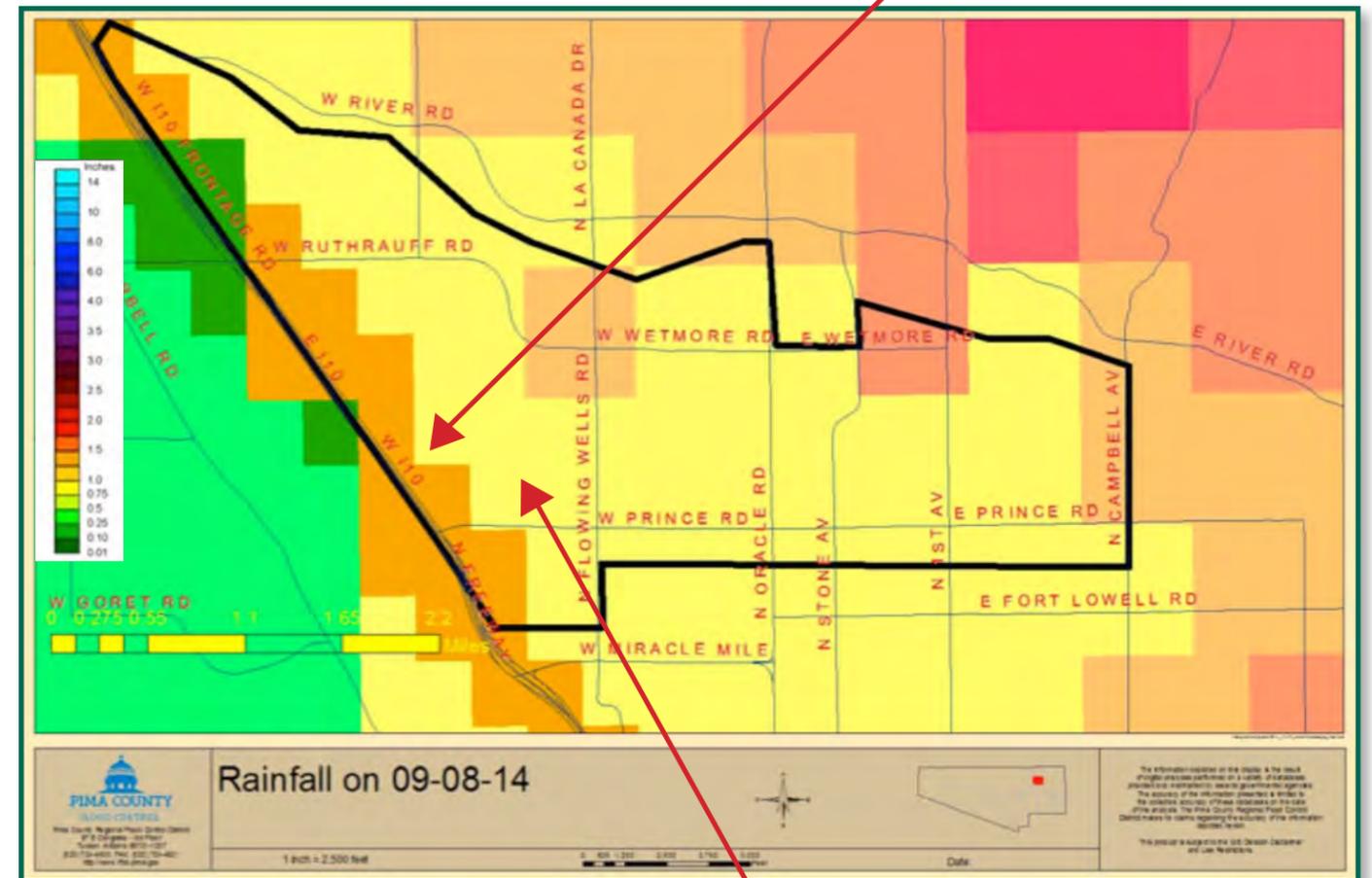
Because much of this area experiences sheet flooding, it is an ideal area for mapping using a grid-based approach, which is a relatively new technology. The grid-based maps show how water flows more accurately than the approach used in the current floodplain maps.

- **Regulatory Floodplains:** Regulatory Floodplains are delineated based on the 1% annual chance flood (100-year) and are used for administering the floodplain ordinance, which is the basis for permitting uses in regulatory mapped floodplains.
- **Floodplains of Problem Storms:** More frequent floods, such as the 10- or 25-year flood, can create problems such as flooding of yards and roadways. Therefore, this study will map these more frequent flows so that solutions can be developed for them.

**Public Involvement:** Stakeholder meetings will be held throughout the duration of the project. In addition, there will be two public meetings. The project timeline shows the phasing of these elements and the current status.

## September 8, 2014, Flood Event

On Sept. 8, 2014, the remnants of hurricane Norbert caused flooding and rainfall throughout the Tucson area. The project team visited the area during the event and took the photos below. The Ruthrauff basin had 1.22 inches of rain at La Cholla and the Rillito, and 1.14 inches at La Cholla and Ruthrauff. Mapping of rainfall depths using radar below\*\* showed greater depths to the east. The District's rainfall data is near-real time and is available at <http://alert.rfcd.pima.gov/>



\*\*The experimental graphic depicting Radar Estimated Precipitation for the 24 hour period is generated by the National Weather Service from radar data. It should be used only as a generalized indication of where the heaviest precipitation has occurred. Radar data is courtesy of NOAA/NOS nowCOAST.



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: [REDACTED]

Daytime Phone # [REDACTED] and/or Email [REDACTED]

Address (if you want a written response) [REDACTED]

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the    City    County    Don't know

Address of problem (If not known can show on map on back) SEE BACK

Comment/Concern WEST BOUND FLOWS FROM COMBINE WOODS

TRAILER PARK (POND) FLOOD SIMMONS/TOTTLE/PERAAR/PASTIME

FROM FAIRVIEW TO FLOWING WOODS RD. FENCED

ENTRANCES INSTALLED TO BLOCK ALLEYWAY S. OF PERAAR

CATCH DEBRIS and AGGRAVATE PONDING ISSUES.

NO "FLOOD ZONE" SIGNAGE (OVER 25 YEARS OF

REQUESTS for "OPERATION SPLASH" TEMPORARY SIGNS)

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

Pima County Regional Flood Control District  
97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632

Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: [REDACTED]

Daytime Phone # [REDACTED] and/or Email [REDACTED]

Address (if you want a written response) [REDACTED]

Type of Comment or Concern

Drainage Problem  Drainage Concern  Recommendation  Other

Location in the  City  County  Don't know

Address of problem (If not known can show on map on back) [REDACTED]

Comment/Concern I talked to Chuck Williams  
& would like to be informed of  
the continuing progress of the drainage.  
I own property across from the culverts  
@ Ruthrauff & I-10

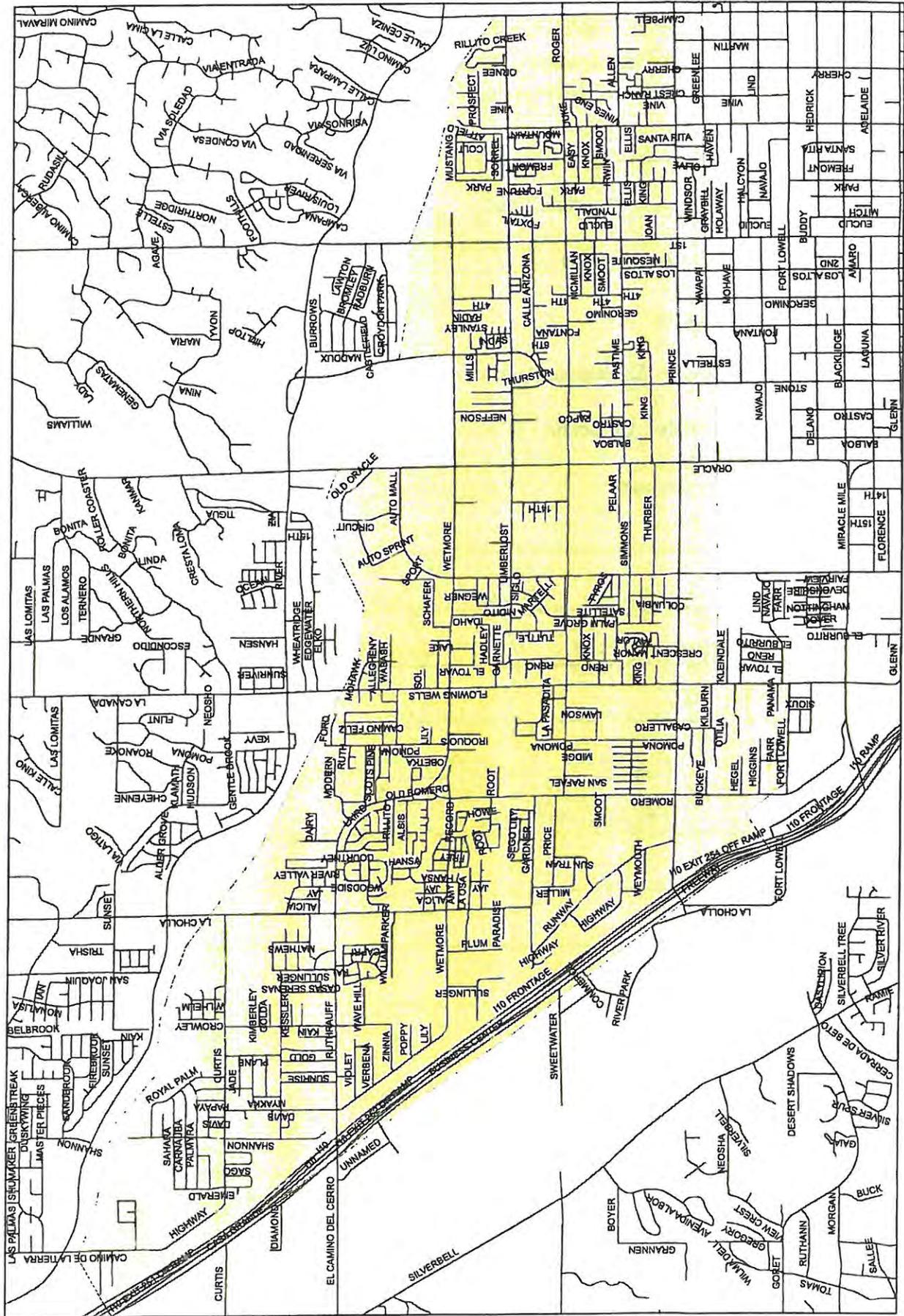
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Pima County Regional Flood Control District  
97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632

Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

Legend  
Study Area



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: \_\_\_\_\_

Daytime Phone # \_\_\_\_\_ and/or Email \_\_\_\_\_

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the       City    County    Don't know

Address of problem (If not known can show on map on back) \_\_\_\_\_

Comment/Concern *Can a deep drainage hole be dug down into water table level like we do for tree planting*

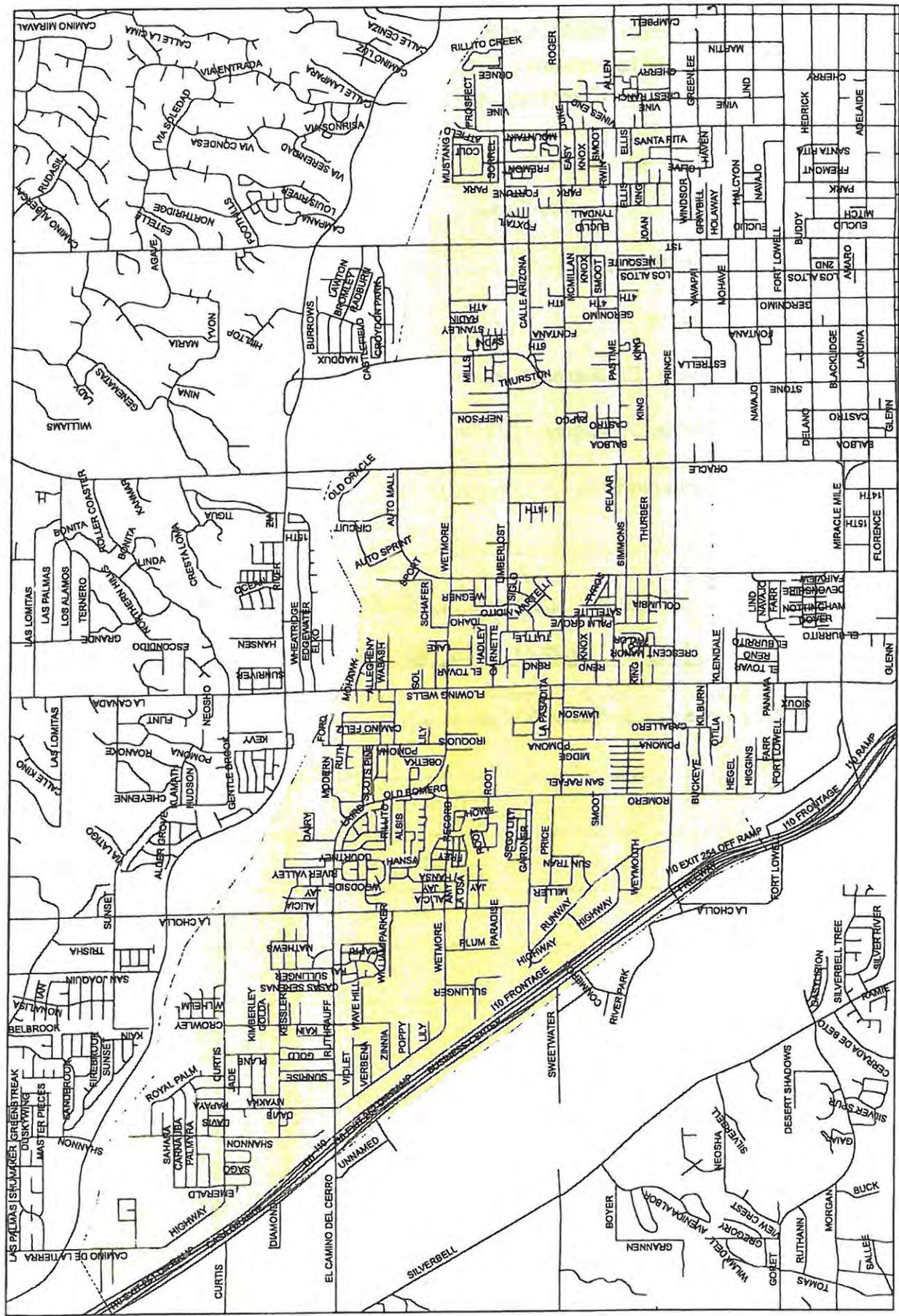
If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

Pima County Regional Flood Control District  
97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632

Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

Legend  
Study Area



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: [Redacted]

Daytime Phone # \_\_\_\_\_ and/or Email [Redacted]

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

- Drainage Problem    Drainage Concern    Recommendation    Other

Location in the    City    County    Don't know

Address of problem (If not known can show on map on back) [Redacted] E Prospect Lane,  
Limberlost Dr. <sup>street flooding</sup> ponding, & Roger Rd. street flooding

Comment/Concern \_\_\_\_\_

No runoff - rainwater ponds.

Culvert on east side of Mountain Avenue ponds and

the ponds can stay a long time.

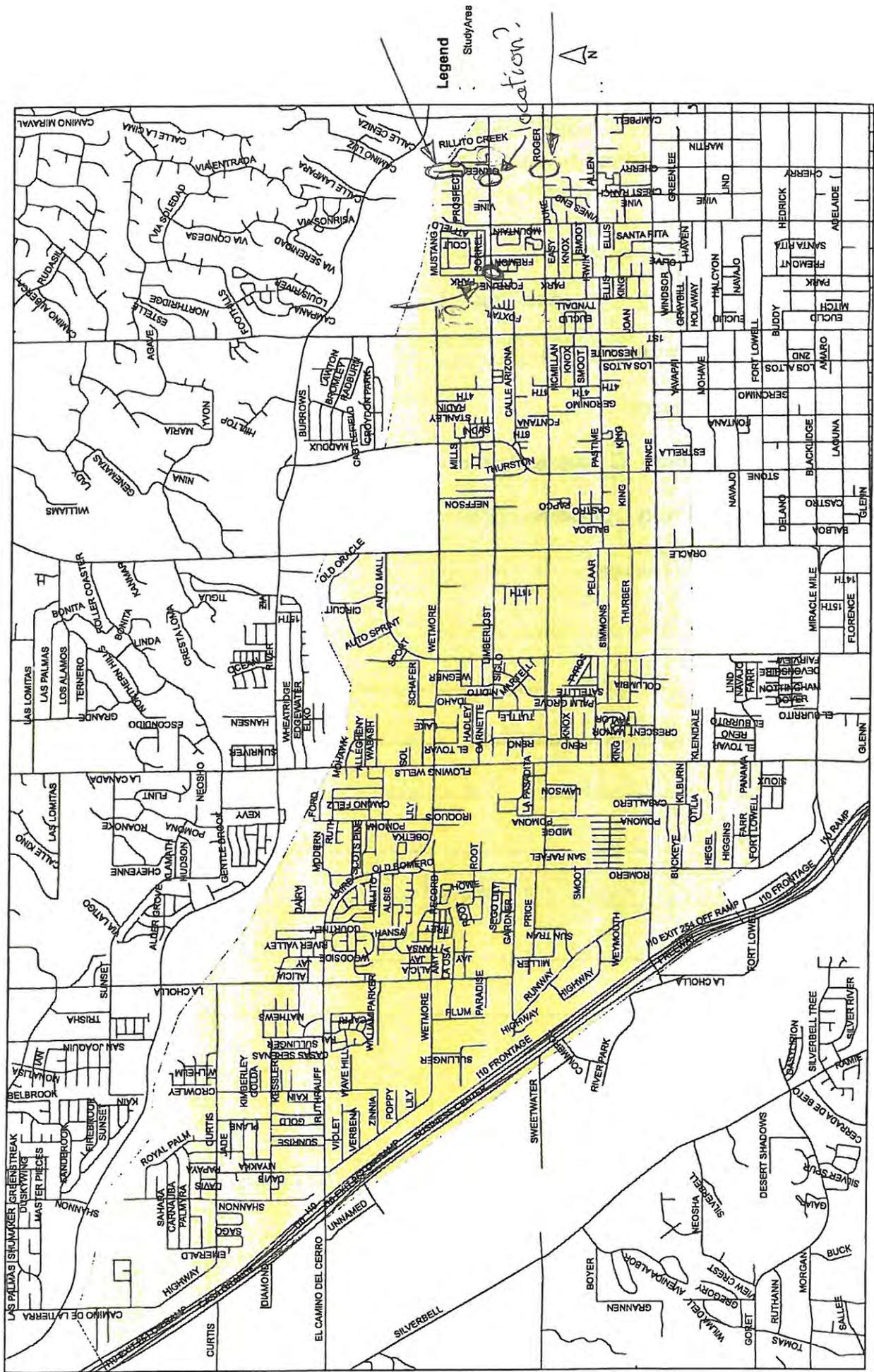
Thank you for your reachout

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97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632

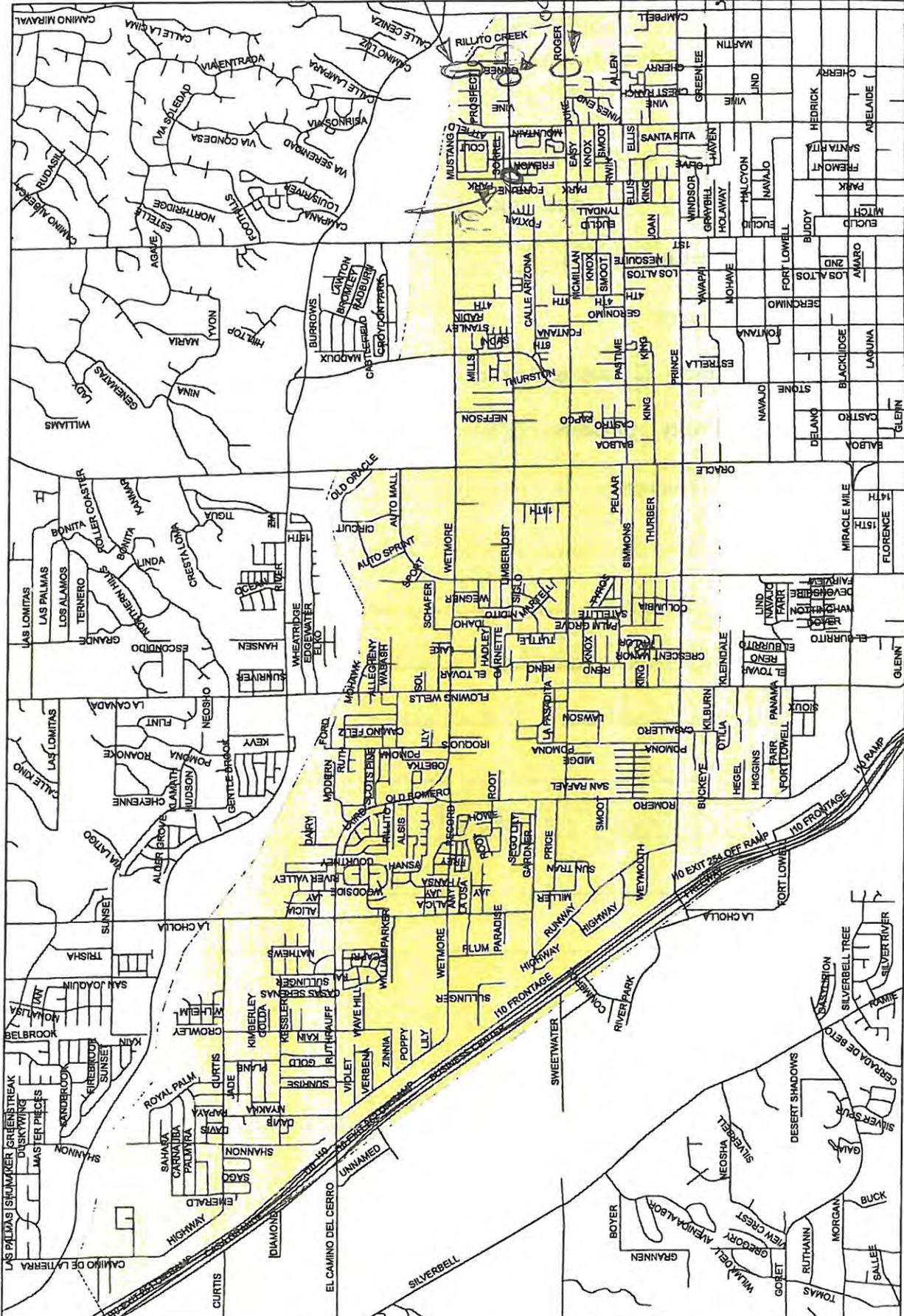
Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)



Legend

Study Area

location?



Vertical text labels on the left side of the map, including street names like 'LAS PALMAS', 'CAMINO DE LA TIERRA', and 'SUNSET'.

Vertical text labels on the right side of the map, including street names like 'CERRA DE BATO', 'SILVER RIVER', and 'SILVER TREE'.

Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: \_\_\_\_\_

Daytime Phone # \_\_\_\_\_ and/or Email \_\_\_\_\_

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the    City    County    Don't know

Address of problem (If not known can show on map on back) \_\_\_\_\_

Comment/Concern Rieleta River Backed up into flowing  
wells river Park, why isn't the Brush  
Kept out of the river Basin.

for large parking lot/or road corner's  
can there be a sump be built to pump  
surface water down under ground,  
a business claims to keep clean a secume of  
wash to put out advertisement signs and a

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Blurb in the water bill



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center

Comments/Concerns

Name

[Redacted]

Daytime Phone #

[Redacted]

and/or Email

[Redacted]

Address (if you want a written response)

[Redacted]

Type of Comment or Concern

- Drainage Problem    Drainage Concern    Recommendation    Other

Location in the

- City    County    Don't know

Address of problem (If not known can show on map on back)

Comment/Concern

Property in question at [Redacted]  
W. Sagola. that we order & put everything  
in for flooding.

