

**Ruthrauff
Basin Management Plan**

Volume I of II

Drainage Improvement Plan



Prepared for:



**Pima County Regional Flood
Control District**

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Executive Summary

This planning study was undertaken to address flooding and drainage problems in study basin. This basin is about 8 square miles in the area southeast of the confluence of the Santa Cruz and Rillito rivers. Prior to urbanization the area was used for irrigated agriculture, so predevelopment topography was extremely flat. Subsequent development, (most of which occurred prior to the adoption of the National Flood Insurance Program in 1968), neglected drainage so there was no comprehensive drainage plan and little drainage infrastructure. Many of the structures were not elevated, and many of the streets were constructed without curbs to accommodate storm flows. In general, the area suffers from sheet flooding and ponding due to the lack of topographic relief and sufficient drainage outlets under the Union Pacific Railroad and Interstate 10 to the Santa Cruz or Rillito Rivers.

The study was comprehensive in nature and included state of the art two-dimensional flood flow modeling with high quality topographic data which allowed us to see where flood flows were generated, how these flows moved, and where they ponded in this highly complex sheet flood environment. The study included significant community involvement to ensure that ponding and flooding problems were adequately identified and assessed. These state of the art technologies were then used to prepare new and more accurate local regulatory and FEMA floodplain maps.

The study also included an alternatives analysis and remediation recommendations. The alternatives analysis for the study area was used to identify a comprehensive list of both structural and non-structural flood hazard solutions based on the data gathered and evaluated in the project (e.g., drainage complaints, hydraulic analysis, existing and planned improvements...etc.). Objective scoring criteria and cost effectiveness were then considered to rank potential solutions.

The study presents a list of recommended alternatives that can be implemented over time and be used as the framework for reducing flooding and drainage problems in the basin. If approved and adopted by the Pima County Board of Supervisors and City of Tucson

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Mayor and Council, this Basin Management Plan can be used for development of future capital improvement and maintenance plans in the basin.

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Abbreviations

Units

cfs	cubic feet per second
F	degrees Fahrenheit
ft	Feet
in	Inch
lbs	Pounds
mi	Mile
sq.ft.	square feet

Agencies, Firms, misc.

ADOT	Arizona Department of Transportation
FIRM	Flood Insurance Rate Map
FLAP	Floodprone Land Acquisition Program
FEMA	Federal Emergency Management Agency
GI/LID	Green Infrastructure/Low Impact Development
COT	City of Tucson
CBC	Concrete Box Culvert
I-10	Interstate 10
JEF	JE Fuller Hydrology and Geomorphology Inc.
LOMR	Letter of Map Revision
PCRFC	Pima County Regional Flood Control District
RBMP	Ruthrauff Basin Management Plan
RD	Road
Stantec	Stantec Consulting Services Inc.
TSMS	Tucson Stormwater Management Study
UPRR	Union Pacific Railroad
WDG	Wheat Design Group

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1.0 Introduction and Project Scope

1.1 Background and Purpose

The Ruthrauff Basin Management Plan (RBMP) study area includes portions of both the City of Tucson (COT) and unincorporated Pima County east of and adjacent to Interstate 10 and the Union Pacific Railroad (UPRR). The area is subject to frequent and substantial sheet flow and, at numerous locations, the ponding of storm water because of the minimal topographic relief and inadequate drainage structures/systems. Historically, flood flows pond on the east side due to the embankment of the Union Pacific Railroad which is located immediately east of Interstate 10. The flooding in the western COT area was studied previously as part of a basin management plan (Cella Barr, 1981). A lack of adequate drainage from the east of the Union Pacific Railroad line to the Santa Cruz River was highlighted repeatedly as the ultimate source of the flooding problems on the western edge of the study area as highlighted in the reference map in Figure 1.

Some of the recommendations of the 1981 study have been adopted including a storm drain along Ruthrauff Road. However, there are still areas mapped as FEMA (Federal Emergency Management Agency) or local administered floodplains along the UPRR. Flooding in the area between Prince Road and Ruthrauff Road comes from both the Flowing Wells Wash and the Ruthrauff Basin (AECOM, 2011). The Flowing Wells Wash from approximately 500 feet east of the railroad to the railroad does not have capacity for the 100-year event. A portion of the conveyed discharge overtops the channel that conveys Flowing Wells Wash (concrete lined channel) and the overtopped portion proceeds along the railroad to the northwest and combines with runoff from the Ruthrauff Basin.

As part of the ADOT widening of Interstate 10 between Prince Road and Ruthrauff Road (2011-2014), drainage under the freeway was improved but some of the drainage across the UPRR was not. This will eventually require additional outlets for the water during flood events to be conveyed under the railroad tracks and enter the improvements constructed during the Interstate 10 widening which will reduce the potential for ponding against the UPRR. There have been four drainage improvements at the UPRR proposed: at the Flowing Wells Wash, at the west end of Gardner Lane, and west of North Highway Drive between West Zinnia Avenue, due north of Ruthrauff Road, and West Verbena

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Avenue. As of the writing of this report only one, a culvert at Flowing Wells Wash, has been constructed.

In May of 2014, the Pima County Regional Flood Control District (PCRFCDD) contracted with Stantec Consulting Services Inc. (Stantec) to provide a professional consulting engineering team (i.e., Stantec, JE Fuller Hydrology and Geomorphology Inc. and Wheat Design Group) to develop a plan, that: identified flood hazard areas using improved topographic information and new hydraulic modeling techniques (i.e., two dimensional modeling), collected drainage compliant reports, reviewed drainage problems, and identified cost-effective solutions to alleviate or manage flooding in the study area. The plan incorporates all the existing stormdrains constructed along the railroad.