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632

Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)



COT A

Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: [redacted]

Daytime Phone # [redacted] and/or Email \_\_\_\_\_

Address (if you want a written response) [redacted]

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the    City    County    Don't know

Address of problem (If not known can show on map on back) [redacted]

[redacted] Wetmore & Stone

Comment/Concern Drainage from adjacent areas

pooling/being directed to the SW area of the  
property, also drainage from parking lot  
at 11W Wetmore allowed to drain on the  
property

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

Pima County Regional Flood Control District  
97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632  
Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center

Name: [REDACTED]

Daytime Phone # [REDACTED] and/or Email [REDACTED]

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the    City    County    Don't know

Address of problem (If not known can show on map on back) [REDACTED] N. Emerald Ave  
Tucson Az. 85705

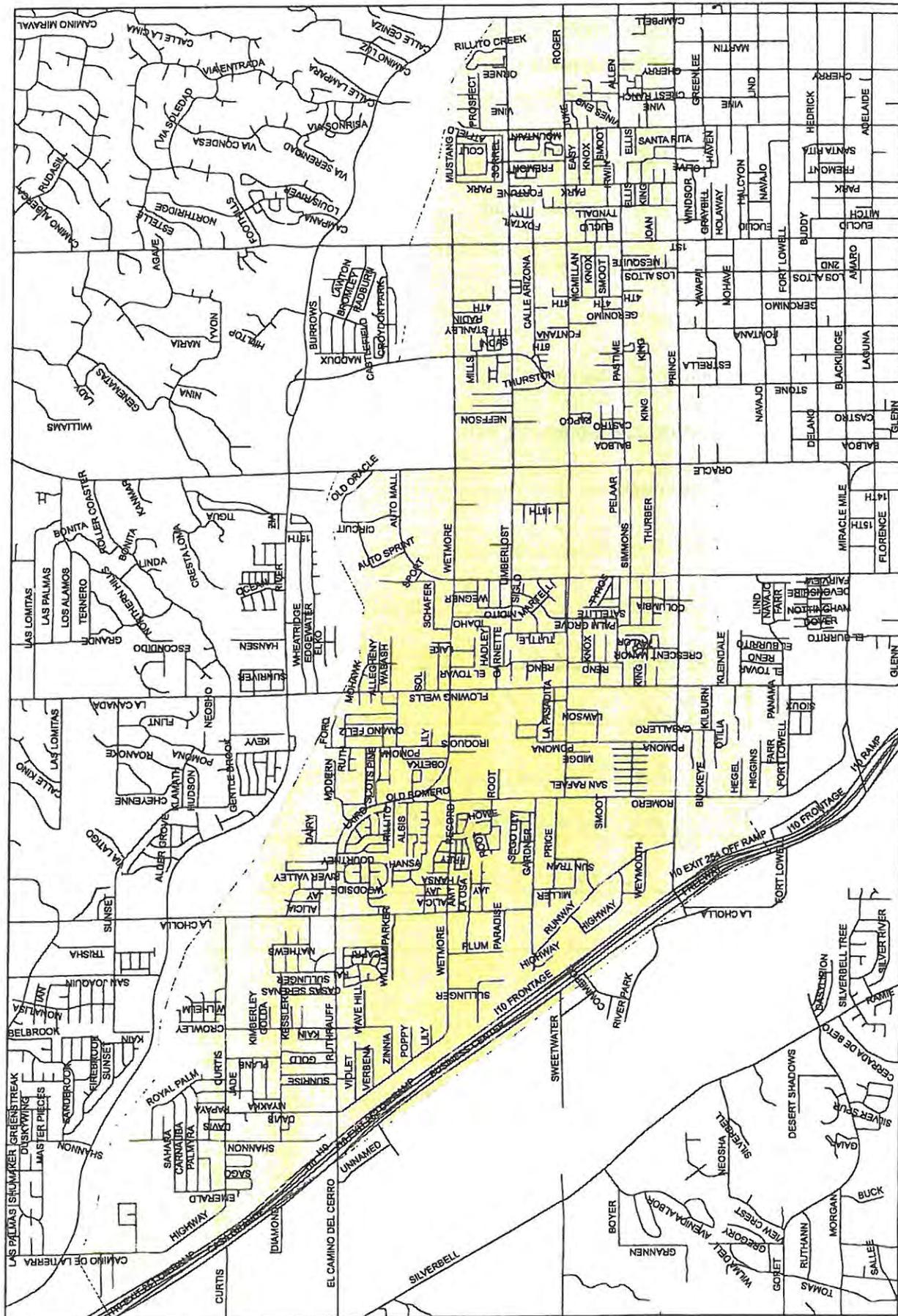
Comment/Concern Reinwater from neighborhood  
all runs west to The Alley dividing  
Emerald Ave with Hervey Trucking  
and The scrap metal yard but  
can not go any further so it  
Backs up into and floods [REDACTED]  
N. Emerald Ave

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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97 E. Congress  
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Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center

Comments/Concerns

Name: [REDACTED]

Daytime Phone # [REDACTED] and/or Email [REDACTED]

Address (if you want a written response) [REDACTED]

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the    City    County    Don't know

Address of problem (If not known can show on map on back) REAR of [REDACTED] W. GARDNER

Comment/Concern WATER WILL NO LONGER DRAIN FROM MY BACK YARD & AREA. AFTER A RAIN, WATER GOING WEST WILL RUN INTO MY BACK AREA. THEREFORE FOR 2 OR 3 DAYS AFTER A NICE RAIN I HAVE A VERY MUDDY AREA BY MY BACK GATE. NOT MUCH RUNS INTO MY PROPERTY BUT MY AREA WILL NOT DRAIN.

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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Tucson AZ 85701-1797  
Attention: Evan Canfield

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Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: \_\_\_\_\_

Daytime Phone # \_\_\_\_\_ and/or Email \_\_\_\_\_

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

Drainage Problem  Drainage Concern  Recommendation  Other

Location in the  City  County  Don't know

Address of problem (If not known can show on map on back) West Pastime Rd  
near Flowing Wells Road - drop inlet structure.  
2. N. Palm Grove Drive.

Comment/Concern \_\_\_\_\_

1. West Simmons Drains through an  
alley to west Pastime. A drop inlet  
structure in the street gets ~~sto~~  
clogged with debris. A larger structure  
may be needed.

2. Amph; School District warehouse Property  
east of Palm Grove needs maintenance of  
drainage channel

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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Tucson AZ 85701-1797  
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FAX # 520-724-4632

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Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: [REDACTED]  
Daytime Phone # [REDACTED] and/or Email [REDACTED]  
Address (if you want a written response) [REDACTED]

Type of Comment or Concern

Drainage Problem  Drainage Concern  Recommendation  Other

Location in the  City  County  Don't know

Address of problem (If not known can show on map on back) [REDACTED] W PASEO REFORMA

Comment/Concern DEAD END FLOODS WHENEVER IT RAINS  
DOES NOT DRAIN

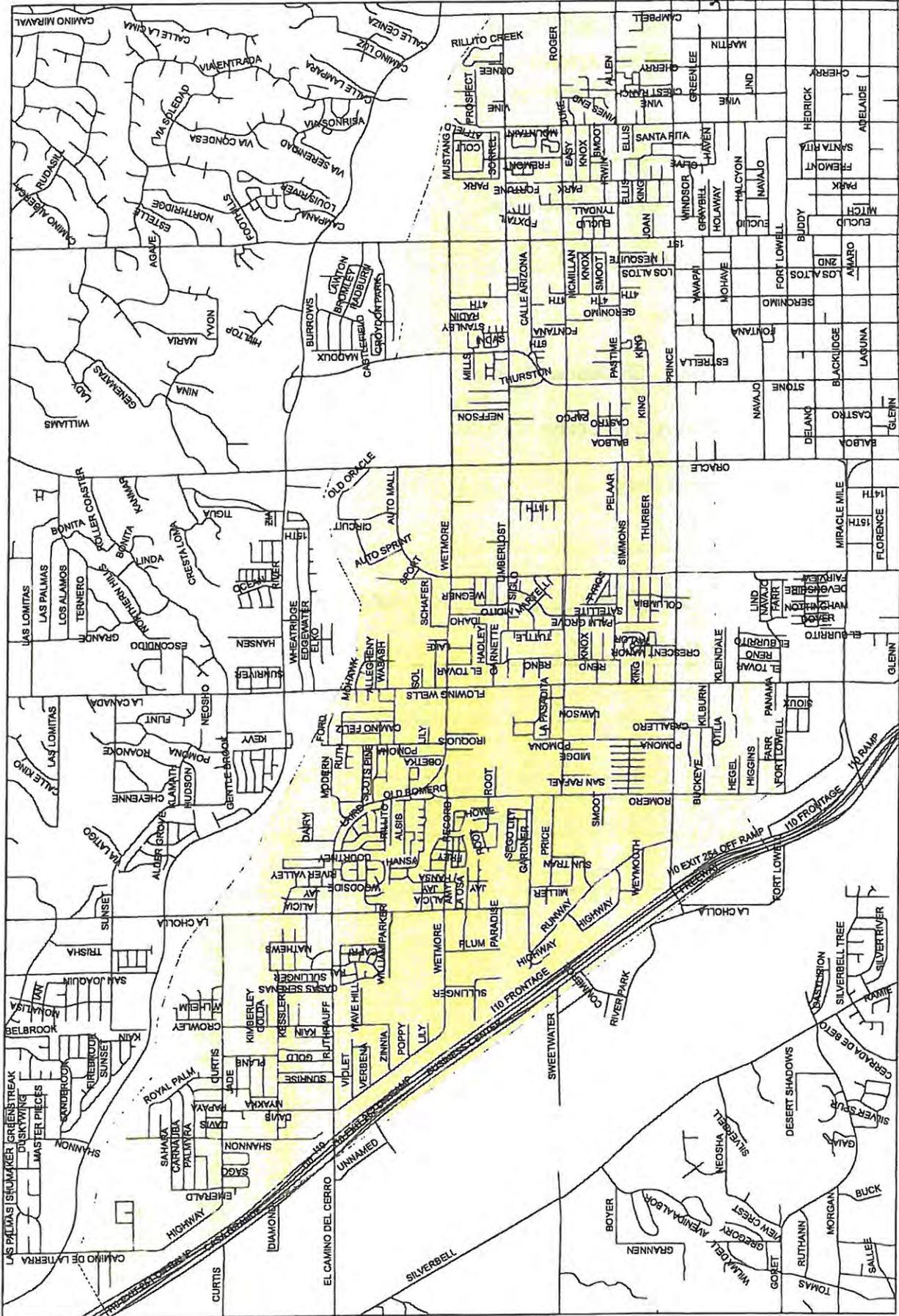
If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632  
Email to: evan.canfield@pima.gov

Legend

Study Area



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: [REDACTED]

Daytime Phone # [REDACTED] or Email [REDACTED]

Address (if you want a written response) [REDACTED]

Type of Comment or Concern

Drainage Problem  Drainage Concern  Recommendation  Other

Location in the  City  County  Don't know

Address of problem (If not known can show on map on back) \_\_\_\_\_

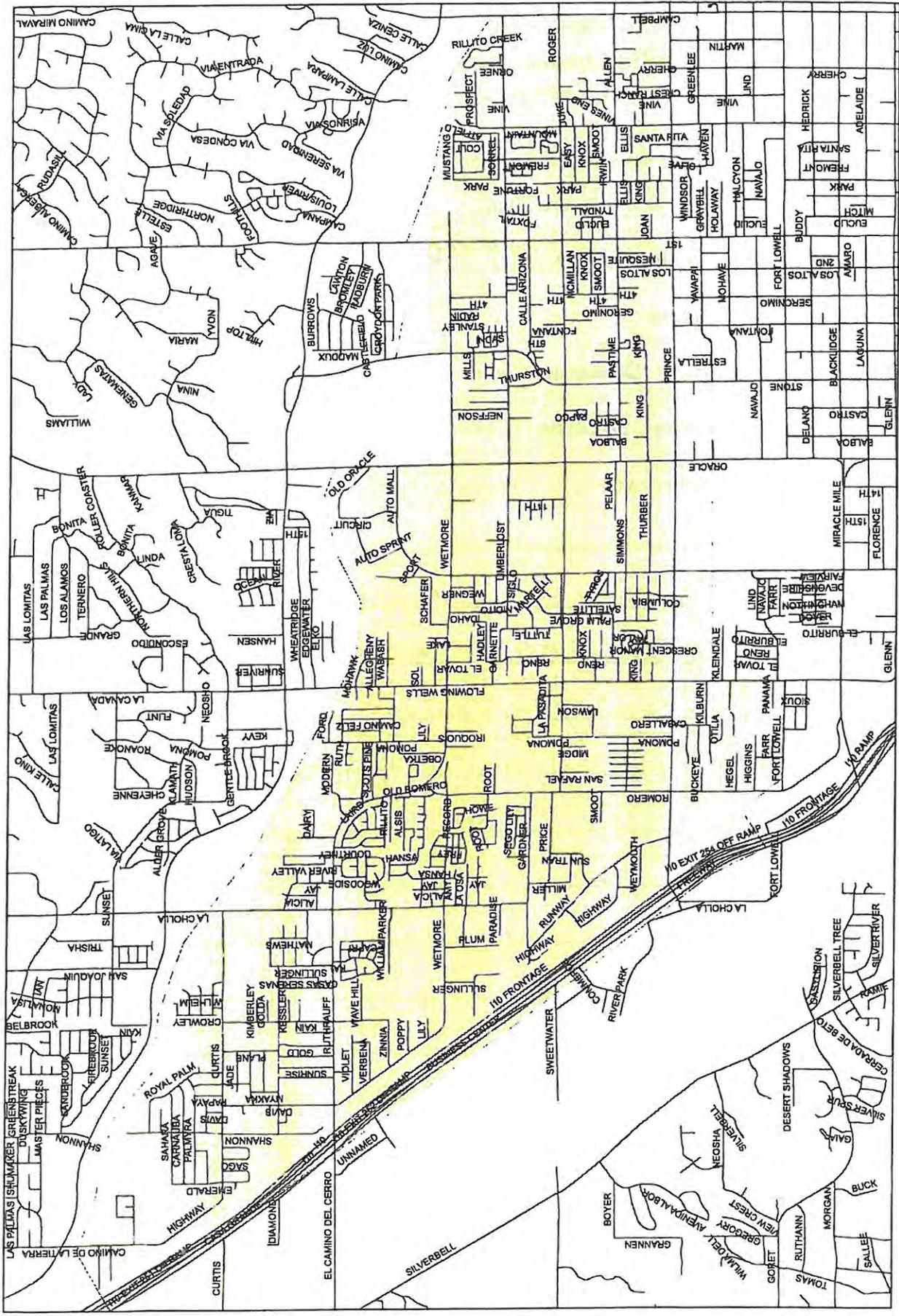
Comment/Concern Prior to 2001, our house  
had to be evacuated because of  
River over flow / flooding. Worried  
about it happening again!

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632

Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: [REDACTED]

Daytime Phone # [REDACTED] and/or Email \_\_\_\_\_

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the       City    County    Don't know

Address of problem (If not known can show on map on back) \_\_\_\_\_

Comment/Concern [REDACTED] *ALGIS Lw.*

*Parcel north of subject parcel was filled in  
causing water to back up + flow crossing subject  
parcel water not making it out. [REDACTED] is lower  
parcel.*

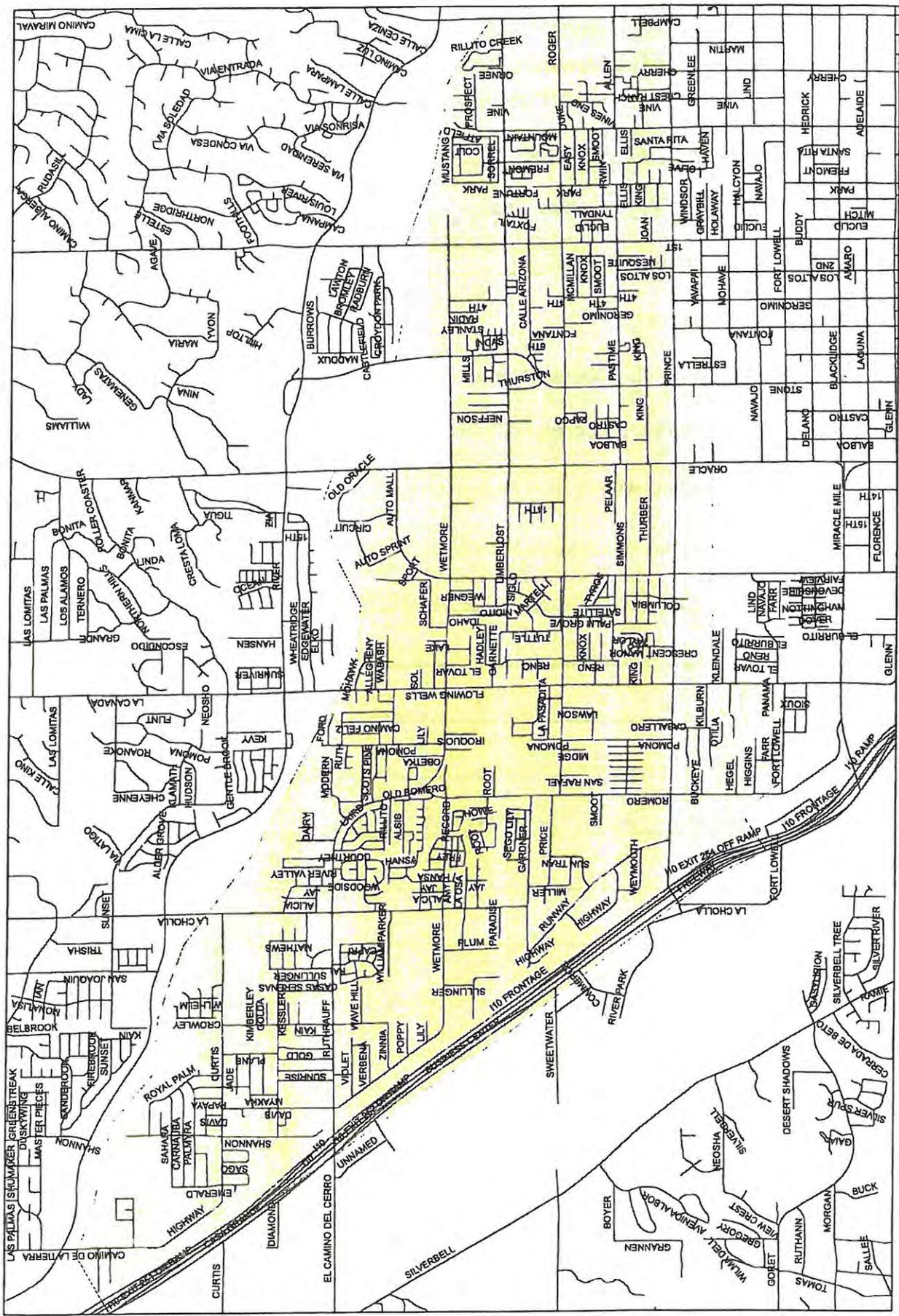
If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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Legend  
Study Area



Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: \_\_\_\_\_

Daytime Phone # \_\_\_\_\_ and/or Email \_\_\_\_\_

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

Drainage Problem    Drainage Concern    Recommendation    Other

Location in the    City    County    Don't know

Address of problem (If not known can show on map on back) MOST FLOODING PROBLEMS

IN CAMPUS FARM NEIGHBORHOOD ARE NORTH OF LIMBERLOST

Comment/Concern THANK YOU FOR KEEPING US INFORMED. COMMENT-

THE CAMPUS FARM IS OUR BEST RESOURCE IN TERMS OF  
FLOOD CONTROL & WATER HARVESTING

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

Pima County Regional Flood Control District  
97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632

Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)



City side  
Ruger  
water ponding  
after today's rain

Ruthrauff Basin Study Open House, December 4, 2014  
Ellie Towne Community Center  
Comments/Concerns

Name: \_\_\_\_\_

Daytime Phone # \_\_\_\_\_ and/or Email \_\_\_\_\_

Address (if you want a written response) \_\_\_\_\_

Type of Comment or Concern

- Drainage Problem
- Drainage Concern
- Recommendation
- Other

Location in the  City  County  Don't know

Address of problem (If not known can show on map on back) \_\_\_\_\_

\_\_\_\_\_

Comment/Concern \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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97 E. Congress  
Tucson AZ 85701-1797  
Attention: Evan Canfield

FAX # 520-724-4632  
Email to: [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)



Pima County Regional Flood Control District  
**Ruthrauff Basin Management Plan**

Open House #2 Summary

November 16, 2016



Prepared by Stantec and Gordley Group

**Ruthrauff Basin Management Plan**  
**Ellie Towne Flowing Wells Community Center**  
**Multipurpose Room**  
**1660 W. Ruthrauff Road**  
**Tucson, AZ 85705**  
**November 16, 2016**

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**TIME:            6:00 pm – 7:30 pm**

**6:00 – 6:30 pm**

1. Sign-In and Open House

**6:30 – 7:05 pm**

2. Presentation
  - a. Meeting Purpose and Agenda Review
  - b. Project Status
  - c. Overview of Recommended Alternatives
  - d. Summary & Next Steps

**7:05 – 7:25 pm**

3. Comments & Questions

**7:25 – 7:45 pm**

4. Open House Time Permitting

**7:30 pm**

5. Meeting Adjourned

## **RUTHRAUFF BASIN MANAGEMENT PLAN**

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### **PUBLIC MEETING SUMMARY**

**LOCATION:** Ellie Towne Flowing Wells Community Center  
Multipurpose Room  
**DATE:** Wednesday, Nov. 16, 2016  
**TIME:** 6 – 7:30 p.m.

### **PROJECT TEAM**

Evan Canfield, Project Manager, Pima County Regional Flood Control District  
Laura Hagen-Fairbanks, Pima County RFCD  
Terry Hendricks, Pima County RFCD  
Francisco Ramirez, Pima County RFCD  
Sandy Steichen, Pima County RFCD  
Elizabeth Leibold, City of Tucson  
Irene Ogata, City of Tucson  
Robin Raine, City of Tucson  
Joe Alwin, Stantec  
Todd Crouthamel, Stantec  
Chuck Williams, Stantec  
John Wise, Stantec  
Ian Sharp, JE Fuller  
Alice Templeton, Gordley Group  
Lori Lantz, Gordley Group  
Hans Rhey, Gordley Group

### **Overview**

Pima County Regional Flood Control District held a public meeting on Wednesday, Nov. 16, 2016 at Ellie Towne Flowing Wells Community Center, 1660 W. Ruthrauff Road, Tucson, Ariz. The purpose of the meeting was to inform the public about the Ruthrauff Basin Management Plan project and answer questions about the study, its findings and recommendations. Approximately 46 members of the public attended. 14 (*add those rec'd by team*) comment forms were received from the public between Nov. 16 and Nov. 30.

### **Meeting Format, Materials and Presentation**

At the public meeting, participants were provided an agenda, project information sheet, frequently asked questions sheet and comment form. Participants were asked to:

- Sign in
- If they have comments, to fill out and leave completed comment forms at the meeting or send them in by Nov. 30, 2016 to be included in the meeting summary
- Proceed to the tables with displays of aerial maps of County or City project areas to indicate their property location, areas of concern, and discuss with team members
- Review the maps marked with potential flood control solutions and ask questions

Staffed information stations with aerial plan-view maps were provided on tables and easels, to allow participants to more easily ask questions specific to the location of their concern. Participants were encouraged to view the displays, ask questions and provide feedback.

## RUTHRAUFF BASIN MANAGEMENT PLAN

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### 1.) **Introductions and Opening Comments**

*Evan Canfield*

Evan Canfield opened the meeting by welcoming everyone. He introduced Kevin Dailey, representing Flowing Wells Neighborhood Association, who expressed appreciation for the flood control project and thanked the team for all their hard work. Evan asked the project team members to stand up and identify themselves. A previous public meeting was held in December 2014, and several attendees raised their hands when asked if they had attended that meeting.

### 2.) **Agenda Review and Meeting Purpose**

*Chuck Williams*

- The project purpose is to develop a comprehensive flood control program, develop cost-effective drainage alternatives and provide a balanced multi-objective approach, as well as provide a basis for budgets for implementation cost estimates and phases. These efforts should produce a report that Pima County and City of Tucson can approve and adopt.
- The purpose of this meeting is to provide an update on the status of the project, review the recommended alternatives that have been identified through the study process, receive input and identify any other related issues, and discuss next steps.

### 3.) **PowerPoint Presentation: Project Overview**

*Chuck Williams, Evan Canfield*

The project overview included the historical changes in land use leading to changes in water flow and flooding, current areas designated as floodplains, problem areas and drainage complaints. Existing conditions analysis, floodplain mapping, and submittal of FEMA map revisions have been completed. FEMA is reviewing the revisions now. The task for the public meeting is to review alternatives analysis and remediation recommendations. The team reviewed suggested site-specific alternatives, area-wide alternatives and what will be included in the final report.

### 4.) **Stakeholder Involvement/Input (Discussion)**

*Chuck Williams, Facilitating*

The meeting was opened up for questions and comments from the audience.

- Comment: If the project timeline is up to 33 months, can you give us some idea of when this project will be completed?
  - Response: This project is about the completed plan, not construction. The plan will be considered completed after being presented to Pima County (Board of Supervisors) and City of Tucson (Mayor and Council) and the plan is adopted by them. We have been working on the plan for 27 months so far.
- Comment: In our neighborhood, we found that by removing chain link fences and other similar actions we were able to keep debris from piling up against the fences and diverting the flows. Have you looked at any of those types of simple solutions?
  - Response: When we looked at maintenance components area-wide, these were the types of specific solutions we found in several neighborhoods.
- Comment: Pima County Board of Supervisors has their jurisdiction and City of Tucson has their jurisdiction. They may not always agree on how to cooperate on this project.
  - Response: From the beginning of this project, County and City staff have worked together with monthly meetings and we have made progress through those. Staff typically keep their bosses informed. The City and the County have signed off on other plans of this type in the past. Tonight's meeting is an example of the City and

## RUTHRAUFF BASIN MANAGEMENT PLAN

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- County working together. Flowing Wells Neighborhood is in both the City and the County and has monthly meetings to bring in speakers from both jurisdictions.
- Comment: I live on Iroquois behind the Shamrock Dairy. In 1968 the banks overflowed and we had about five feet of floodwater. What type of work are you actually doing to prevent overflow when we have the next 100-year flood?
    - Response: We have a comprehensive plan here and we will talk to you about your location individually.
  - Comment (from Chuck Williams): Does anyone in the room experience water in their home or business?
    - Response from the public/attendees: People raised their hands and mentioned water in their business (one gets two feet of water in his shop) and others in their homes. ADEQ has cited one person because of standing water and mosquitos.
  - Comment: Flood control doesn't see the problem because they come out when it's not raining. When it rains hard, it floods. Why hasn't anything been done about this in 20 years? They told me to raise my house; every year I get flooded out.
    - Response: We need to look at your property specifically. These areas were built before there was any consideration for drainage in unincorporated Pima County. We will talk to you individually; please speak to the staff at the unincorporated Pima County table.
    - Response: If you are in the City of Tucson and experience water in your house or business, talk to Elizabeth Leibold who is here tonight, so the City can log that problem. It will help them better decide what they are able to do, the same way this study helps us define better what we might be able to do.
  - Comment: Is there any coordination with the railroad?
    - Response: Yes. The County and the railroad meet in Phoenix on a semi-regular basis. We are proposing new culverts through the railroad bank, and we are already beginning the engineering for that process. Then we will talk to the railroad, who owns the property rights. They are highly cooperative. An example of this is the Flowing Wells Wash culvert that we showed earlier in the presentation.
  - Comment: If there is coordination, is there financial assistance from the railroad?
    - Response: Not that we are aware of.
  - Comment: Ruthrauff and Interstate 10 traffic interchange is coming in the next couple of years. Is the Flood Control District considering these impacts and working with ADOT?
    - Response: Yes. We have been talking to ADOT specifically on modeling predicting how much flooding will go where. ADOT has looked at our updated flood prediction model, and what they will need to do with the drainage to address the need to move water from this side of the embankment. ADOT is using our updated information.
  - Comment: How many members of the Flood Plain Advisory Board live in this Ward 3?
    - Response: There is a Flood Control District Board. Every representing community has seats on that Board. The City has three seats. I don't know where each of them live. Two are engineers and another is from the City Manager's office. All the other

## RUTHRAUFF BASIN MANAGEMENT PLAN

representatives are from Oro Valley, Sahuarita or Pima County, and I'm not sure where they all live. Ward 3 is very active and the City meets with them periodically.

- Comment: Is there a plan to clean out the Rillito?
  - Response: There is a separate plan to clean out the Rillito. The Rillito is not part of this study, but we are also studying the Rillito. Multiple studies and \$1 million worth of maintenance near Swan and Alvernon have been completed, and now we have assessed it in a very detailed study. We have even addressed where the soil cement is being undermined.
- Comment: Development near our property in unincorporated area caused water to shoot onto our property. What can be done to coordinate with the City and County?
  - Response: Let us talk with the City and County staff to answer your question. If the City and County adopt this plan, in the future the City and the County will work together as much as possible.
- Comment: We see reports of horrific flooding in other parts of the country. Will adoption of this plan help alleviate some of these types of floods?
  - Response: One of the good things about having the plan on the shelf, is when there is a disaster declaration, we can let them know we have plans, and maybe we can get more some funding to address the problems.
- Comment: Does the Flood Control District have the money to build these items?
  - Response: No. The implementation plan identifies ranking of projects as well as funding sources. FEMA and Department of Emergency Management sometimes have money available. There are opportunities for public-private partnerships. We are just getting to the place where projects are identified, so the cost estimate is part of the next steps.
- Comment: In 2012, the County built a drainage channel, but when it rains, nothing goes down the drainage ditch. Why did they put that big ditch in there all the way to the river bed, but it's always dry? But there is a drainage ditch down further on Camino Feliz, and water goes down there.
  - Response: We don't have a maintenance person here so we can't answer that question.
- Comment: Where would we go in case we have a 100-year flood? If you weren't feeling safe at home, where would you go for refuge?
  - Response: I don't know if anyone from Flood Control has a direct answer for that. We didn't address this as part of this project. The Office of Emergency Management deals with those issues. Both County and City have an emergency operation plan, and the City updated theirs in 2014. We can find out and follow up with you.
- Comment: We have elected officials to help with this. Nobody would come out to look at our problem and solution until we contacted our elected official on the City Council, and they came out to look at it. That's what our elected officials are for.
  - Response: Talk to Ward 3. Government has been supportive of this project and we are appreciative of them. We would like to thank the City, County, and Flowing Wells Neighborhood Association, who have been involved and helpful in this project.

## **RUTHRAUFF BASIN MANAGEMENT PLAN**

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### **5.) Summary/Next Steps**

*Evan Canfield*

- Give us your comments tonight. If you have more questions or input, fill out the comment form and mail, fax or email to Evan Canfield by November 30 to be included in this meeting's summary.
- The team will consider your comments and finalize the recommended alternatives plan.
- The community will be kept informed and involved.
- Watch for updates on the website and project report document. Go to Pima.gov and search for Ruthrauff Basin Management Study. The web address is also listed on your comment form.
- An implementation plan will be prepared for adoption by jurisdictions. We will work on a joint maintenance plan with City and County to maintain this area. We would like to present these to the Board of Supervisors and Mayor and Council in the spring for adoption.

### **6.) Adjourn**

*Evan Canfield*

- The meeting was adjourned at 7:30 p.m.

# OPEN HOUSE

## Ruthrauff Basin Management Plan

Please join the Pima County Regional Flood Control District and the City of Tucson for an Open House to present possible drainage solutions in the Ruthrauff Basin. In December 2014, the Pima County Regional Flood Control District (District) held an open house for businesses and residents of the area outlined on the map below. Community members shared their thoughts and concerns about flooding issues in this area. The District used that feedback and extensive technical investigation to help draft proposals for future flood control projects and activities and will share the proposed plans at an upcoming Open House.

The public can view displays and speak with project representatives beginning at 6 p.m. A presentation with the opportunity to ask questions will begin at 6:30 p.m. Following the presentation, staff will again be available to speak with individual residents and business owners on a one-on-one basis.

The Open House site is wheelchair accessible. Individuals with disabilities who require accommodations for effective participation and communication should call 520-724-4600.

Si necesita asistencia en español, llame al 520-724-4600.

**Date:**

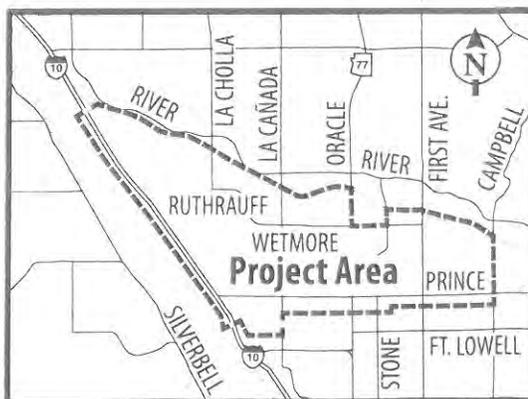
Wednesday,  
November 16, 2016

**Time:**

6 – 7:30 p.m.

**Location:**

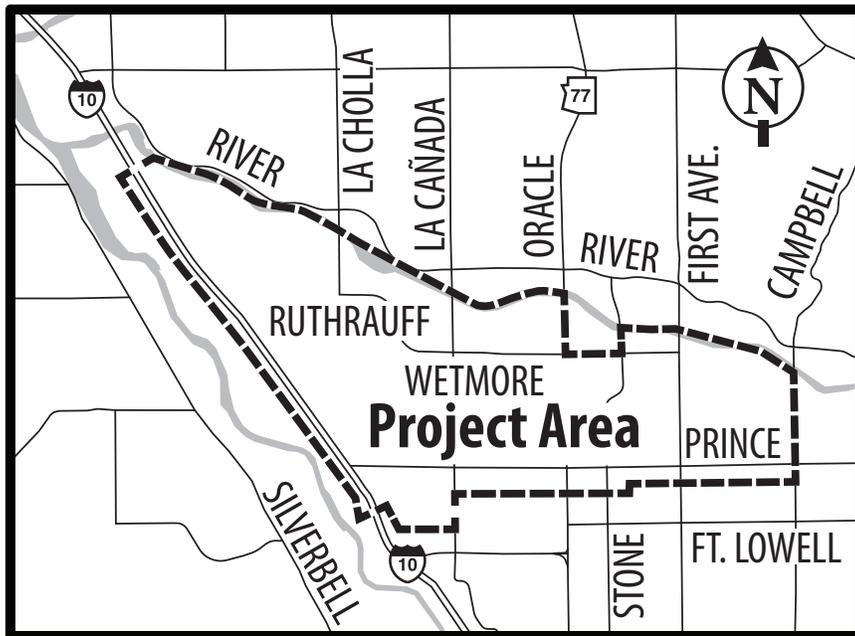
Ellie Towne Flowing Wells  
Community Center  
1660 W. Ruthrauff Road



# OPEN HOUSE

## Ruthrauff Basin Management Plan

Please join the Pima County Regional Flood Control District and the City of Tucson for an Open House to present possible drainage solutions in the Ruthrauff Basin. In December 2014, the Pima County Regional Flood Control District (District) held an open house for businesses and residents of the area outlined on the map below. Community members shared their thoughts and concerns about flooding issues in this area. The District used that feedback and extensive technical investigation to help draft proposals for future flood control projects and activities and will share the proposed plans at an upcoming Open House.



**Date:**

Wednesday, November 16, 2016

**Time:**

6 – 7:30 p.m.

**Location:**

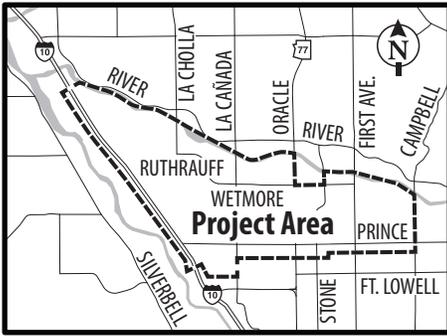
Ellie Towne Flowing Wells  
Community Center  
1660 W. Ruthrauff Road

The public can view displays and speak with project representatives beginning at 6:00 p.m. A presentation with the opportunity to ask questions will begin at 6:30 p.m. Following the presentation, staff will again be available to speak with individual residents and business owners on a one-on-one basis.

The Open House site is wheelchair accessible. Individuals with disabilities who require accommodations for effective participation and communication should call 520-724-4600 by November 7, 2016.

Si necesita asistencia en español, llame al 520-724-4600.





# **OPEN HOUSE**

## **Ruthrauff Basin Management Plan**

**6 – 7:30 p.m. Wednesday, November 16, 2016**  
**Ellie Towne Flowing Wells Community Center**  
**1660 W. Ruthrauff Road**

Please join the Pima County Regional Flood Control District and the City of Tucson for a second Open House regarding the Ruthrauff Basin Management Plan. Feedback from a December 2014 Open House, and extensive technical investigation have helped draft proposals for future flood control projects and activities that will be described on November 16.

This session will allow residents to view displays and speak with representatives from the project team beginning at 6:00 p.m. A presentation with the opportunity to ask questions will begin at 6:30 p.m. Afterward, staff will again be available to speak with individual residents and business owners one-on-one.

For more information about the project, visit:

**<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=158694>**

(or search 'Ruthrauff Basin Management Study' on the web)

The Open House site is wheelchair accessible. Individuals with disabilities who require accommodations for effective participation and communication should call **520-724-4600** by November 7, 2016.

**Si necesita asistencia en español, llame al 520-724-4600.**



# Ruthrauff Basin Management Plan

## Project Update – November 2016

### Improvements And Revised Floodplain Maps

The Arizona Department of Transportation has installed new culverts under the Union Pacific Railroad at the Flowing Wells Wash. This improvement will reduce the potential for flooding upstream of the railroad embankment.

The Ruthrauff Basin management plan team has prepared new FEMA floodplain maps that show a substantial reduction in the 1% chance annual flood (often called the 100-yr flood) based on both the drainage improvements at Flowing Wells Wash and improved capability to assess the flood risk in shallow sheet flood areas, such as those that occur in Ruthrauff Basin.

### Project Contacts

Please contact us if you would like more information or have photos or information on flooding or erosion issues within these watersheds that you would like to share with the District.

**Evan Canfield, PhD, PE,** Project Manager for the District [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

**John Wise, PE,** Project Manager for Stantec [john.wise@stantec.com](mailto:john.wise@stantec.com)

### Past Events

1. The Pima County Regional Flood Control District held a Local Government Sector Stakeholder Meeting on July 24, 2014, to review the project and share information on the drainage situation in the watershed.
2. The Pima County Regional Flood Control District sponsored an Open House on December 4, 2014 to describe the project and solicit information from the community on drainage problems in the Ruthrauff Basin.

### Project Website

<https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=158694>



### Project Location

The Ruthrauff Basin is located in both the City of Tucson and unincorporated Pima County adjacent to Interstate 10 and the Union Pacific Railroad. The Ruthrauff Basin drains into the Santa Cruz River from the east just upstream of the confluence with the Rillito River.

### Project Description

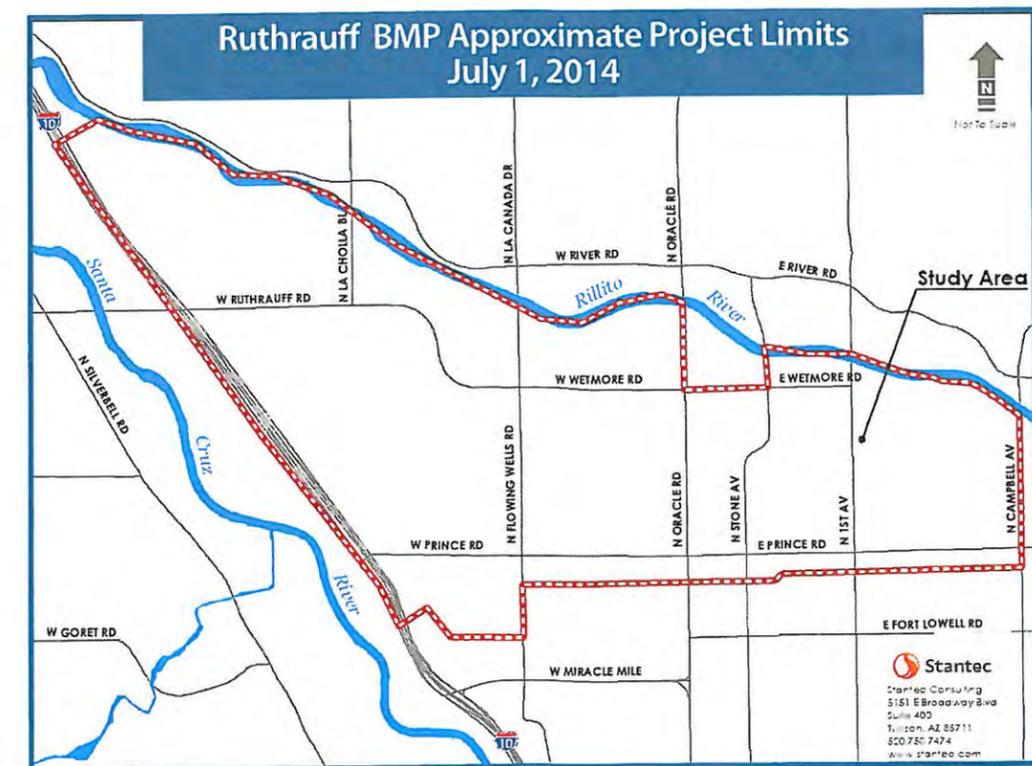
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent and substantial sheet flow and ponding of stormwater as a result of the minimal topographic relief and

inadequate drainage structures. Historically, flood flows have ponded on the east side of the Union Pacific Railroad embankment.

This project will develop a Ruthrauff Basin Management Plan that will identify flood hazard areas and drainage problems, and cost-effective solutions to alleviate or manage flooding in the project area.

### What's Next:

Following the November 16, 2016 Open House, the team will finalize the preferred alternatives and develop an implementation plan for adoption of governing bodies.



## Project Elements and Timeline

**Existing Conditions Analysis:** Review previous studies, perform hydrologic and hydraulic analysis that incorporates drainage improvements, and identify areas of drainage and erosion hazards.

**FEMA Floodplains will be Mapped:** The new culvert crossing at Flowing Wells Wash is anticipated to reduce flooding on the Flowing Wells Wash and the FEMA Floodplain, which currently shows water ponding behind the railroad track embankment. Therefore, a new floodplain map for this area will be prepared for approval by FEMA.

**Public Involvement:** Stakeholder meetings will be held throughout the duration of the project. In addition, there will be two public meetings

The project timeline shows the phasing of these elements and the current status.

**Two Types of Local Floodplains will be Mapped:** Because much of this area experiences sheet flooding, it is an ideal area for mapping using a grid-based approach which is a relatively new technology. The grid-based maps show more accurately how water flows than the approach used in the current floodplain maps.

- **Regulatory Floodplains:** Regulatory Floodplains are delineated based on the 1% annual chance flood (100-year) and are used for administering the floodplain ordinance, which is the basis for permitting uses in regulatory mapped floodplains.
- **Floodplains of Problem Storms:** More frequent floods, such as the 10- or 25-year flood, can create problems such as flooding of yards and roadways. Therefore, this study will map these more frequent flows so that solutions can be developed for them.

## Evaluating Drainage Alternatives

On June 9, 2015 a group of 25 stakeholders developed a set of rating criteria to evaluate possible drainage alternatives and determined that multi-benefit evaluation criteria would be weighted as follows:

- Public Safety – 30%
- Implementation – 23%
- Environmental Sustainability – 20%
- Economic Vitality – 17%
- Community – 10%

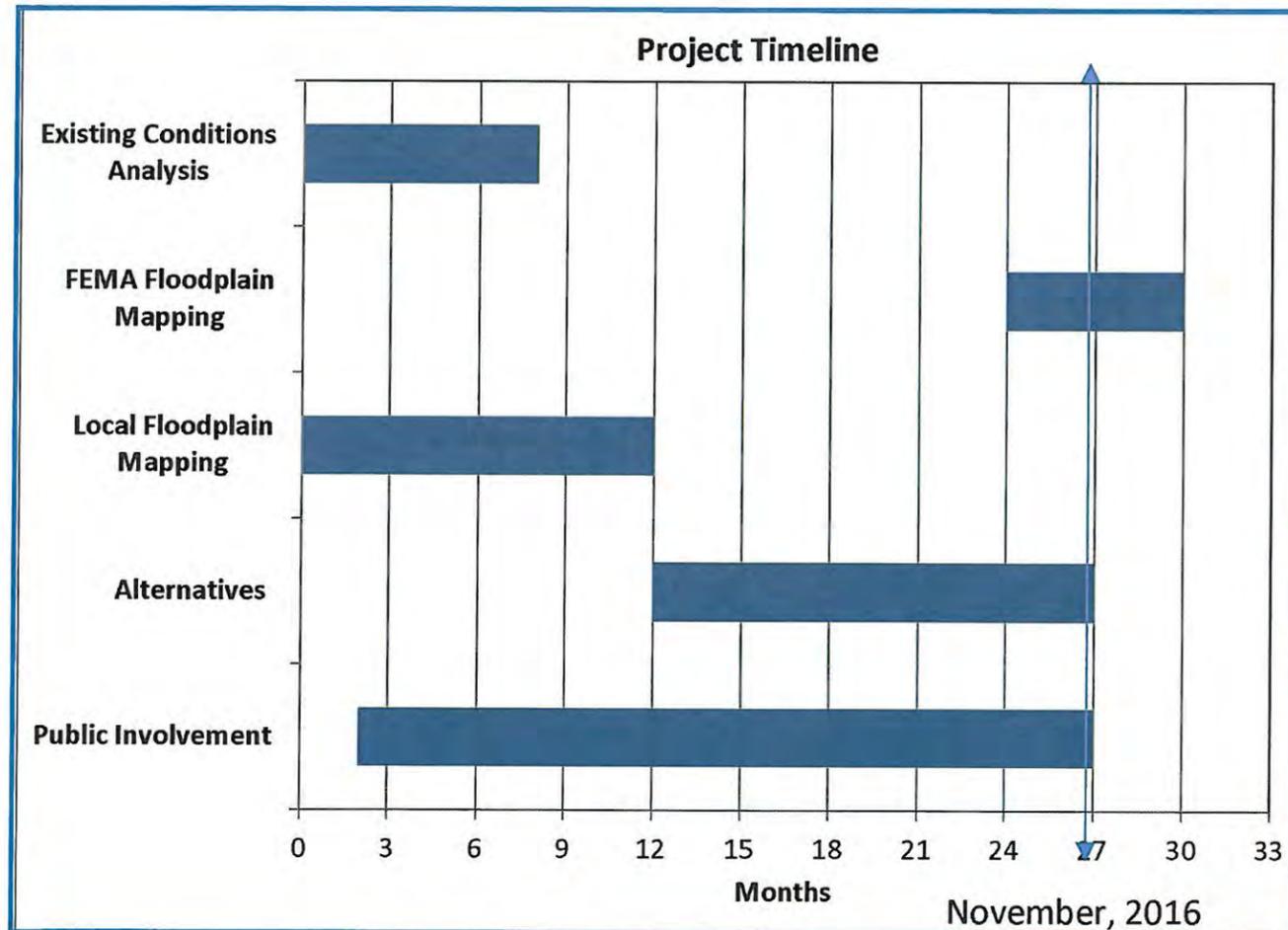
An Alternatives Working Group of 15 stakeholders met in February, 2016 and evaluated nine problem drainage areas on the basin and identified 46 different possible drainage solutions and seven area-wide alternatives for further evaluation by the Ruthrauff Basin Management Plan team.

The Alternatives Working Group met again on July 28, 2016 and suggested that 18 of these

localized drainage alternatives needed to be further evaluated by evaluating these possible alternatives using hydraulic models, estimating preliminary costs, and scored using the evaluation criteria. In general, these alternatives were:

- 1.) Providing improved drainage through the railroad embankment.
- 2.) Slowing water and reducing flood peaks at multi-use basins.
- 3.) Conveying water in drainage channels.
- 4.) Conveying water in stormdrains.
- 5.) Improving roadways to better convey water.
- 6.) Applying practices across the basin that reduce potential for flooding.

These Draft Alternatives will be presented for discussion at an Open House on November 16, 2016.



#### I – Flooding Issues

- Q. My house is not near a wash or other drainageway that floods, how will this project help me?**
- A. *Sheet flow is the most common problem we have observed in the Ruthrauff Basin. Sheet flow is shallow, relatively slow moving floodwater. In many cases, this results in flooding in streets and backyards, which are not washes or drainageways. Sheet flow problems can prevent people from reaching their house or other destination.*
- Q. Who do I call if I see a clogged culvert or other drainage problem?**
- A. *In unincorporated Pima County call the Pima County Regional Flood Control District at 724-4600. In the City of Tucson call the City Department of Transportation at 791-3154.*
- Q. Are there regular maintenance schedules for inspections on grates and drainage structures, or is maintenance scheduled only after complaints or flood events?**
- A. *There are both regular maintenance schedules and maintenance that occurs after complaints. Pima County and the City of Tucson have limited staff, so people need to call us if they observe problems. We know about many problem areas and we check on them before anticipated events and also follow up on complaints.*
- Q. Where is the existing 100-year floodplain?**
- A. *There are both “FEMA” and “local” Regulatory Floodplains, which show the limits of the 1 percent annual chance flood (often called the 100-year flood). The FEMA-adopted floodplain is used for showing flood insurance requirements. The City and County have floodplain maps that extend further than the FEMA maps to regulate in the interest of public safety. New developments in existing floodplains in the City and County must show they can deal with existing drainage water and won’t increase flood hazards on adjacent properties.*

#### II - The Ruthrauff Basin Management Plan

- Q. What is the purpose of the Ruthrauff Basin Management Plan?**
- A. *The purpose of the Ruthrauff Basin Management Plan is to identify flood areas and drainage problems, and develop a long-term plan for cost-effective solutions to reduce or manage flooding in the project area.*
- Q. When did the project start, and when will it end?**
- A. *The project started in April 2014 and will be completed in 2017.*
- Q. What has been completed?**
- A. *The following has been completed:*
- *Completion of an Existing Conditions Analysis summarizing the drainage problems observed on the basin.*
  - *Remapping of 100-yr local floodplains.*
  - *Submitting a 100-yr FEMA floodplain map to FEMA that would reflect improved drainage conditions at the Union Pacific Railroad embankment in the vicinity of Prince Rd. The*

*improvements and new mapping will save property owners money and reduce flood risk in this area.*

- *Developing draft recommended alternatives to solve flooding and drainage problems.*

**Q. Will this project address flooding from the Rillito and Santa Cruz rivers?**

A. *No, this project will evaluate the drainage flowing into the Rillito and Santa Cruz rivers.*

**Q. What will the completed Plan do to address flooding we see in the Ruthrauff Basin?**

A. *The Plan presents a list of structural and non-structural solutions to problems identified in collaboration with the community. At this point, there is no specific funding source for paying for these solutions. However, the Plan will include an implementation component that describes possible funding sources and phasing that might be necessary for the solutions to occur.*

### **III – Alternatives Analysis and Recommended Solutions**

**Q. What stakeholders have been involved in preparing draft alternatives?**

A. *We included representatives from:*

- *Neighborhood Associations*
- *Pima County Government*
- *Pima County Supervisors*
- *City of Tucson Government*
- *City of Tucson Ward 3 Office*
- *Flowing Wells Irrigation District*
- *School Districts*
- *Arizona Department of Transportation (ADOT)*
- *Non-profit organizations*

**Q. What kinds of drainage solutions were considered?**

A. *The following kinds of solutions were considered:*

- *Providing improved drainage through the railroad embankment.*
- *Slowing water and reducing flood peaks at multi-use basins.*
- *Conveying water in drainage channels.*
- *Conveying water in stormdrains.*
- *Improving roadways to better convey water.*
- *Applying practices across the basin that reduce potential for flooding (e.g. basin-specific maintenance plan, stormwater harvesting basins, infill incentives, education, etc.).*

**Q. How were solutions evaluated?**

A. *A sub-group of 15 stakeholders evaluated each alternative in relation to how they addressed the following concerns:*

- *Public Safety*
- *Implementation*
- *Environmental Sustainability*
- *Economic Vitality*
- *Community*



**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



Irrigation Ditches along Roger have been filled in.  
Surplus buses are there: Now paved over and  
water runs off

Area south of Roger w/ fairview to the east  
floods. (More than 100 year flood plain!) (also forms  
and sand builds up

*Optional*

Name: Address: City: State: ZIP Code:

[Redacted Name and Address]

[Redacted Name and Address]

Date:

11/16/16

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Project Website:  
<https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=158694>



**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



Backyards of homes on South side of Mills Drive  
cultisac, during real heavy rain can flood.  
(My Main Concern) A large vacant parcel in  
back of my back yard & my alley [REDACTED]  
is for sale (vacant parcel address - [REDACTED])  
Parcel will be sold & 14 town homes built there!  
We want town home developer to provide more  
than adëquit measures, so that during heavy  
rains, our possible flooding does not become  
worse!

*Optional*

Name:	Address:	City:	State:	ZIP Code:
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	Email:	Date:		
[REDACTED]	[REDACTED]	11-16-16		

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



People are dumping on Pima County lot at Tres Nogales  
and Camino de la Tierra.

We are interested in upcoming connections  
from I-10 to this area as we have a  
property nearby.

*Optional*

[Redacted]

[Redacted]

Date:

11/16/16

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



Drainage ditch behind my house is  
full of debris - water doesn't drain

Optional

(See Terry to check  
drainage ditch behind his house

Date:

11/16/16

to see who owns it

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



front of property is high enough  
but water flows on side of bldg ok,  
on other side though it floods, 3 or 4  
times a year.

Elevations changed when Wetmore was  
worked on although water doesn't  
come off road.

Date:

11/16/16

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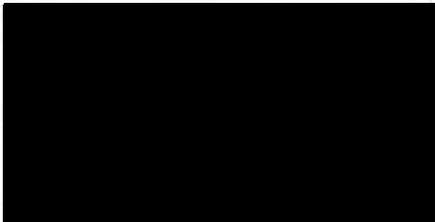

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The alley ~~behind~~ running N & S  
 east of alleyway is full of trash  
 see Terry Hendricks

River park needs to  
 be cleaned - fence  
 has been ~~cut~~  
 cut



Also contact →



Address: City: State: ZIP Code:

11-16-2016

Phone:

Email:

Date:

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



MY MAJOR CONCERN IS THE RIVER BED ALONG  
RIVER ROAD -- ALL THE WAY TO THE SANTA CRUZ, THE  
VEGETATION HAS NOT BEEN CLEARED IN THE LAST 10 YR.  
I UNDERSTAND THAT WORK IS BEING DONE ON THE  
EAST END OF THE RILLITO,,, THE WORK IN MY  
OPINION NEEDS TO BE STARTED AT THE RILLITO --  
SANTA CRUZ CONNECTION AND WORK EASTWARD  
IF THE EAST ZONE IS CLEARED FIRST, IT WILL  
A BIGGER BACK UP DOWNSTREAM.

State: ZIP Code:

11-16-16

Phone:

Email:

Date:

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**Ruthrauff Basin Management Plan**  
 Open House  
 Ellie Towne Flowing Wells Community Center  
 Wednesday, Nov. 16, 2016  
**COMMENT FORM**



We are [redacted] company  
 We have complained every year since about 1985  
 about the flow of water due to the <sup>other</sup> new businesses  
 starting with [redacted] truck line there has been  
 no drainage and there have been more & more businesses  
 moving in & raising their lots & all the water comes  
 down to us. Our [redacted] yard floods every summer and  
 our materials are floating. We have a terrible time with  
 mosquitos and have gotten written up by the city  
 of Tucson Environmental & wrote us up for ponding  
 water. They keep paving the streets with asphalt and  
 that just makes it worse. We need sandbags to keep water  
 [redacted] People don't want to come  
 to our business.

[redacted]  
 [redacted]  
 [redacted] Date: 11-16-16

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



*Good presentation, my 1<sup>st</sup> meeting and I'm glad to see plans in place and progress being made. Hard to find things that were done 7 years ago.*

[Redacted Address] Address: [Redacted City] City: [Redacted State] State: ZIP Code: [Redacted ZIP Code]

Phone: [Redacted Phone] Email: [Redacted Email] Date: *11-16-16*

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



*Found this very helpful.  
Able to talk to Paul Baughman  
from the city to get some  
feed back about new development  
impacting our community  
Wagons West.*

*Retired*

[Redacted Name, Address, City, State, ZIP Code]

[Redacted Contact Information]

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



APPROXIMATELY 1-2 YEARS AGO, WE  
RECEIVED A POST CARD FROM THE COUNTY  
REGARDING, IF PURCHASE NEW MOBILE  
HOME WOULD REQUIRE FLOOD INSURANCE.  
DUE TO IMPROVEMENTS MADE AFTER '83  
FLOODS, WE HAVE NOT HAD ANY FLOODING.

[Redacted Address]

State: ZIP Code:

11/16/16

Phone:

Email:

Date:

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There is a berm located at the end of La Osa street that stops the water flow



**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



my house has been flooded out for 19 years I get all the water off of la cholla wetmore and Plum and La Osa The county keeps telling me there is no problem. They actually told me to raise my house. That is next to impossible. La Osa street was repaved a few years ago and all they did was laid asphalt on top of the old stuff now the road is 2in higher. I tried to ~~get~~ get them to come out after a hard rain <sup>Optional</sup> NO LUCK. I am tired of getting water in my house.

Name: \_\_\_\_\_ Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_



Phone: \_\_\_\_\_ Email: \_\_\_\_\_ Date: \_\_\_\_\_



11-16-16

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



The problem is that AN ~~USED~~ UNUSED irrigation pipe was left UNDER FAIRVIEW AVE on the North end @ my address which causes flooding across my property. I have spoken to Jim ~~Femling~~ with C.O.T Street Maintenance Femling

[Redacted]

ZIP Code:

11/16/16

Phone:

Email:

Date:

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**Ruthrauff Basin Management Plan**  
Open House  
Ellie Towne Flowing Wells Community Center  
Wednesday, Nov. 16, 2016  
**COMMENT FORM**



flurry up and construct channel along  
wetmore. Water builds up along <sup>my</sup> property (B3)  
[redacted] and it floods it out. Clean  
out mud. Water builds up in swale out  
front. Retention basin can't handle volume.

*Optional*

Phone: [redacted]

Email: [redacted]

Date: 11/16/16

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**RUTHRAUFF  
BASIN MANAGEMENT PLAN**

**VOLUME I OF II**

**DRAINAGE IMPROVEMENT PLAN**

**F.2 July 24, 2014 Stakeholder Meeting**

Contains the agenda and summary for this meeting.



## RUTHRAUFF BASIN MANAGEMENT PLAN

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### GOVERNMENT SECTOR STAKEHOLDER MEETING AGENDA

**LOCATION:** Joel D. Valdez Main Library  
Large Meeting Room in the Basement  
**DATE:** Thursday, July 24th, 2014  
**TIME:** 1:30 – 3:00 pm

1. 1:30 - Introductions and Opening Comments Evan Canfield  
District PM
  
2. 1:40 - Meeting Purpose Chuck Williams  
Facilitator
  - Inform Stakeholders
  - Project Objectives and Overview
  - Receive input from Stakeholders
  - Discuss information/data exchange opportunities
  - Other
  
3. 1:50 - Project Overview John Wise  
Stantec PM  
Evan Canfield
  - Scope Review and Status
  - Schedule
  - Deliverables
  
4. 2:10 - Stakeholder Involvement/Input Chuck Williams
  - Stakeholder Individual Comments
  - Stakeholder Group Issues Discussion
  - Data Needs/Request
  
5. 2:50 - Summary/Next Steps Chuck Williams  
Evan Canfield
  
6. 3:00 – Adjourn Evan Canfield

## **RUTHRAUFF BASIN MANAGEMENT PLAN**

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### **PUBLIC SECTOR STAKEHOLDER MEETING SUMMARY – STAKEHOLDER MEETING 1**

Prepared by Lori Lantz, Chuck Williams and Evan Canfield (08-01-14)

**LOCATION:** Joel D. Valdez Main Library  
Large Meeting Room in the Basement  
**DATE:** Thursday, July 24, 2014  
**TIME:** 1:30 – 3:00 p.m.

#### **PROJECT TEAM**

Evan Canfield, Project Manager, Pima County Regional Flood Control District  
Terry Hendricks, Pima County RFCD  
Akitsu Kimoto, Pima County RFCD  
John Wise, Project Manager Stantec  
Chuck Williams, Stantec  
Sandy Steichen, Stantec  
Lori Lantz, Gordley Group  
Jason Green, City of Tucson Planning & Development Services (PDSD)

#### **ATTENDEES**

John Bernal, Pima County Public Works  
Chris Cawein, Pima County Natural Resources Parks and Recreation (NRPR)  
Dave Crockett, Flowing Wells Irrigation District  
Pat Eisenberg, City of Tucson Water  
Leslie Ethen, City of Tucson Office of Integrated Planning (OIP)  
Susan Green, City of Tucson PDSD  
Melody Loyer, City of Tucson Water  
Jim Vogelsberg, City of Tucson PDSP  
James MacAdam, City of Tucson OIP  
Ann Moynihan, Pima County RFCD  
Irene Ogata, City of Tucson OIP  
Robin Raine, Arizona Department of Transportation  
Jason Bahe, Pima County Department of Transportation  
Louis Romero, Pima County Regional Wastewater Reclamation Department  
Karin Uhlich, Council Member Ward 3  
Joseph Cuffari, Supervisor District 1 Office  
Bill Zimmerman, Pima County RFCD  
Edward Lopez, City of Tucson Water

#### **BACKGROUND:**

This was the first stakeholder meeting for the Ruthrauff Basin Management plan. The intent of this meeting was to familiarize government sector stakeholders with the purpose, tasks, deliverables and schedule of the plan and to request on-going coordination. Invitations were sent to local government sector stakeholders only. The format was a presentation followed by discussion. The project is being implemented by the Pima County Regional Flood Control District (RFCD) (Evan Canfield, Project Manager) with Stantec as lead consultant (John Wise, Project Manager).

## RUTHRAUFF BASIN MANAGEMENT PLAN

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### 1.) *Introductions and Opening Comments*

*Evan Canfield*

### 2.) *Project and Meeting Purpose*

*Chuck Williams*

- Project purpose is to develop a comprehensive flood control program, develop drainage alternatives and provide a balanced multi-objective approach. Produce a report that Pima County and City of Tucson approve and adopt.
- Purpose of today's meeting is to inform stakeholders of the project objectives and overview, receive input from stakeholders and discuss information/data exchange opportunities.

### 3.) *PowerPoint Presentation: Project Overview*

*John Wise, Evan Canfield*

### 4.) *Stakeholder Involvement/Input (Discussion)*

*Chuck Williams*

- Comment: With regard to the 100-year floodplain along Ft. Lowell Road, would this project potentially impact that area as well?
  - Response: No. We considered that, but it is outside the Ruthrauff study area (see attached map). Our original scope of work calls us to address the drainage affected by the improvements along Interstate 10.
- Comment: Are you saying that the water's not flowing north in the same way from that area, so any mitigation to the north is not going to impact anything along the Navajo Wash?
  - Response: That's right. The study boundary is just to the north, just south of Prince Road. Our efforts are focused on the north at this point.
- Comment: You should anticipate a lot of questions from our constituencies in that area about "why not".
- Comment: Are you doing a Flo-2D model on this whole area so you might define some local floodplains? You're just refining that one area, not planning on expanding anything and going through FEMA?
  - Response: That's correct. Within that area, hydrology and hydraulics will be available once that model is done, not just to identify what may be locally administered floodplains, but also information available for design level work.
- Comment: Are you trying to focus on outlets beneath the railroad and I-10 to get to the river?
  - Response: Yes.
- Comment: We are currently relocating some of the utilities for six miles along I-10 in the railroad right-of-way. The crossing locations are pretty fixed. If they need to be slightly larger, that's okay. But if they need to be a whole new location, that's going to be really difficult. As long as you're coordinating with our design team for the drainage, that should work out.
  - Response: Yes. We have been in contact with your project team. Greg Bambauer has given us a lot of good information. We went out and tried to look at every one of those outlets on our site visit.

## RUTHRAUFF BASIN MANAGEMENT PLAN

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- Comment: Have you noticed in your examination of the floodplain over time, whether the growth of individual rainwater harvesting had made any difference in the flow?
  - *Response:* The City of Tucson has a Green Streets Policy. We have done a study with Irene Ogata from City of Tucson on the effect of green infrastructure. We don't have an answer yet on the impact; not enough data from storms.
  - *Response:* Watershed Management Group and others have wanted to gauge the effect of water harvesting, but have never been able to find funding for gauging.
  - *Response:* We think the best way to determine this effect is by modeling.
  
- Comment: What are the plans for the area shown in blue at the north of the study map at La Cholla?
  - *Response:* This is a 500-year flood area. At this point the only FEMA map revision is further south on the map, which is in the City.
  - *Response:* Regarding alternatives, the new hydrology and hydraulics information developed from the Flo-2D model, including types of drainage problems that aren't here in the mapped FEMA 100-year flood plain, combined with drainage complaints and stakeholder and citizen input, will help us to develop at least concept-level alternatives that could include pipes, basins, elevations and rainwater harvesting, but it's too early to know exactly what these will be. The Flo-2D model will be the basis for developing these concept-level alternatives.
  
- Comment: Is the intent then to use them as regulatory floodplains?
  - *Response:* The 100-yr floodplains will be used for floodplain management. Only the area downstream of the Flowing Wells wash will have FEMA floodplains. The remainder of the newly-mapped floodplains will be for local regulatory purposes.
  
- Comment: Watershed Management Group is doing a comparison in the Airport Wash watershed of what can be done using vegetative and green infrastructure solutions to address some of the same problems. Can there be some consideration of the costs and benefits of green infrastructure opportunities?
  - *Response:* We met with Watershed Management Group three weeks ago. We talked about a 10% adoption rate of green infrastructure on-site. We're going to try to do this. Other cities are assessing in-street green infrastructure methods using whole areas of right-of-way and open space.
  
- Comment: Can you adopt these policies with public properties? We get a lot of requests within that area because they're the least filled up.
  - *Response:* Yes. We will evaluate those parcel by parcel, working within current requirements.
  
- Comment: I work for Pima County DOT and we designed the Ruthrauff/Flowing Wells La Cholla segment in the 90's. Everyone out there had drainage complaints. It's all sheet flow. Right now the same thing is occurring at the project at La Cholla and Wetmore. The rain event that occurred about a week ago pretty much drowned everybody out there. I'm sure you've considered alternatives to get water off streets into schoolyards and parks.
  - *Response:* We want to make sure that those complaints are in our knowledge base. We have citizen complaints, we have Tucson DOT complaints, and we have your

## RUTHRAUFF BASIN MANAGEMENT PLAN

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- records. If we can get more records of drainage complaints, from an alternatives process that information may be valuable.
- *Response:* DOT suggests we contact Dave Cummings, Pima County Division Manager of Operations and Maintenance, who can direct you in obtaining more records of complaints and issues.
  - *Comment:* Regarding soils in the A-O-1 zone, are you trying to remap it, does water infiltrate those areas, do you get ponding in the old irrigation channels? Does water sit there for 24 or 48 hours? Are we talking D-type soils? Building basins and rainwater harvesting areas may not actually work because water just sits there.
    - *Response:* There is a lot of clay, unless you can get to the drainable subgrade. Soil amendments can be made.
  - *Comment:* After the heavy rains recently, are you looking at 10- and 25-year floods?
    - *Response:* Yes. We are looking at 10- and 25-year floods, not just 100-year floods.
  - *Comment:* I'm with Pima County Wastewater. What kind of input are you seeking from utilities? It sounds like you're evaluating existing conditions and some flood mapping and some real conceptual recommendations.
    - *Response:* Your agency will be invited to meetings twice, once as a local government agency. The second invitation will be for a utilities meeting in the near future. We will want to compile utility information at key locations, such as where some of your trunk lines are, as we look at those concept alternative solutions. In addition, we want to keep you informed of the project status.

### 5.) Summary/Next Steps

*Chuck Williams*

- A progress meeting is held every month, and you are welcome to attend.
- We will compile and send out a meeting summary soon.
- The Ruthrauff Basin Management Plan Website will begin posting relevant information:
  - <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=158694>
- A workgroup meeting is planned for sometime in October, and you will be invited.
- Continued stakeholder coordination will include meeting individually and in small groups.
- We invite anyone who has additional information to send it to the project managers for this project (Evan Canfield [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov) or John Wise [john.wise@stantec.com](mailto:john.wise@stantec.com)).
- Deliverable production is ongoing.

### 6.) Adjourn

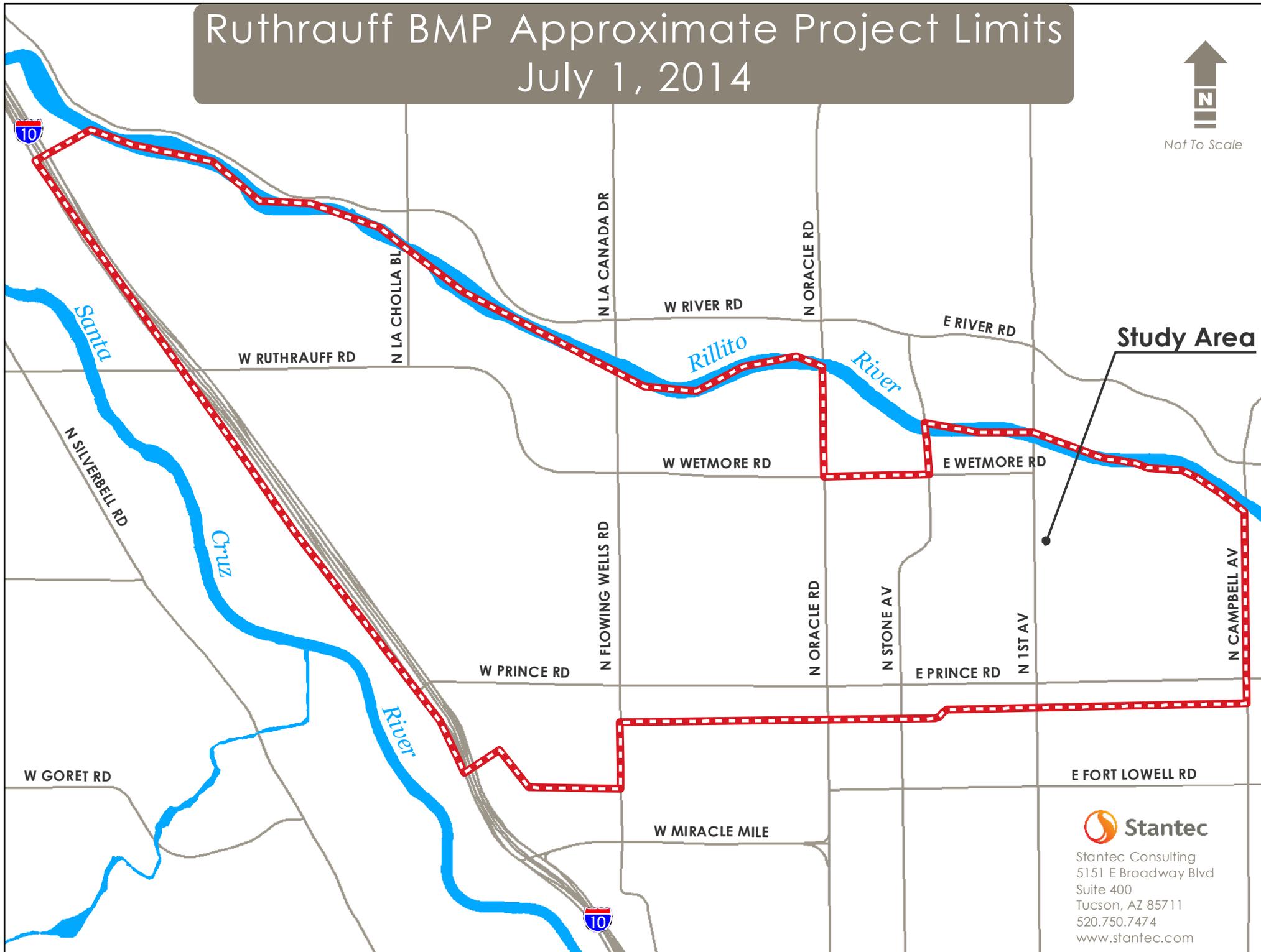
*Evan Canfield*

- The meeting was adjourned at 2:40 p.m.

# Ruthrauff BMP Approximate Project Limits July 1, 2014



Not To Scale



Stantec Consulting  
5151 E Broadway Blvd  
Suite 400  
Tucson, AZ 85711  
520.750.7474  
www.stantec.com

**RUTHRAUFF  
BASIN MANAGEMENT PLAN**

**VOLUME I OF II**

**DRAINAGE IMPROVEMENT PLAN**

**F.3 October 23, 2014 Stakeholders Meeting**

Contains the agenda, summary, and related documents for this meeting.

## RUTHRAUFF BASIN MANAGEMENT PLAN

### PRIVATE SECTOR STAKEHOLDER MEETING AGENDA

**LOCATION:** Ellie Towne Flowing Wells Neighborhood Center  
**DATE:** Thursday, October 23rd, 2014  
**TIME:** 1:30 – 3:00 pm

1. 1:30 - Open House to Review Exhibits
2. 1:45 - Introductions and Opening Comments Evan Canfield  
District PM
3. 1:55 – Agenda Review & Meeting Purpose Chuck Williams  
Facilitator
  - Agenda Review
  - Meeting Purpose
  - Stakeholder Approach
  - Project Objectives and Overview
  - Receive input from Stakeholders
  - Identify Any Other Related Issues
4. 2:05 - Project Overview John Wise  
Stantec PM  
Evan Canfield
  - Scope Review and Status
  - Schedule
  - Deliverables
5. 2:25 - Stakeholder Involvement/Input Chuck Williams
  - Stakeholder Individual Comments
  - Stakeholder Group Issues Discussion
6. 2:55 - Summary/Next Steps Chuck Williams  
Evan Canfield
6. 3:00 – Adjourn Evan Canfield



## **RUTHRAUFF BASIN MANAGEMENT PLAN**

### **PRIVATE SECTOR STAKEHOLDER MEETING #2 SUMMARY**

**LOCATION:** Ellie Towne Flowing Wells Community Center  
Multipurpose Room  
**DATE:** Thursday, Oct. 23, 2014  
**TIME:** 1:30 – 3 p.m.

#### **PROJECT TEAM**

Evan Canfield, Project Manager, Pima County Regional Flood Control District  
Mindy Cox, Pima County RFCD  
Terry Hendricks, Pima County RFCD  
Akitsu Kimoto, Pima County RFCD  
Diane Luber, Pima County Communications  
Jason Green, City of Tucson Planning & Development  
Ian Sharp, JE Fuller  
Janice Mock, Stantec  
Sandy Steichen, Stantec  
Chuck Williams, Stantec  
John Wise, Stantec  
Jan Gordley, Gordley Group  
Lori Lantz, Gordley Group

#### **ATTENDEES**

Adam Bliven, Pima County RWRD  
Dave Crockett, Flowing Wells Irrigation District  
Jeannie Davis, Pima County District 1 Administrative Staff  
Matt Kopec, Pima City of Tucson Ward 3 Administrative Staff  
Melody Loyer, City of Tucson Water  
Irene Ogata, City of Tucson Office of Integrative Planning  
James Burns, Amphi School District  
Kevin Daily, Flowing Wells Neighborhood Association  
Susan Grant, Flowing Wells NA  
Louise Newman, Campus Farms NA  
Theresa Pena, Westwood Village/Flowing Wells NA  
Michael Ray, Limberlost NA

#### **1.) *Introductions and Opening Comments***

*Evan Canfield*

#### **2.) *Agenda Review and Meeting Purpose***

*Chuck Williams*

- Project purpose is to develop a comprehensive flood control program, develop drainage alternatives and provide a balanced multi-objective approach, as well as produce a report that Pima County and City of Tucson approve and adopt.
- The purpose of this meeting is to inform stakeholders of the project objectives and overview, receive input from stakeholders and identify any other related issues.

#### **3.) *PowerPoint Presentation: Project Overview***

*John Wise, Evan Canfield*

## RUTHRAUFF BASIN MANAGEMENT PLAN

### **4.) Stakeholder Involvement/Input (Discussion)**

*Chuck Williams Facilitating*

- Comment: What amount of rain would produce a 100-year flood?
  - Response: A three hour-storms producing 3.2 inches of rain produces the 100-year storm runoff within the project area.
- Comment: Do your maps show sheet flooding?
  - Response: Yes, sheet flooding above six inches in depth is shown. Sheet flow occurs in an area like a parking lot where there is no well-defined channel and water flows across a wide area, shallow and usually less than a foot deep. The water is not fast moving, but causes a lot of flooding problems in this project area.
- Comment: Older large apartment rentals were built before requirements to capture water on property. Properties downstream experience sheet flooding. What is the public policy framework or solutions to take care of this?
  - Response: The implementation plan will have recommended alternatives, which can either be structural, like a channel, or non-structural, like an ordinance, or both. Most new developments are required to have drainage basins since the ordinance was put in place in the early 1980's.
- Comment: Who weighs performance criteria? Do stakeholders have input?
  - Response: Yes, stakeholders have input. Workgroups composed of the district, consultant team, interested stakeholders and interested public give input throughout the process to develop performance criteria. Then weighted criteria are developed in a similar way.
- Comment: How do you gather interested stakeholders?
  - Response: We are doing that now, including local government, regulatory agencies, elected officials, utilities, wastewater, neighborhood associations and interested citizens' groups. We will also have public meetings.
- Comment: Are there regular maintenance schedules for inspections on grates and drainage structures, or is maintenance scheduled only after complaints or flood events?
  - Response: Both systems are in place. But we can't be everywhere with our limited staff; people need to call us. Pima County knows the problem areas and checks on them before anticipated events as well as following up on complaints. Some areas don't have drainage solutions yet.
- Comment: Where is the existing 100-year floodplain?
  - Response: The FEMA-adopted floodplain which is used for insurance purposes is shown in the map on the slide. The City and County have other floodplain maps which they have the authority to regulate in the interest of protecting public safety. The Pima County floodplain map extends further than the FEMA area. When building a new development in existing floodplains, the City and County have restrictions. Development has to prove they can deal with existing drainage water and won't send water onto adjacent properties.

## RUTHRAUFF BASIN MANAGEMENT PLAN

- Comment: Will this avoid situations like the flood in 1983 when businesses and buildings went down into the Rillito?
  - Response: If we can identify potential problem areas, that leads to better planning and helps to prevent future losses. In this project we are not looking at flooding on the Rillito and the Santa Cruz rivers; it's the flooding that occurs upstream of those two Rivers.
- Comment: When did the project start, and how long will it take?
  - Response: The project started in April and is expected to last two years. When flooding and drainage problem analysis is completed and finalized, we can move into the alternatives analysis.
- Comment: My biggest concern is a drainage area in my little Flowing Wells neighborhood. Who is supposed to maintain it?
  - Response: City Streets, Tucson Department of Transportation, maintains watercourses, so you can call City of Tucson Streets and Maintenance.
- Comment: The City staff say it is the County's responsibility. One year they cleaned it up, but not since.
  - Response: Email me, Terry Hendricks, the location and I can tell you who maintains it. We can determine the jurisdiction and responsibility to maintain and can send in the request for maintenance.
  -
- Comment: Are these maps available online?
  - Response: Some maps are online, but not the PowerPoint. This is still a work in progress, so many maps are in preliminary draft form. Once it's done, the maps will be online. Existing and local floodplains are online.
- Comment: When you increase drainage at the railroad tracks, any idea of the amount of acre-feet of water that will be going into the Santa Cruz and pushing into Marana?
  - Response: Are you asking do we know how much water will pass beneath the interstate and into the Santa Cruz River, possibly increasing flooding in Marana? Does this solution make problems downstream? No, this will not affect Marana. By the time this area drains, the peak of the Santa Cruz flow will be past. Part of a successful alternative is not creating additional problems.

We are planning a public meeting. Are there any items of information that you would like to see addressed at the public meeting?

- Comment: We would like to know what kind of impacts on daily life will occur when the project is done; whatever will affect constituents negatively or positively.
  - Response: We will look at addressing impacts.
- Comment: From a neighborhood point of view I see efforts to increase curb cuts, directing water to tree basins along the roadway. Some of these areas have street-related flooding where some of that water could be put to better use to be absorbed and create tree cover. The engineering side is how to move water out with the flood, looking at water as a problem rather than a resource.

## RUTHRAUFF BASIN MANAGEMENT PLAN

- Response: We are looking at these opportunities to capture water for the landscape. This falls under the alternatives development and is being included in the discussions. A current example is in use at the library and park across the street. We are also looking at 10- and 25-year flood events, not just 100 years.
- Comment: What is the timing of study findings with the Arizona Department of Transportation project, specifically at the overpass at Ruthrauff?
  - Response: Culverts are planned around 2018 for Ruthrauff at I-10. At Flowing Wells Wash, culverts are going in about January or February 2015. As I-10 is widened the drainage structures will also be improved. When the railroad put in their second line, they already made some of the drainage improvements. We will be looking at what opportunities could be utilized once the drainage improvements along I-10 are done.
- Comment: What are plans regarding the project along Gardner Lane?
  - Response: Potential plans with ADOT are for culverts underneath the railroad and I-10 later, but not along Gardner at this point. This would be part of our solutions alternatives.
- Comment: A neighborhood coalition exists – you could meet with them to let them know about the project. Flowing Wells Neighborhood Association meets every third Thursday in the evening.
  - Response: We are looking at the schedule for a public meeting, and it will be in the evening.

### **5.) Summary/Next Steps**

*Evan Canfield*

- Watch for updates on the website and project report document.
- If you would like to provide more questions or input, fill out the comment form and mail, fax or email to Evan Canfield.
- A public meeting is being planned, possibly for early December, and you will be invited.
- Continued stakeholder coordination will include meeting individually and in small groups.
- Deliverable production is ongoing. Good progress is being made on preliminary drafts.

### **6.) Adjourn**

*Evan Canfield*

- The meeting was adjourned at 2:55 p.m.

**RUTHRAUFF  
BASIN MANAGEMENT PLAN**

**VOLUME I OF II**

**DRAINAGE IMPROVEMENT PLAN**

**F.4 Project Updates**

This is a record of the periodic project updates released by PCRFD.



# Ruthrauff Basin Management Plan

## Project Update – October 2014

### Expected Improvements

The Arizona Department of Transportation (ADOT) recently told us that the new culverts planned for the Union Pacific Railroad at the Flowing Wells Wash (shown in photo above) are anticipated to be installed in January or February of 2015. This improvement should reduce the depth of flooding upstream of the railroad embankment at the wash.

Following this improvement, the Ruthrauff Basin Team will prepare new FEMA floodplain maps, which are expected to reduce the size of the mapped FEMA 100-year floodplain.

### Project Contacts

Please contact us if you would like more information or have photos or information on flooding or erosion issues within these watersheds that you would like to share with the District.

**Evan Canfield**, PhD, PE, Project Manager for the District [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

**John Wise**, PE, Project Manager for Stantec [john.wise@stantec.com](mailto:john.wise@stantec.com)

### Past and Upcoming Events

1. The Pima County Regional Flood Control District held a Local Government Sector Stakeholder Meeting on July 24, 2014, to review the project and share information on the drainage situation in the watershed. The meeting summary is available under the "Public Involvement" tab on the project website: <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=158694>
2. A Private Sector Stakeholder Meeting has been planned for stakeholders living or working in the watershed. It will be held on Oct. 23, 2014, at the Ellie Towne Flowing Wells Community Center from 1 to 3 p.m.
3. There will be two future public meetings held on the project.



### Project Location

The Ruthrauff Basin is located in both the City of Tucson and unincorporated Pima County adjacent to Interstate 10 and the Union Pacific Railroad. The Ruthrauff Basin drains into the Santa Cruz River from the east just upstream of the confluence with the Rillito River.

### Project Description

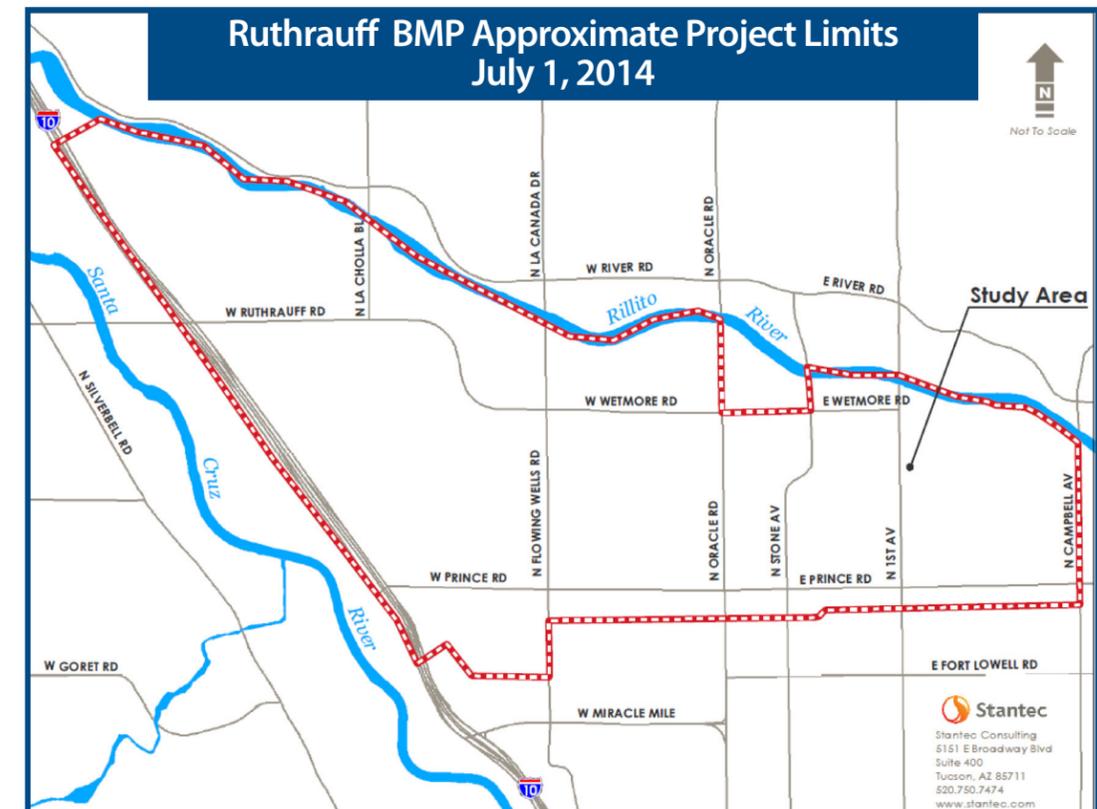
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent and substantial sheet flow and ponding of stormwater

as a result of the minimal topographic relief and inadequate drainage structures. Historically, flood flows have ponded on the east side of the Union Pacific Railroad embankment.

This project will develop a Ruthrauff Basin Management Plan that will identify flood hazard areas and drainage problems, and cost-effective solutions to alleviate or manage flooding in the project area.

### What's Next:

Private Sector Stakeholder Meeting on Thursday, Oct. 23, 2014.



## Project Elements and Timeline

**Existing Conditions Analysis:** Review previous studies, perform hydrologic and hydraulic analysis that incorporates drainage improvements, and identify areas of drainage and erosion hazards.

**FEMA Floodplains will be Mapped:** The new culvert crossing at Flowing Wells Wash is anticipated to reduce flooding on the Flowing Wells Wash and the FEMA Floodplain, which currently shows water ponding behind the railroad track embankment. Therefore, a new floodplain map for this area will be prepared for approval by FEMA.

**Public Involvement:** Stakeholder meetings will be held throughout the duration of the project. In addition, there will be two public meetings

The project timeline shows the phasing of these elements and the current status.

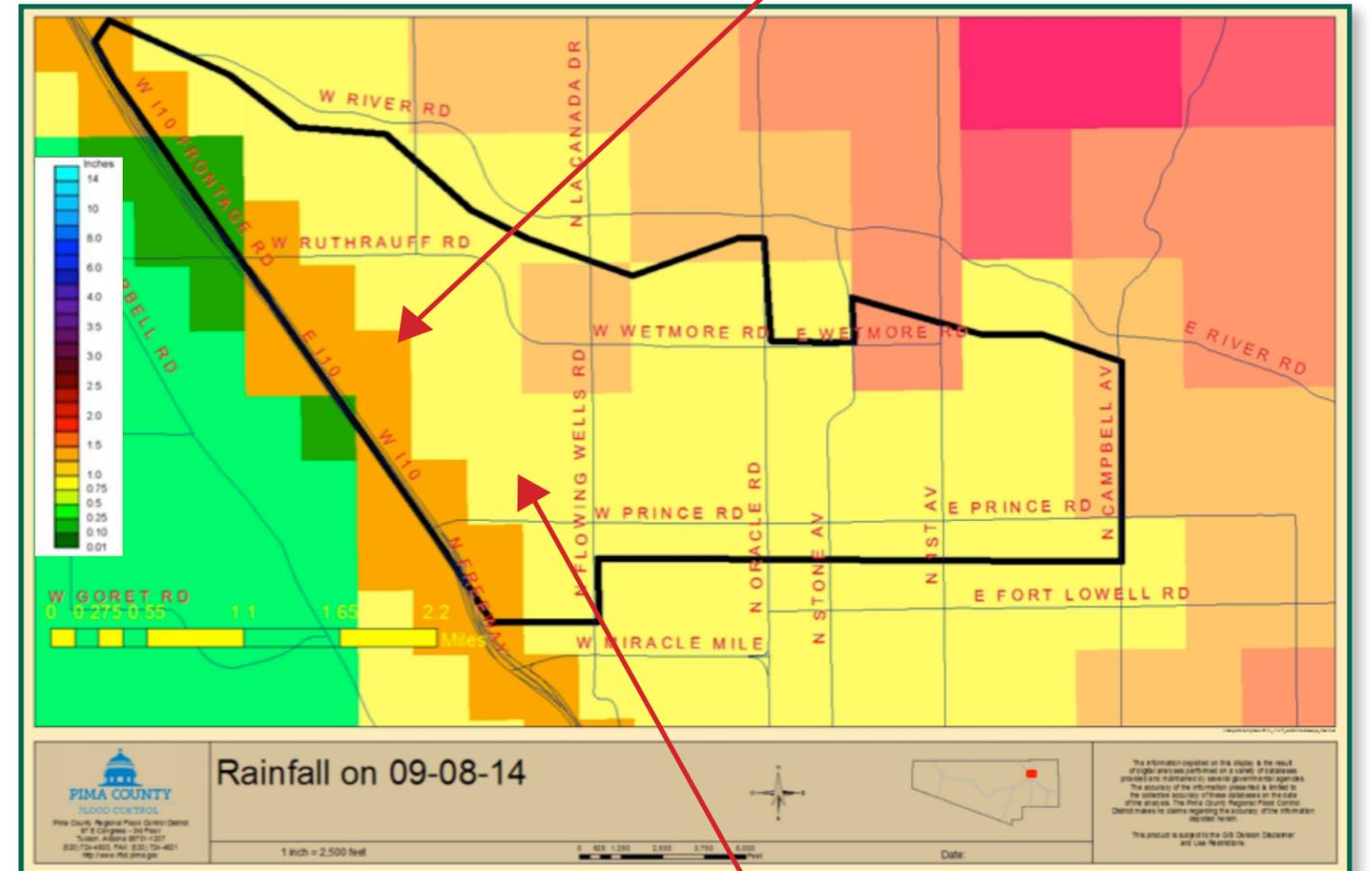
### Two Types of Local Floodplains will be Mapped:

Because much of this area experiences sheet flooding, it is an ideal area for mapping using a grid-based approach, which is a relatively new technology. The grid-based maps show how water flows more accurately than the approach used in the current floodplain maps.

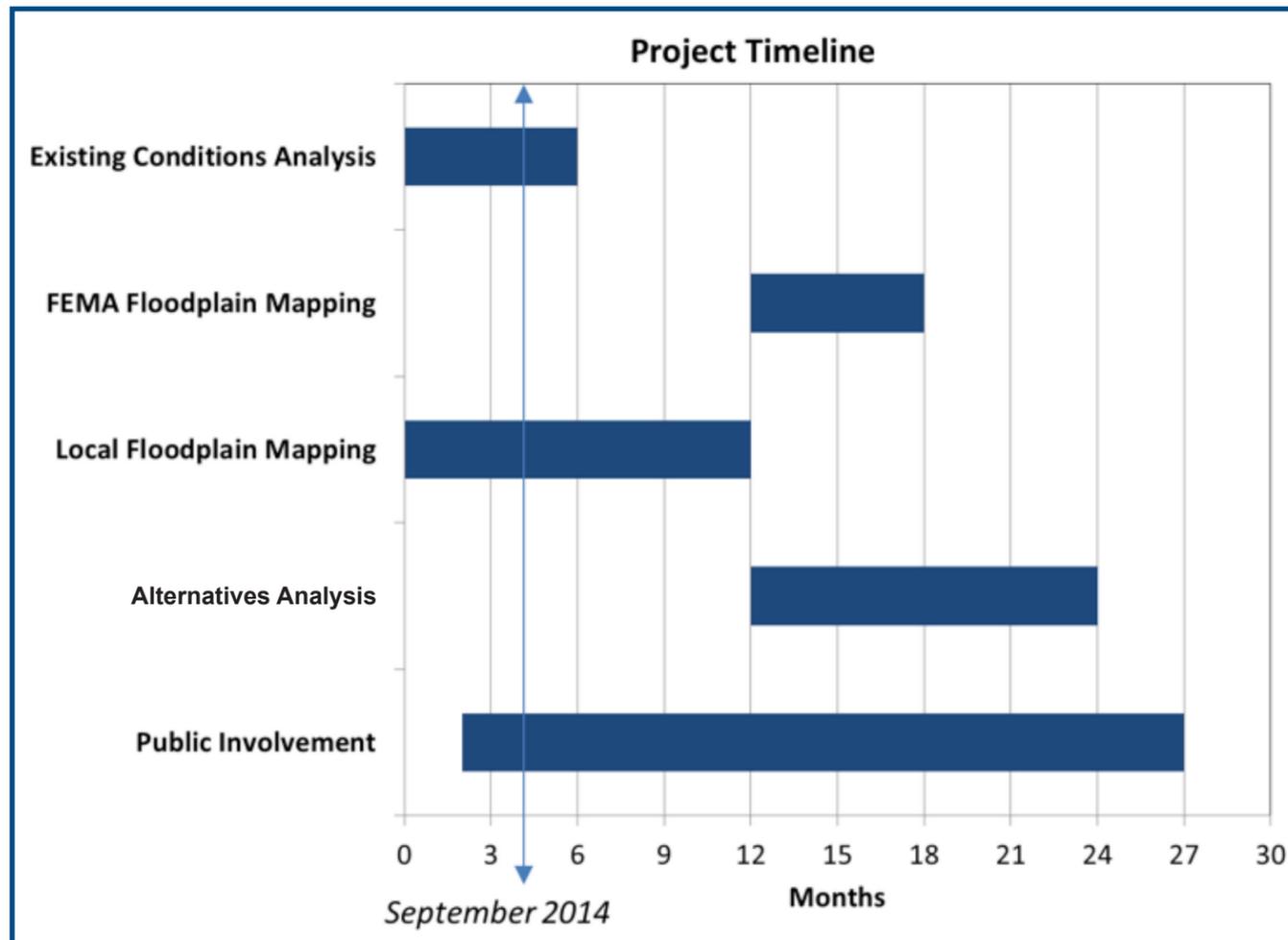
- **Regulatory Floodplains:** Regulatory Floodplains are delineated based on the 1% annual chance flood (100-year) and are used for administering the floodplain ordinance, which is the basis for permitting uses in regulatory mapped floodplains.
- **Floodplains of Problem Storms:** More frequent floods, such as the 10- or 25-year flood, can create problems such as flooding of yards and roadways. Therefore, this study will map these more frequent flows so that solutions can be developed for them.

## September 8, 2014, Flood Event

On Sept. 8, 2014, the remnants of hurricane Norbert caused flooding and rainfall throughout the Tucson area. The project team visited the area during the event and took the photos below. The Ruthrauff basin had 1.22 inches of rain at La Cholla and the Rillito, and 1.14 inches at La Cholla and Ruthrauff. Mapping of rainfall depths using radar below\*\* showed greater depths to the east. The District's rainfall data is near-real time and is available at <http://alert.rfcd.pima.gov/>



\*\*The experimental graphic depicting Radar Estimated Precipitation for the 24 hour period is generated by the National Weather Service from radar data. It should be used only as a generalized indication of where the heaviest precipitation has occurred. Radar data is courtesy of NOAA/NOS nowCOAST.





# Ruthrauff Basin Management Plan

## Project Update – December 2014

### Expected Improvements

The Arizona Department of Transportation (ADOT) recently told us that the new culverts planned for the Union Pacific Railroad at the Flowing Wells Wash (shown in photo above) are anticipated to be installed in January or February of 2015. This improvement should reduce the depth of flooding upstream of the railroad embankment at the wash.

Following this improvement, the Ruthrauff Basin Team will prepare new FEMA floodplain maps, which are expected to reduce the size of the mapped FEMA 100-year floodplain.

### Project Contacts

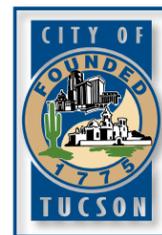
Please contact us if you would like more information or have photos or information on flooding or erosion issues within these watersheds that you would like to share with the District.

**Evan Canfield**, PhD, PE, Project Manager for the District [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

**John Wise**, PE, Project Manager for Stantec [john.wise@stantec.com](mailto:john.wise@stantec.com)

### Past and Upcoming Events

1. The Pima County Regional Flood Control District held a Local Government Sector Stakeholder Meeting on July 24, 2014, to review the project and share information on the drainage situation in the watershed. The meeting summary is available under the "Public Involvement" tab on the project website: <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=158694>
2. A Private Sector Stakeholder Meeting was held on Oct. 23, 2014, at the Ellie Towne Flowing Wells Community Center.
3. An open house on the project will be held Dec. 4, 2014, from 6 to 7:30 p.m. at the Ellie Towne Flowing Wells Community Center. A second open house will be held following the development of proposed alternatives.



### Project Location

The Ruthrauff Basin is located in both the City of Tucson and unincorporated Pima County adjacent to Interstate 10 and the Union Pacific Railroad. The Ruthrauff Basin drains into the Santa Cruz River from the east just upstream of the confluence with the Rillito River.

### Project Description

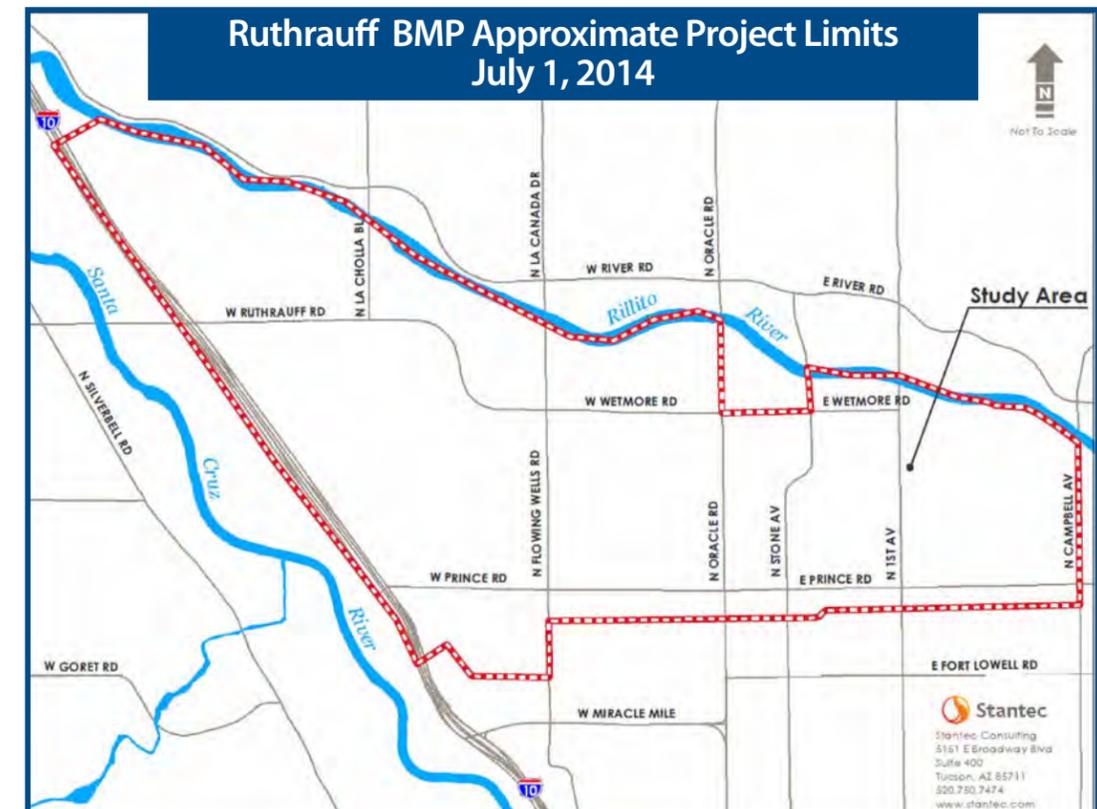
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent and substantial sheet flow and ponding of stormwater

as a result of the minimal topographic relief and inadequate drainage structures. Historically, flood flows have ponded on the east side of the Union Pacific Railroad embankment.

This project will develop a Ruthrauff Basin Management Plan that will identify flood hazard areas and drainage problems, and cost-effective solutions to alleviate or manage flooding in the project area.

### What's Next:

An open house will be held on Thursday, Dec. 4, from 6 to 7:30 p.m. at Ellie Towne Flowing Wells Community Center.



## Project Elements and Timeline

**Existing Conditions Analysis:** Review previous studies, perform hydrologic and hydraulic analysis that incorporates drainage improvements, and identify areas of drainage and erosion hazards.

**FEMA Floodplains will be Mapped:** The new culvert crossing at Flowing Wells Wash is anticipated to reduce flooding on the Flowing Wells Wash and the FEMA Floodplain, which currently shows water ponding behind the railroad track embankment. Therefore, a new floodplain map for this area will be prepared for approval by FEMA.

**Alternative Analysis and Recommended Solutions:** Alternative analysis for the General Study Area is to identify flood hazard solutions based on the data gathered and produced during the previous elements effort.

Develop structural and non-structural alternative solutions for mitigating the floodplain and erosion hazards identified in the existing conditions analysis, including cost effectiveness, and recommend an alternative for each flood hazard.

### Two Types of Local Floodplains will be Mapped:

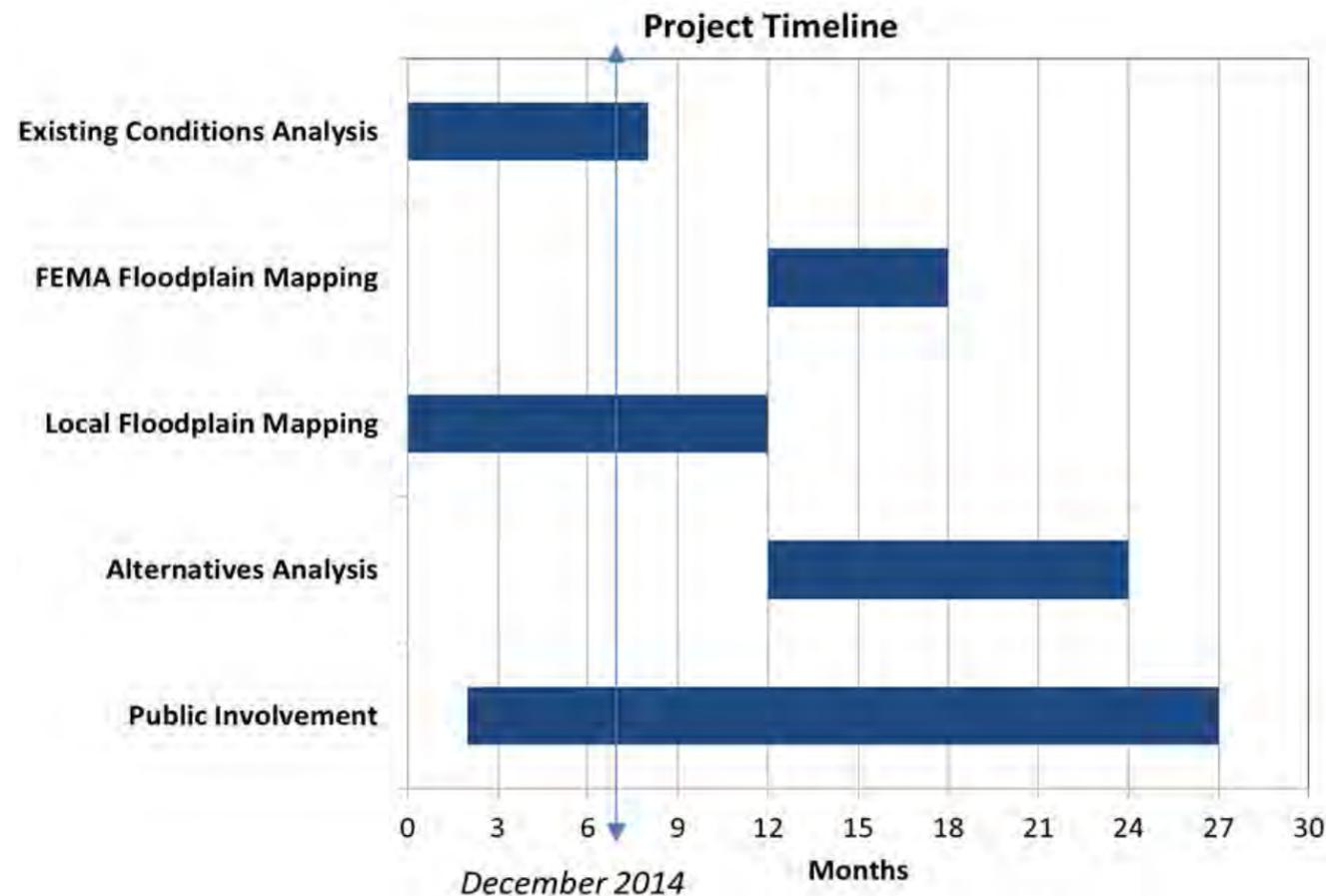
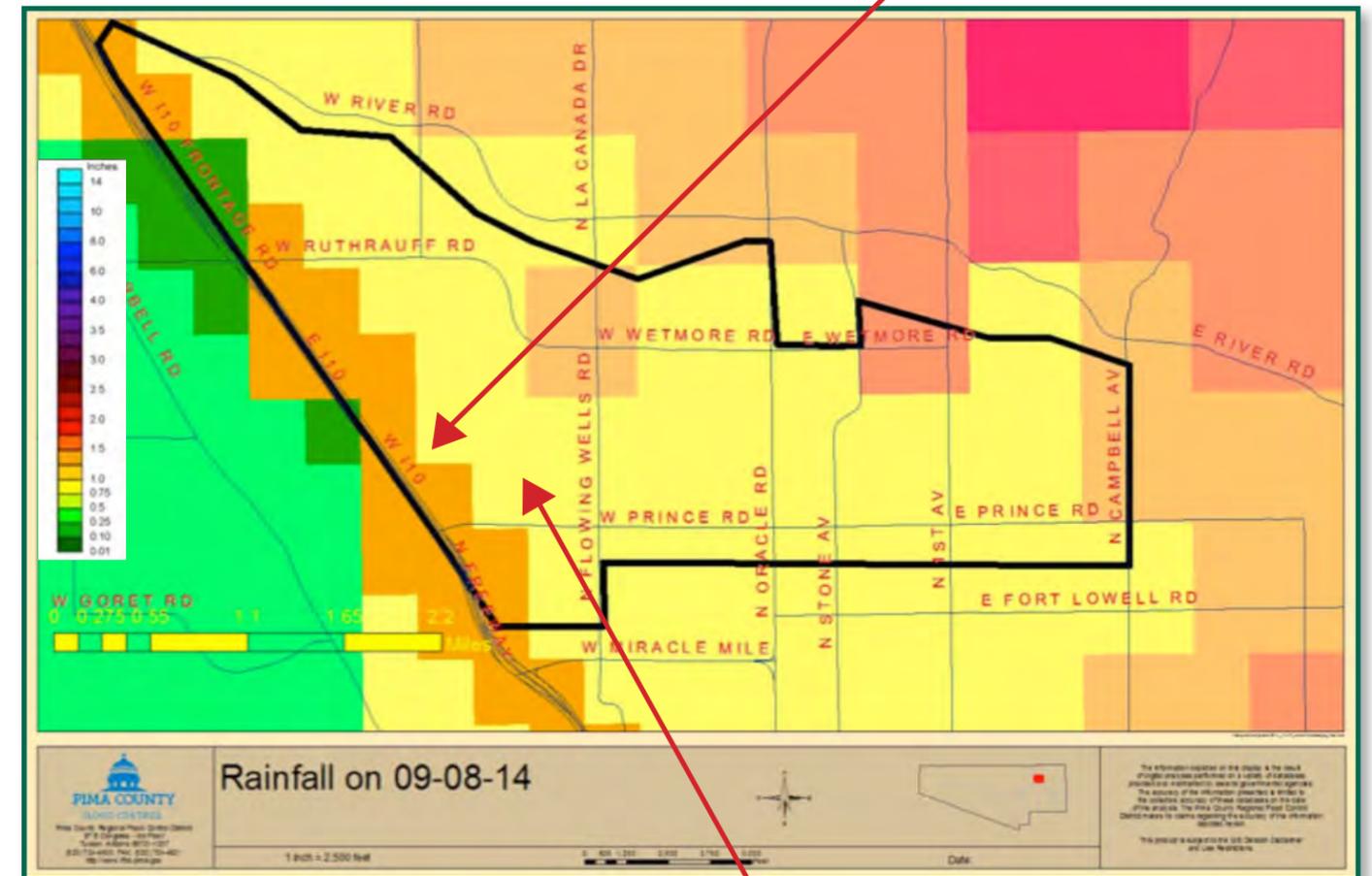
Because much of this area experiences sheet flooding, it is an ideal area for mapping using a grid-based approach, which is a relatively new technology. The grid-based maps show how water flows more accurately than the approach used in the current floodplain maps.

- **Regulatory Floodplains:** Regulatory Floodplains are delineated based on the 1% annual chance flood (100-year) and are used for administering the floodplain ordinance, which is the basis for permitting uses in regulatory mapped floodplains.
- **Floodplains of Problem Storms:** More frequent floods, such as the 10- or 25-year flood, can create problems such as flooding of yards and roadways. Therefore, this study will map these more frequent flows so that solutions can be developed for them.

**Public Involvement:** Stakeholder meetings will be held throughout the duration of the project. In addition, there will be two public meetings. The project timeline shows the phasing of these elements and the current status.

## September 8, 2014, Flood Event

On Sept. 8, 2014, the remnants of hurricane Norbert caused flooding and rainfall throughout the Tucson area. The project team visited the area during the event and took the photos below. The Ruthrauff basin had 1.22 inches of rain at La Cholla and the Rillito, and 1.14 inches at La Cholla and Ruthrauff. Mapping of rainfall depths using radar below\*\* showed greater depths to the east. The District's rainfall data is near-real time and is available at <http://alert.rfcd.pima.gov/>



\*\*The experimental graphic depicting Radar Estimated Precipitation for the 24 hour period is generated by the National Weather Service from radar data. It should be used only as a generalized indication of where the heaviest precipitation has occurred. Radar data is courtesy of NOAA/NOS nowCOAST.





# Ruthrauff Basin Management Plan

## Project Update – November 2015

### Expected Improvements

The Arizona Department of Transportation told us that the new culverts (shown in photo above) planned for the Union Pacific Railroad at the Flowing Wells Wash are under construction and will be completed in spring 2016. This improvement should reduce the depth of flooding upstream of the railroad embankment at the wash.

Following this improvement, the Ruthrauff Basin Team will prepare new FEMA floodplain maps, which are expected to reduce the size of the mapped FEMA 100-year floodplain.

### Project Contacts

Please contact us if you would like more information or have photos or information on flooding or erosion issues within these watersheds that you would like to share with the District.

**Evan Canfield**, PhD, PE, Project Manager for the District [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

**John Wise**, PE, Project Manager for Stantec [john.wise@stantec.com](mailto:john.wise@stantec.com)

### Past and Upcoming Events

1. The Pima County Regional Flood Control District held a Local Government Sector Stakeholder Meeting on July 24, 2014, to review the project and share information on the drainage situation in the watershed.

### Project Website

<https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=158694>



### Project Location

The Ruthrauff Basin is located in both the City of Tucson and unincorporated Pima County adjacent to Interstate 10 and the Union Pacific Railroad. The Ruthrauff Basin drains into the Santa Cruz River from the east just upstream of the confluence with the Rillito River.

### Project Description

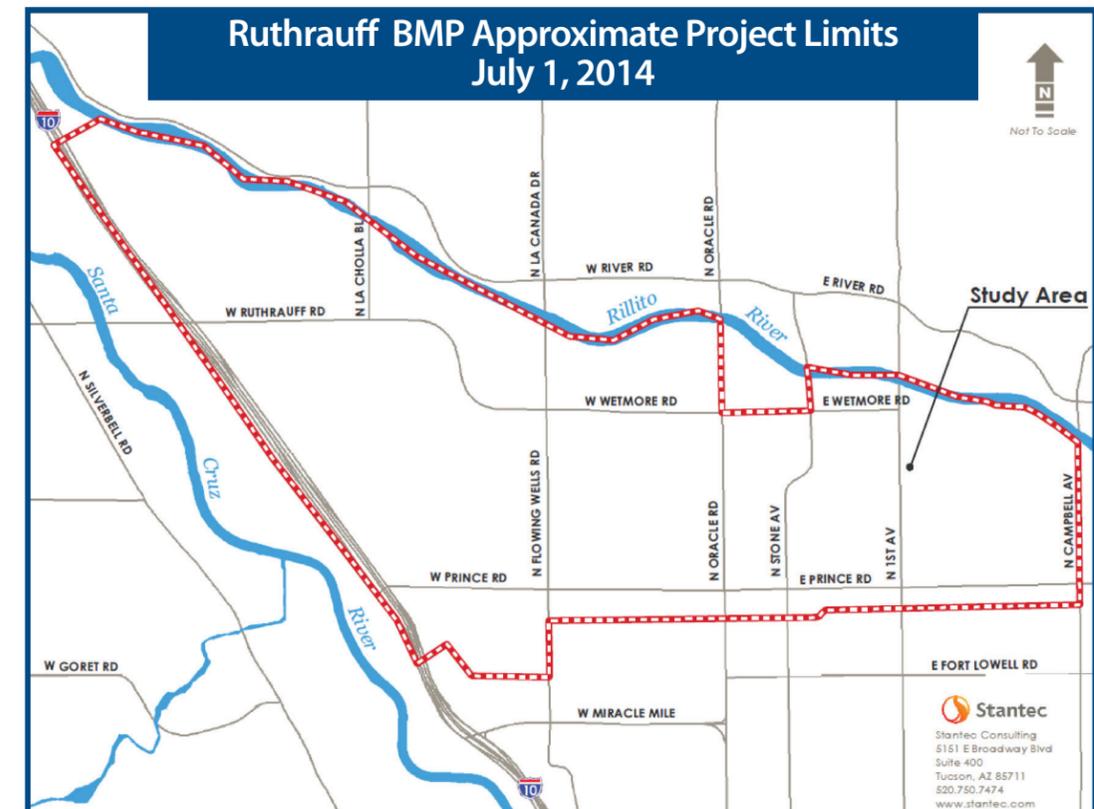
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent and substantial sheet flow and ponding of stormwater

as a result of the minimal topographic relief and inadequate drainage structures. Historically, flood flows have ponded on the east side of the Union Pacific Railroad embankment.

This project will develop a Ruthrauff Basin Management Plan that will identify flood hazard areas and drainage problems, and cost-effective solutions to alleviate or manage flooding in the project area.

### What's Next:

A meeting to present preferred alternatives will be held near the completion of the project in fall 2016.



## Project Elements and Timeline

**Existing Conditions Analysis:** Review previous studies, perform hydrologic and hydraulic analysis that incorporates drainage improvements, and identify areas of drainage and erosion hazards.

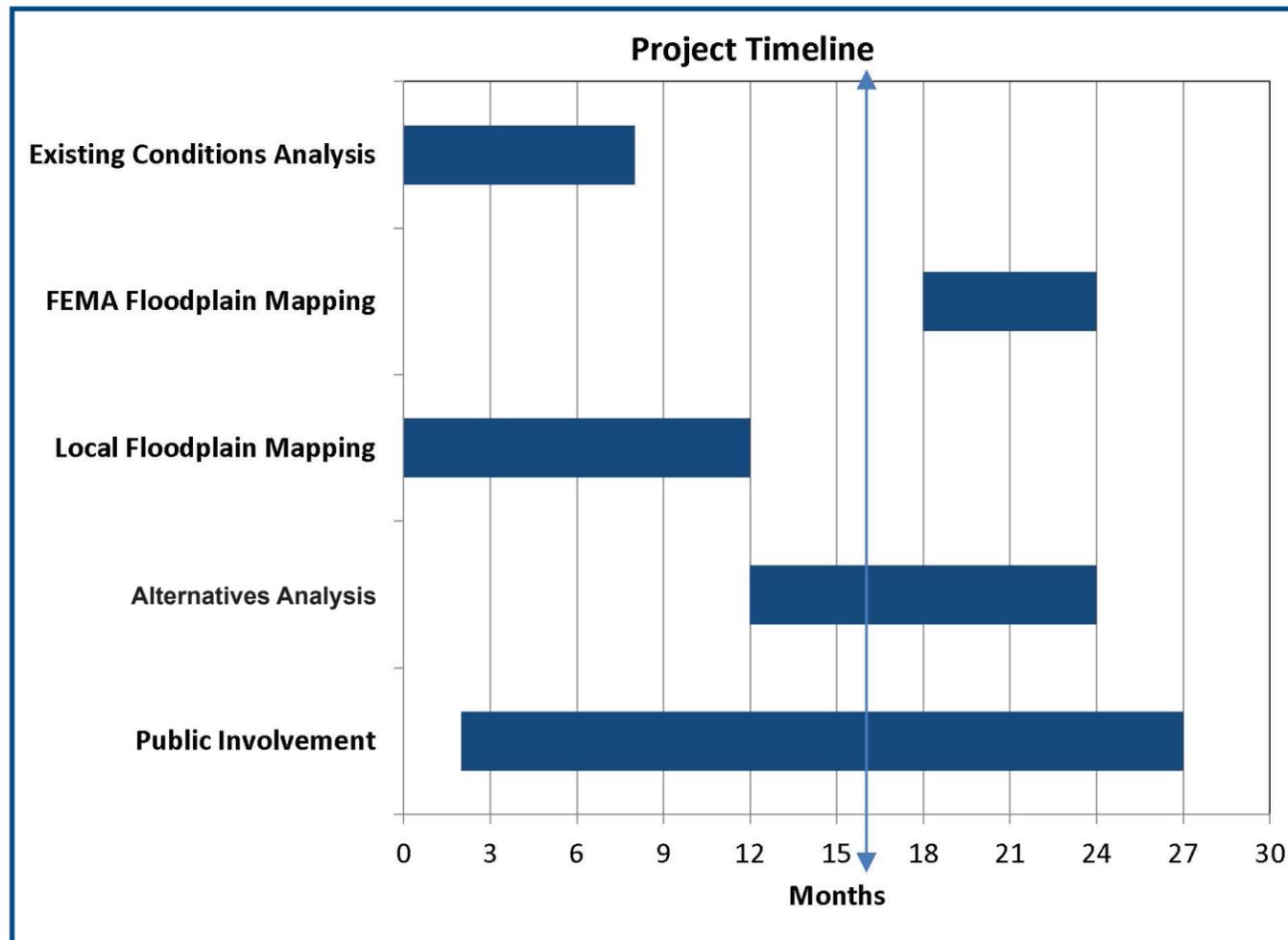
**FEMA Floodplains will be Mapped:** The new culvert crossing at Flowing Wells Wash is anticipated to reduce flooding on the Flowing Wells Wash and the FEMA Floodplain, which currently shows water ponding behind the railroad track embankment. Therefore, a new floodplain map for this area will be prepared for approval by FEMA.

**Public Involvement:** Stakeholder meetings will be held throughout the duration of the project. In addition, there will be two public meetings

The project timeline shows the phasing of these elements and the current status.

**Two Types of Local Floodplains will be Mapped:** Because much of this area experiences sheet flooding, it is an ideal area for mapping using a grid-based approach which is a relatively new technology. The grid-based maps show more accurately how water flows than the approach used in the current floodplain maps.

- **Regulatory Floodplains:** Regulatory Floodplains are delineated based on the 1% annual chance flood (100-year) and are used for administering the floodplain ordinance, which is the basis for permitting uses in regulatory mapped floodplains.
- **Floodplains of Problem Storms:** More frequent floods, such as the 10- or 25-year flood, can create problems such as flooding of yards and roadways. Therefore, this study will map these more frequent flows so that solutions can be developed for them.



## Weighting of Drainage Alternatives

A two-dimensional flood mapping of the floodplains on the Ruthrauff basin confirmed that shallow flooding would be widespread throughout the basin in a 100-year flood. In such an event, nearly 1/3 of the basin would experience some ponded water. Most of the ponded water would be 0.2 to 0.5 foot deep. Generally speaking, the flow velocities in the project area are low, however there are a few defined channels in the basin with higher velocities.

On June 9, 2015, a workgroup of 25 stakeholders met to develop metrics to help prioritize alternatives. The workgroup used multiple criteria in assessing the weighted measures in the table below.

## Summary of Highest Rated Criteria from Workgroups

	Weight	Most Important	2nd Most	3rd Most
<b>Public Safety</b>	<b>30%</b>	Identify Maintenance Needs	Provide Usable Floodplain Maps and Data	Design Drainage for All Weather Access
<b>Implementation</b>	<b>23%</b>	Optimize Stakeholders' Support	Minimize Complexity of Regulatory Compliance	Optimize Multiple Funding Sources
<b>Environmental Sustainability</b>	<b>20%</b>	Maximize use of renewable water and minimize use of potable water resources	Promote systems with adaptability and resilience	Mitigate the urban heat island effect
<b>Economic Vitality</b>	<b>17%</b>	Leadership - meeting objectives of all stakeholders (regional, county, city, community)	Economic value of beneficial sustainable impacts (for example evaluate alternatives with business case evaluator)	Quality of Life - enhance community growth and development
<b>Community</b>	<b>10%</b>	Maximize community connectivity, access and use of multi-modal transportation	Optimize beneficial use of land	Compatibility with known community or neighborhood values, goals and plans within the Study Area

Over the next year the project team will evaluate drainage alternatives using these criteria, to select preferred alternatives and provide an implementation plan.



# Ruthrauff Basin Management Plan

## Project Update – November 2016

### Improvements And Revised Floodplain Maps

The Arizona Department of Transportation has installed new culverts under the Union Pacific Railroad at the Flowing Wells Wash. This improvement will reduce the potential for flooding upstream of the railroad embankment.

The Ruthrauff Basin management plan team has prepared new FEMA floodplain maps that show a substantial reduction in the 1% chance annual flood (often called the 100-yr flood) based on both the drainage improvements at Flowing Wells Wash and improved capability to assess the flood risk in shallow sheet flood areas, such as those that occur in Ruthrauff Basin.

### Project Contacts

Please contact us if you would like more information or have photos or information on flooding or erosion issues within these watersheds that you would like to share with the District.

**Evan Canfield, PhD, PE, Project Manager** for the District [evan.canfield@pima.gov](mailto:evan.canfield@pima.gov)

**John Wise, PE, Project Manager** for Stantec [john.wise@stantec.com](mailto:john.wise@stantec.com)

### Past Events

1. The Pima County Regional Flood Control District held a Local Government Sector Stakeholder Meeting on July 24, 2014, to review the project and share information on the drainage situation in the watershed.
2. The Pima County Regional Flood Control District sponsored an Open House on December 4, 2014 to describe the project and solicit information from the community on drainage problems in the Ruthrauff Basin.

### Project Website

<https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=158694>



### Project Location

The Ruthrauff Basin is located in both the City of Tucson and unincorporated Pima County adjacent to Interstate 10 and the Union Pacific Railroad. The Ruthrauff Basin drains into the Santa Cruz River from the east just upstream of the confluence with the Rillito River.

### Project Description

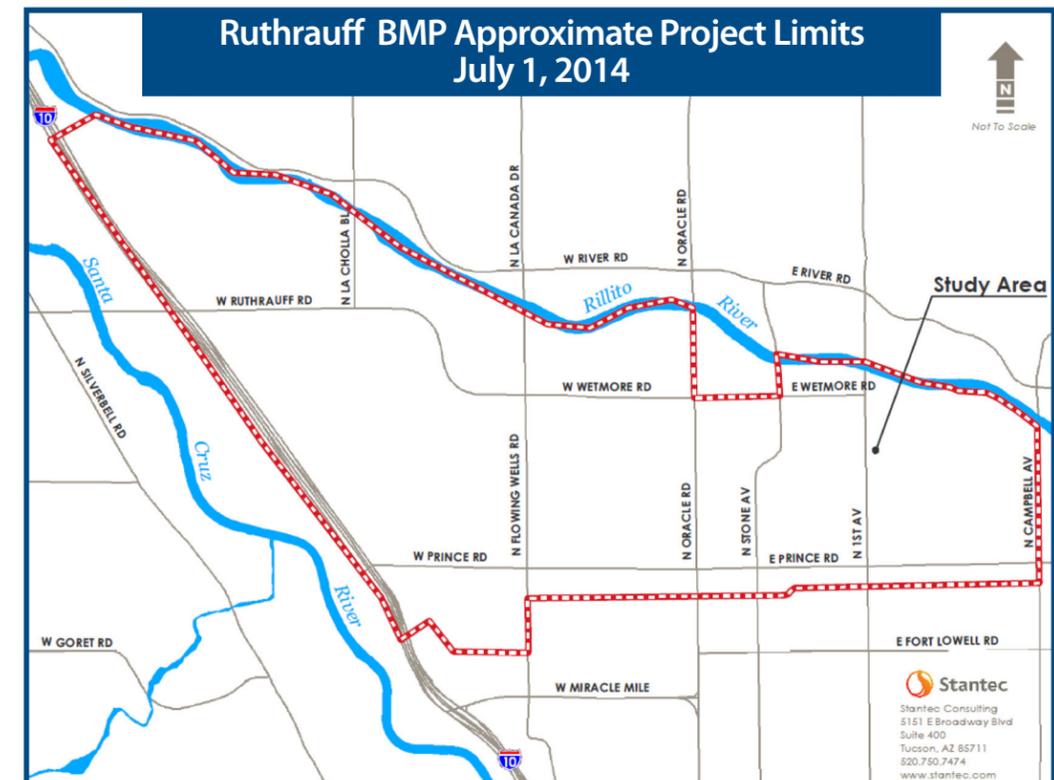
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent and substantial sheet flow and ponding of stormwater as a result of the minimal topographic relief and

inadequate drainage structures. Historically, flood flows have ponded on the east side of the Union Pacific Railroad embankment.

This project will develop a Ruthrauff Basin Management Plan that will identify flood hazard areas and drainage problems, and cost-effective solutions to alleviate or manage flooding in the project area.

### What's Next:

Following the November 16, 2016 Open House, the team will finalize the preferred alternatives and develop an implementation plan for adoption of governing bodies.



## Project Elements and Timeline

**Existing Conditions Analysis:** Review previous studies, perform hydrologic and hydraulic analysis that incorporates drainage improvements, and identify areas of drainage and erosion hazards.

**FEMA Floodplains will be Mapped:** The new culvert crossing at Flowing Wells Wash is anticipated to reduce flooding on the Flowing Wells Wash and the FEMA Floodplain, which currently shows water ponding behind the railroad track embankment. Therefore, a new floodplain map for this area will be prepared for approval by FEMA.

**Public Involvement:** Stakeholder meetings will be held throughout the duration of the project. In addition, there will be two public meetings

The project timeline shows the phasing of these elements and the current status.

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- **Floodplains of Problem Storms:** More frequent floods, such as the 10- or 25-year flood, can create problems such as flooding of yards and roadways. Therefore, this study will map these more frequent flows so that solutions can be developed for them.

## Evaluating Drainage Alternatives

On June 9, 2015 a group of 25 stakeholders developed a set of rating criteria to evaluate possible drainage alternatives and determined that multi-benefit evaluation criteria would be weighted as follows:

- Public Safety – 30%
- Implementation – 23%
- Environmental Sustainability – 20%
- Economic Vitality – 17%
- Community – 10%

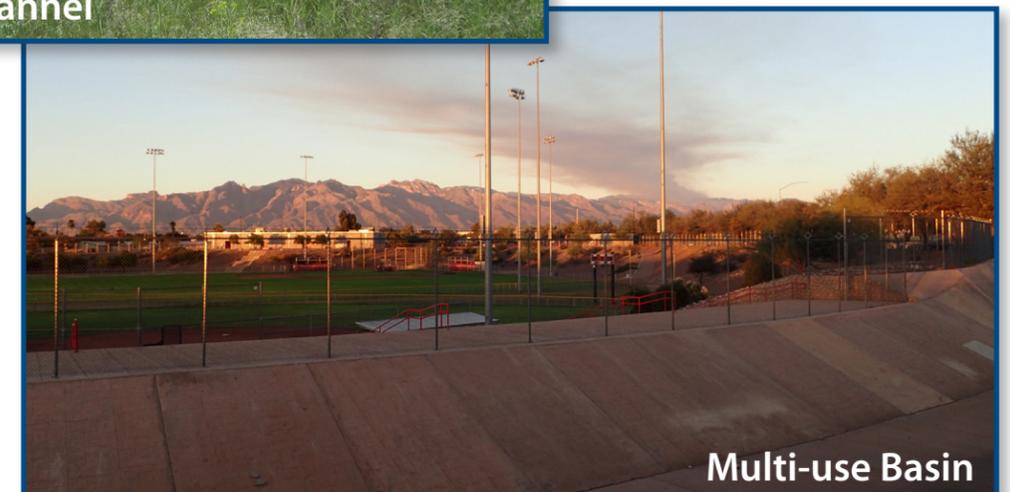
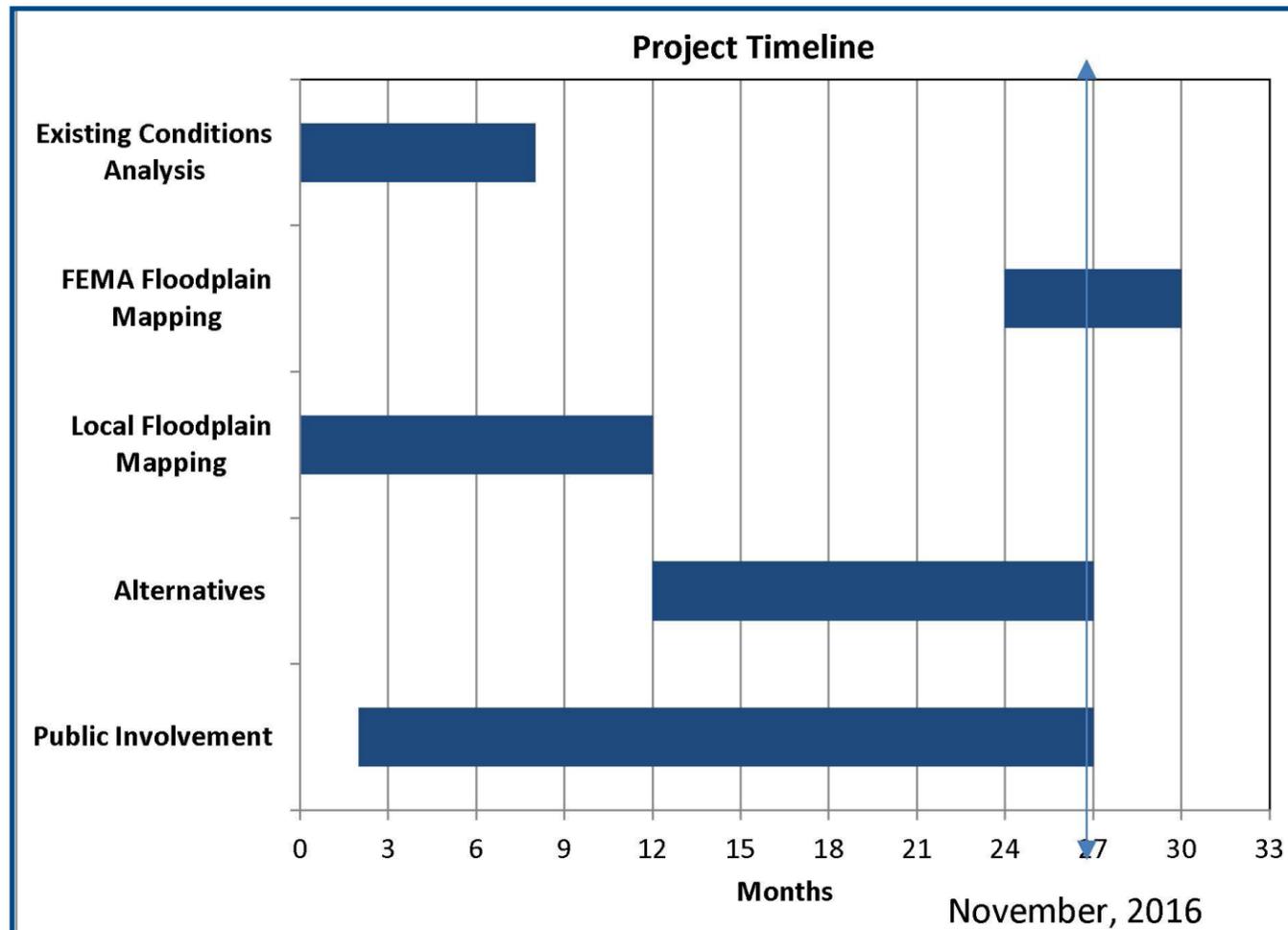
An Alternatives Working Group of 15 stakeholders met in February, 2016 and evaluated nine problem drainage areas on the basin and identified 46 different possible drainage solutions and seven area-wide alternatives for further evaluation by the Ruthrauff Basin Management Plan team.

The Alternatives Working Group met again on July 28, 2016 and suggested that 18 of these

localized drainage alternatives needed to be further evaluated by evaluating these possible alternatives using hydraulic models, estimating preliminary costs, and scored using the evaluation criteria. In general, these alternatives were:

- 1.) Providing improved drainage through the railroad embankment.
- 2.) Slowing water and reducing flood peaks at multi-use basins.
- 3.) Conveying water in drainage channels.
- 4.) Conveying water in stormdrains.
- 5.) Improving roadways to better convey water.
- 6.) Applying practices across the basin that reduce potential for flooding.

These Draft Alternatives will be presented for discussion at an Open House on November 16, 2016.



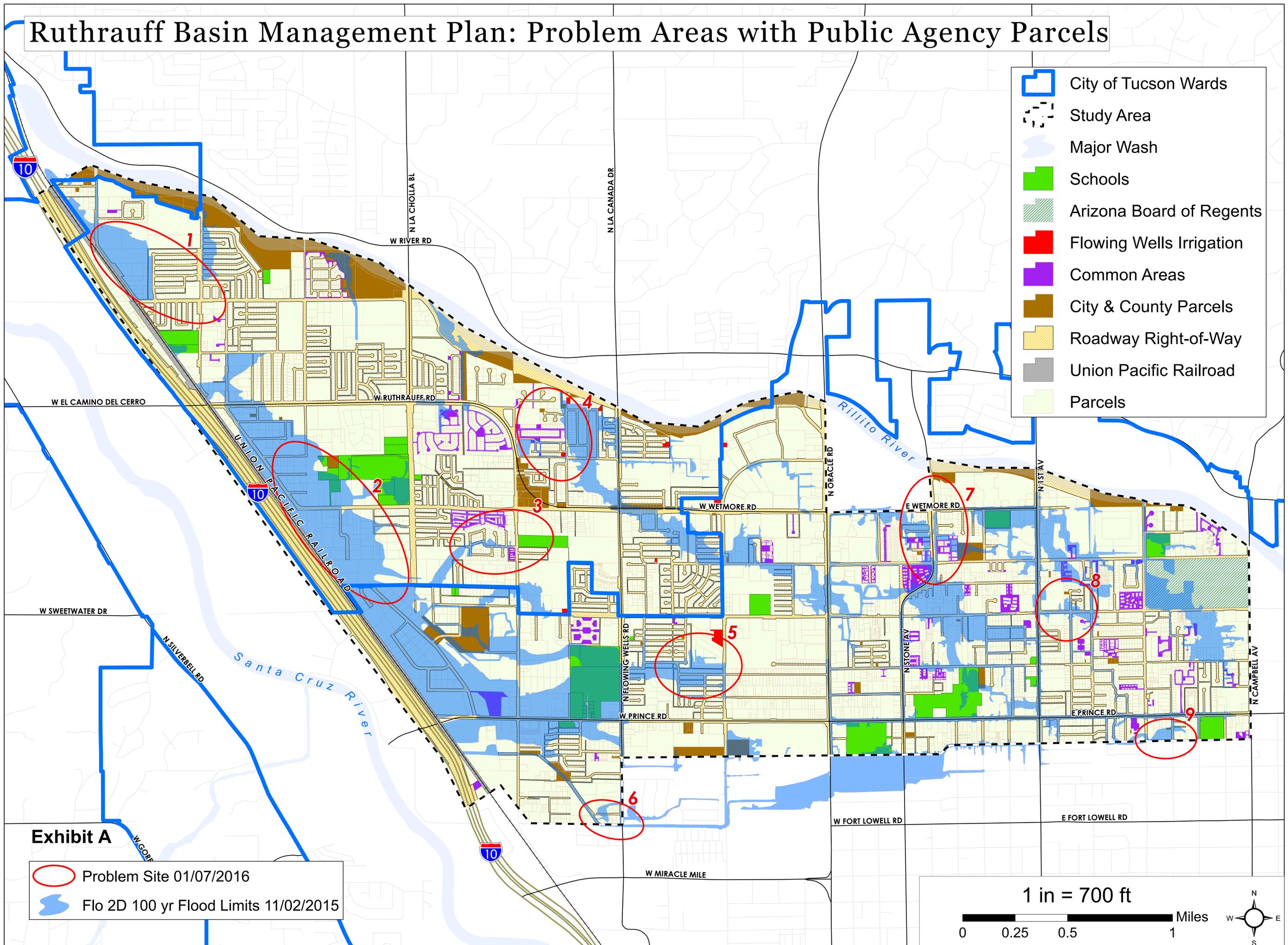
**RUTHRAUFF  
BASIN MANAGEMENT PLAN**

**VOLUME I OF II**

**DRAINAGE IMPROVEMENT PLAN**

**Exhibits**

# Ruthrauff Basin Management Plan: Problem Areas with Public Agency Parcels



# Ruthrauff Basin Management Plan: Problem Area 1 Draft Structural Alternatives

-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels

Earthen Channel  
Length = 2,900 ft.  
Q<sub>max</sub> = 50 to 100 cfs  
Q<sub>cap</sub> ~ 125 cfs  
Tri Shape: 4:1 SS, 3:1 SS  
2.5-ft depth

### Alternative 2

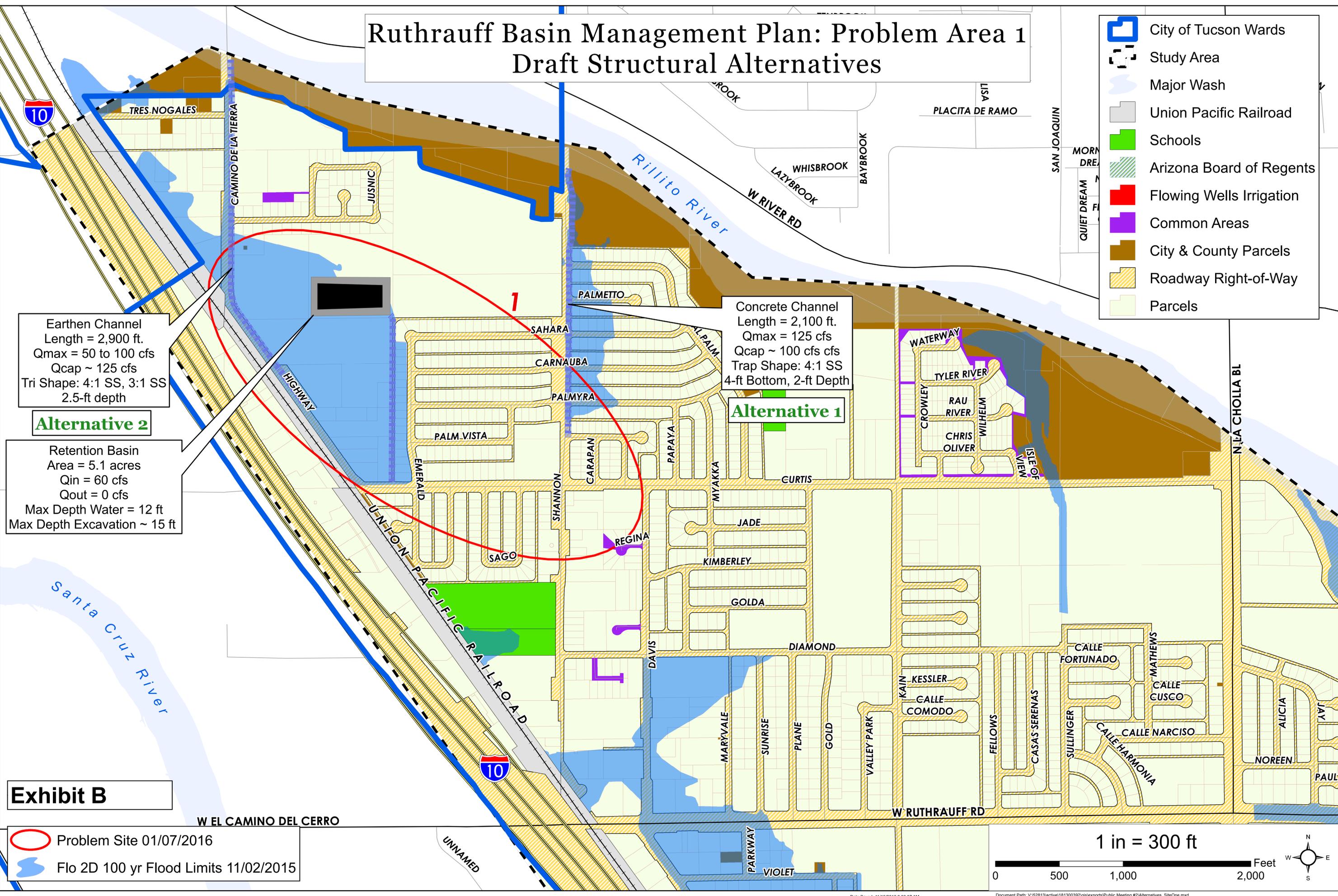
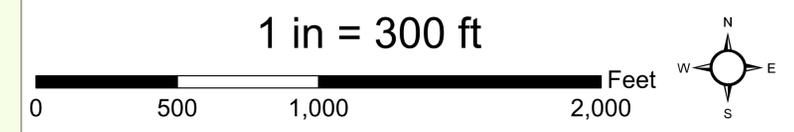
Retention Basin  
Area = 5.1 acres  
Q<sub>in</sub> = 60 cfs  
Q<sub>out</sub> = 0 cfs  
Max Depth Water = 12 ft  
Max Depth Excavation ~ 15 ft

Concrete Channel  
Length = 2,100 ft.  
Q<sub>max</sub> = 125 cfs  
Q<sub>cap</sub> ~ 100 cfs  
Trap Shape: 4:1 SS  
4-ft Bottom, 2-ft Depth

### Alternative 1

## Exhibit B

-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015



# Ruthrauff Basin Management Plan: Problem Area 2

## Draft Structural Alternatives

Channels  
 Length = varies  
 Qmax = varies  
 Shape = varies  
 Max. Depth = varies

**Alternative 2**

Retention Basin  
 Area = 8.8 acres  
 Max Depth Water = 9 ft  
 Max Depth Excavation = 17 ft

**Alternative 6**

Retention Basin & Channel  
 Area = 3.3 acres  
 Max Depth Water = 9 ft  
 Max Depth Excavation = 11 ft

**Alternative 7**

Retention Basin & Channel  
 Area = 12.7 acres  
 Max Depth Water = 7 ft  
 Max Depth Excavation = 13 ft

**Alternative 5**

Retention Basin & Channel  
 Area = 7.1 acres  
 Max Depth Water = 11 ft  
 Max Depth Excavation = 14 ft  
 QCap = 170cfs

**Alternative 4**

Retention Basins (2)  
 Area = 10.6 acres  
 Qin = 451 cfs  
 Qout = 4 cfs  
 Max Depth Water = 19 ft  
 Max Depth Excavation ~ 23 ft

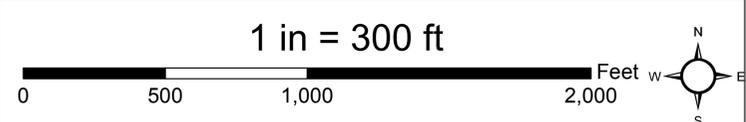
**Alternative 1**

Diversion Channel  
 into Basins  
 Length = 1,300 ft  
 Qmax = 113 cfs  
 Qcap ~ 100 cfs  
 Tri Shape: 3:1 SS  
 2.5 ft depth

-  City of Tucson Wards (WARD\_COT)
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels

-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015

**Exhibit C**



# Ruthrauff Basin Management Plan: Problem Area 3

## Draft Structural Alternatives

-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels

Retention Basin  
 Area = 1.9 acres  
 $Q_{in} = 61$  cfs  
 $Q_{out} = 0$  cfs  
 Max Depth Water = 7 ft  
 Max Depth Excavation ~ 15 ft

### Alternative 1

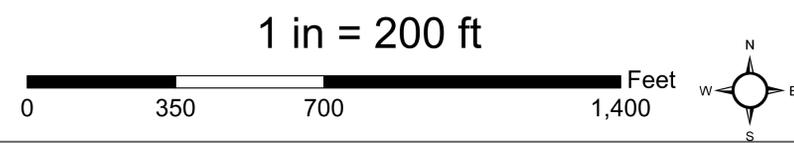
Earthen Channel  
 Length = 1,280 ft  
 $Q_{cap} = 45$  cfs  
 Tri Shape: 4:1 SS  
 2 ft depth

Roadway Reconstruction  
 Length = 1420 ft.  
 $Q_{max} = 61$  cfs  
 $Q_{cap} = 62$  cfs  
 Roadway Shape: inverted  
 0.7 ft depth

### Alternative 1

### Exhibit D

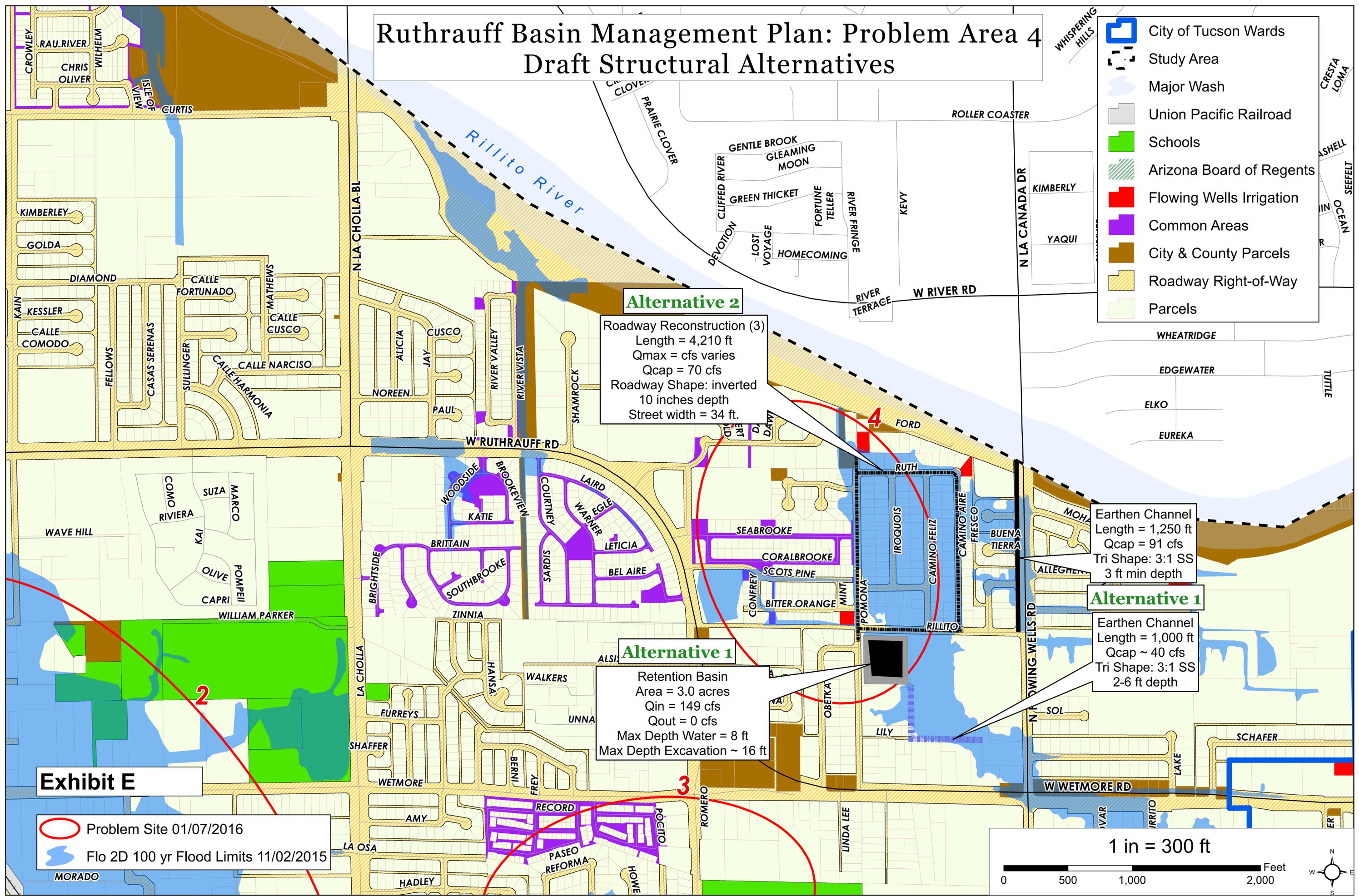
-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015



# Ruthrauff Basin Management Plan: Problem Area 4

## Draft Structural Alternatives

-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels



**Alternative 2**

Roadway Reconstruction (3)  
 Length = 4,210 ft  
 Q<sub>max</sub> = cfs varies  
 Q<sub>cap</sub> = 70 cfs  
 Roadway Shape: inverted  
 10 inches depth  
 Street width = 34 ft.

**Alternative 1**

Retention Basin  
 Area = 3.0 acres  
 Q<sub>in</sub> = 149 cfs  
 Q<sub>out</sub> = 0 cfs  
 Max Depth Water = 8 ft  
 Max Depth Excavation ~ 16 ft

**Alternative 3**

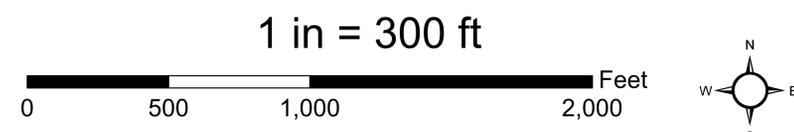
Earthen Channel  
 Length = 1,250 ft  
 Q<sub>cap</sub> = 91 cfs  
 Tri Shape: 3:1 SS  
 3 ft min depth

**Alternative 1**

Earthen Channel  
 Length = 1,000 ft  
 Q<sub>cap</sub> ~ 40 cfs  
 Tri Shape: 3:1 SS  
 2-6 ft depth

**Exhibit E**

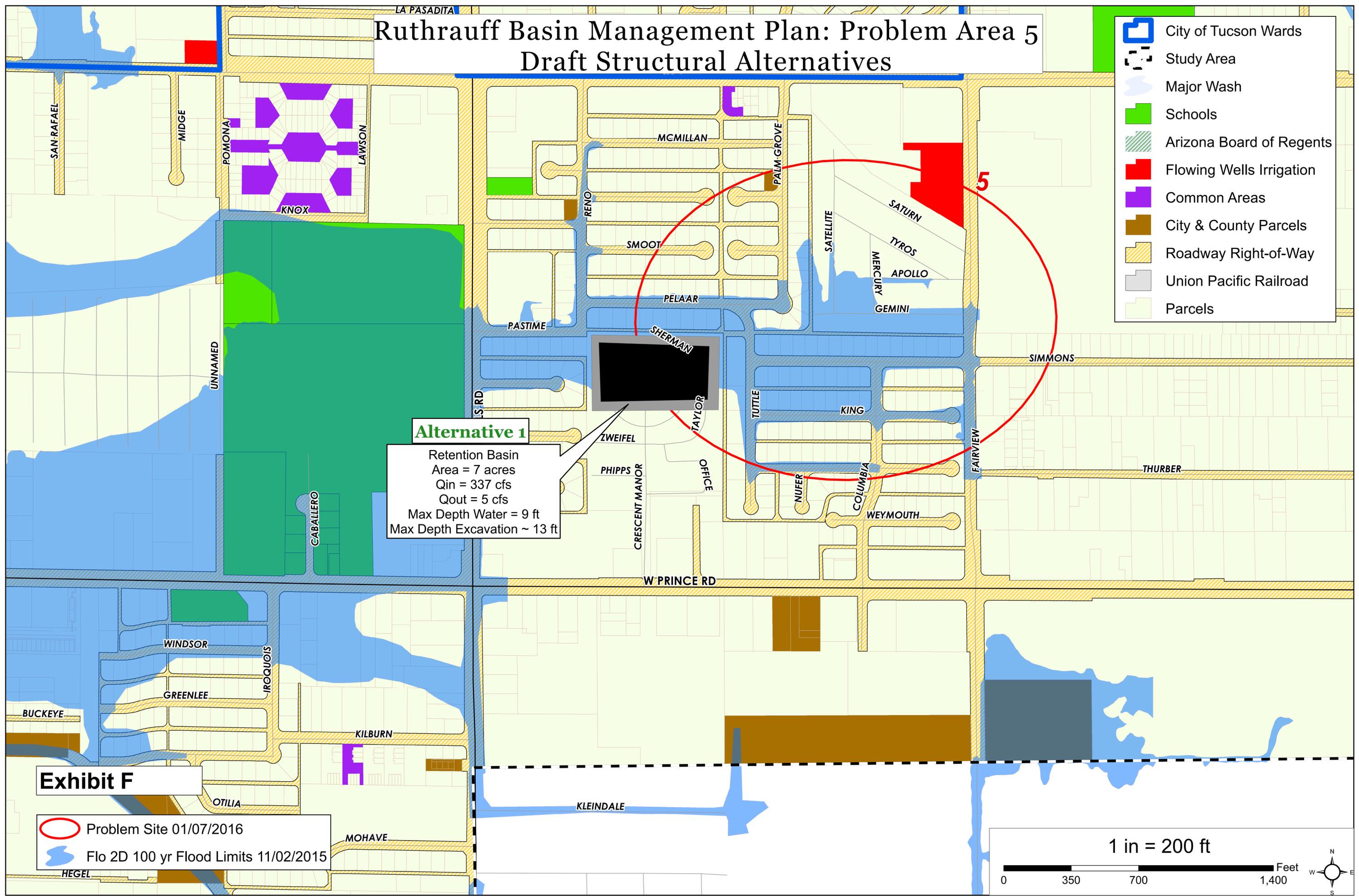
-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015



# Ruthrauff Basin Management Plan: Problem Area 5

## Draft Structural Alternatives

-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Union Pacific Railroad
-  Parcels

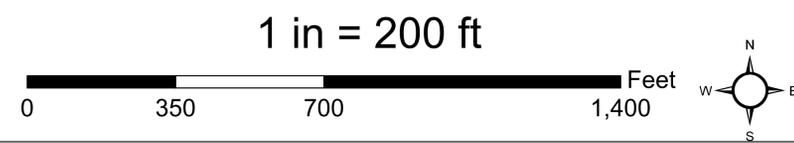


**Alternative 1**

Retention Basin  
 Area = 7 acres  
 $Q_{in} = 337$  cfs  
 $Q_{out} = 5$  cfs  
 Max Depth Water = 9 ft  
 Max Depth Excavation ~ 13 ft

**Exhibit F**

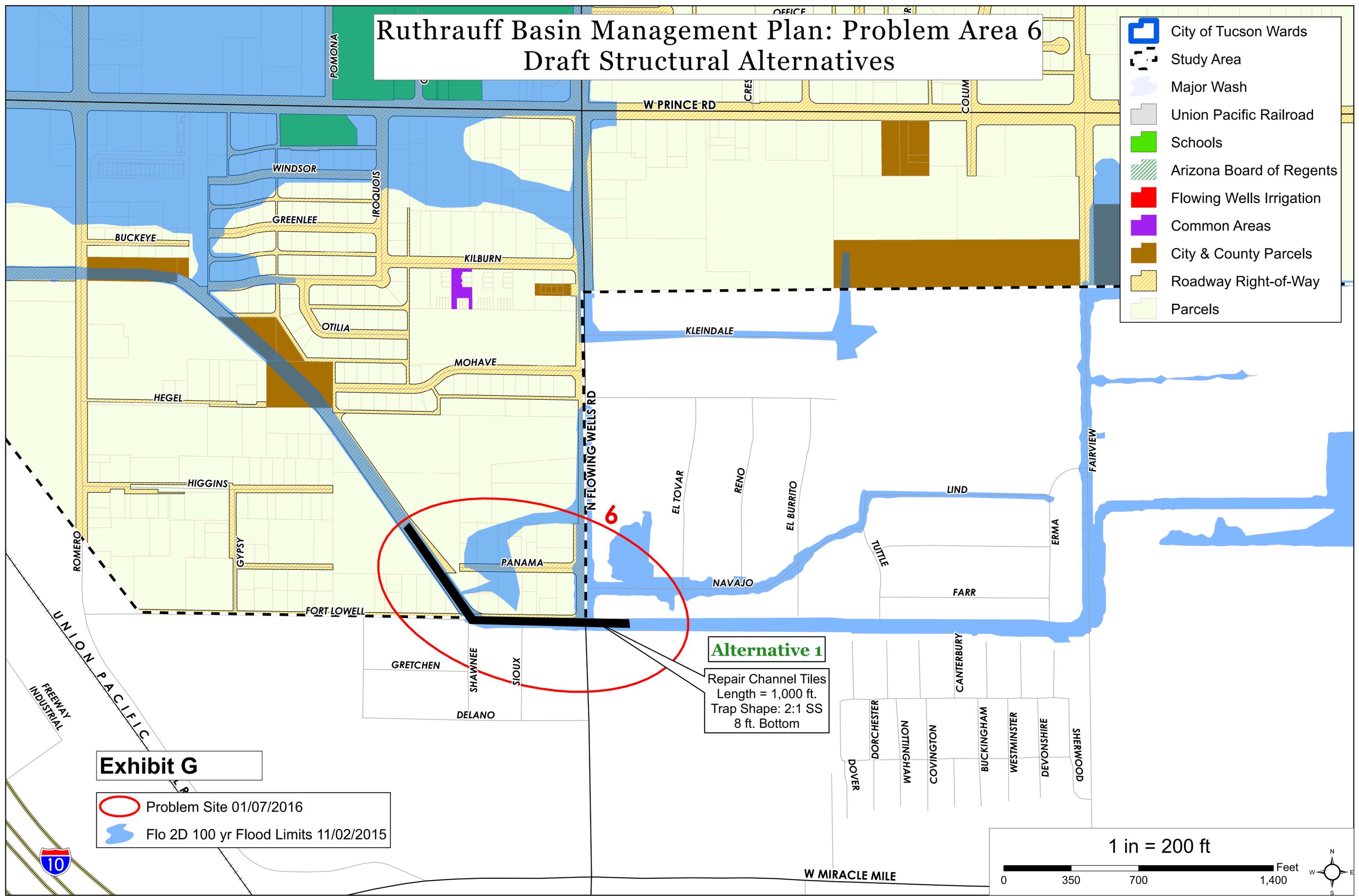
-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015



# Ruthrauff Basin Management Plan: Problem Area 6

## Draft Structural Alternatives

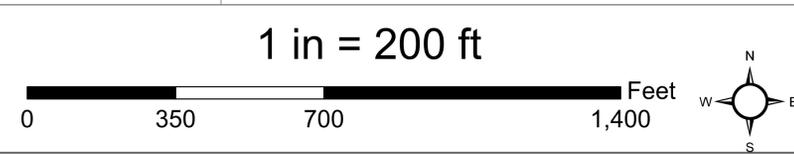
-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels



**Alternative 1**  
 Repair Channel Tiles  
 Length = 1,000 ft.  
 Trap Shape: 2:1 SS  
 8 ft. Bottom

### Exhibit G

-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015

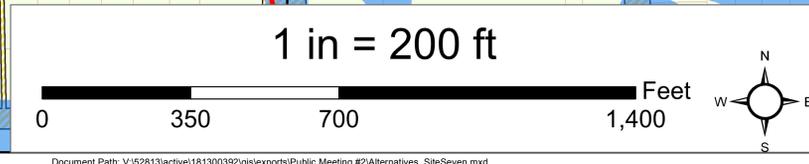
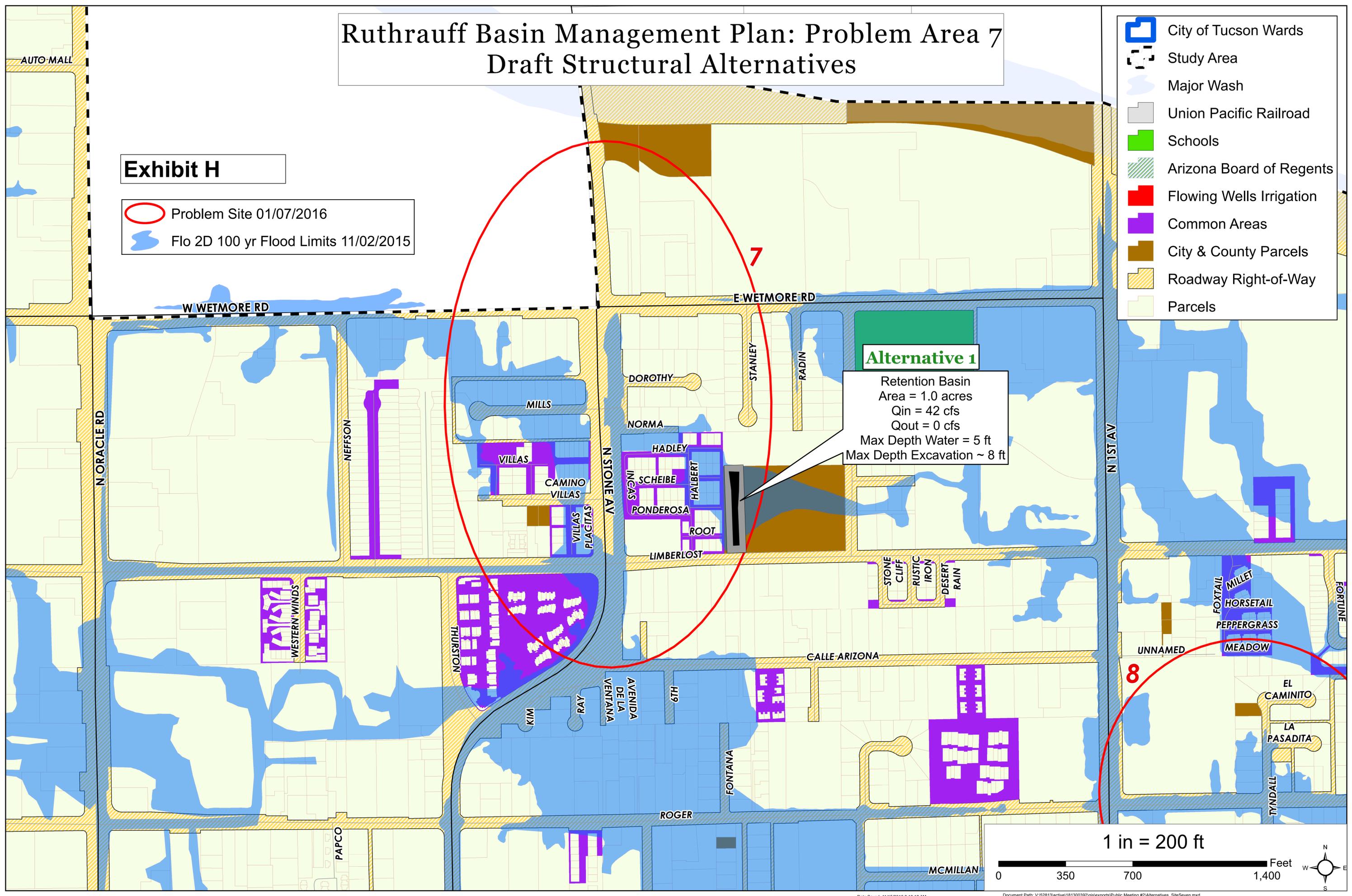


# Ruthrauff Basin Management Plan: Problem Area 7 Draft Structural Alternatives

## Exhibit H

-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015

-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels



# Ruthrauff Basin Management Plan: Problem Area 8 Draft Structural Alternatives

-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels

## Alternative 1

Reconstruction of Intersection of Roger and Tyndall and Catch Basins

## Alternative 2

Six Dry Wells at Intersection of Roger and Tyndall

## Exhibit I

-  Problem Site 01/07/2016
-  Flo 2D 100 yr Flood Limits 11/02/2015