The purpose of the RBMP was to develop a comprehensive flood control protection program and to develop drainage alternatives which will improve public safety, provide fiscal responsibility, and provide a balanced multi-objective approach toward managing the watersheds, floodplains, and resources in the study area. The Ruthrauff basin is developed (e.g., commercial, industrial, residential...etc.) but the basin has been the target of a recent comprehensive plan amendment (Co7-08-01, Res. No. 2009-63), which will allow Pima County to initiate infill incentives along Highway Drive including development of a comprehensive flood control plan.

Once adopted by the Board of Supervisors and the City Council, this plan will provide guidance for development, redevelopment and retrofits in flood prone areas as well as drainage alternatives to further limit the potential for flooding. This study relied on interagency coordination to preserve the hydrologic integrity and storm water conveyance ability of the regional watersheds. The adoption of this study will ensure that the floodplain management regulations will balance competing residential community and private sector interests.

1.2 Project Scope

Stantec performed an existing conditions hydrologic and hydraulic analysis that incorporated recent drainage improvements within the study area, and identified areas of flooding and drainage conflicts. Currently available regulatory discharge values were identified at selected locations for future development and improvements, as applicable and/or for comparison to the hydraulic modeling completed for this basin management

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plan. The results of the analysis concluded that the existing floodplain mapping needed to be re-delineated (see Section 4.0) for a portion of the area.

The project included an alternatives analysis and remediation recommendations. The alternatives analysis for the study area was used to identify flood hazard solutions based on the data gathered (e.g., drainage complaints, hydraulic analysis, existing and planned improvements...etc.) and produced during the project. Remediation methods included both structural and non-structural approaches for mitigating the floodplain conflicts identified during the existing conditions analysis that include ranking by weighted performance criteria and cost effectiveness.

The RBMP included extensive public and stakeholder involvement and required dissemination of information, direct involvement (e.g., public meetings), and comprehensive stakeholder coordination for all elements of the Ruthrauff Basin Management Plan.

As part of the RBMP, Stantec prepared an Implementation and Maintenance Plan (see Volume II of II). This is the plan for moving forward with the funding, scheduling, and construction of the remediation recommendations contained within this report. Residing within the Implementation and Maintenance Plan is a plan for identifying, scheduling, and performing maintenance on existing and proposed drainage infrastructure.

1.3 Study Area

The RBMP study area is a 5440-acre (i.e., 8.5 square miles) urban area in east central Pima County. Approximately 3155 acres, or 58%, of this area falls within Ward 3 of the City of Tucson with the remaining portion of the study area located within unincorporated Pima County. It is bounded on the southern edge by: West Fort Lowell Road between Interstate 10 and North Flowing Wells Road, the Kleindale Road alignment between North Flowing Wells Road and North Estrella Avenue, East Greenlee Road from North Estrella Avenue to North Campbell Avenue. Interstate 10 marks the western edge and North Campbell Avenue comprises the eastern study limit. The northern limit consists of the southern bank of the Rillito River excluding the Tucson Mall property within the northern half of Section 23, Township 13, Range 13 East (see Figure 1).

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The project area is generally located within portions of Sections 8, 15, 16, 17, 21, 23, 24, 25, 26, 27, and 28 of Township 13, Range 13 East and Sections 19 and 30 of Township 13, Range 14 East.

1.4 Approximate Cost

The scope of this project included only preliminary design (15%) plans and therefore engineering costs are highly estimated. However, estimates of the cost of construction for the recommended alternatives (i.e., structural methods) were developed during the prioritization phase for the purposes of priority ranking (see Section 5.2). These estimates include an estimate of cost for construction only and do not include costs related to: design, construction administration, contingency, property acquisition, agency permitting/coordination nor environmental related expenses. It is recommended that a more comprehensive analysis of all costs related to the execution of construction for the individual alternatives be evaluated during a future project(s) as described in the Implementation Plan (see Volume II of II).

1.5 Construction Schedule and Duration

Given their conceptual nature and the need to allocate funding there is no set construction start date set for the recommendations resulting from this project. Additionally, until funding is established for any or all the recommended alternatives and all final plans, specifications, and opinions of the costs of construction are completed the duration of any of the proposed improvements cannot be accurately estimated.

1.6 Project Disclaimer

The author of this document has taken all necessary steps and included various assumptions that could be reasonably used without detailed discussions and/or review periods that would normally be undertaken with all necessary State and/or Federal agencies for a federally programmed project or one that requires direct coordination with all necessary State, Federal or other local agencies and/or utility owners. This document was prepared using current approaches, methodology, computations and standards of care and practice; however, the author cannot guarantee that such may be the same at a future date when funding has been established or when the final design phase

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commences. Therefore, at a future date this document may need to be reviewed and revised as necessary to comply with all applicable criteria at that time.

All recommendations provided within this report will require complete engineering design and other related services/efforts and approval by all appropriate agencies prior to any construction activities. This document does not serve as project approval.

Information provided to Stantec by the PCRFCFCD is considered appropriate for use within the nature of this study (i.e., conceptual) but will need to be reviewed and revised as necessary prior to use within any subsequent design phases.

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Figure 1 – Project Map with Jurisdictions

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2.0 Existing Conditions

The data for the analysis of the existing conditions within the Ruthrauff Basin was collected from: the PCRFCO, the COT, the Arizona Department of Transportation (ADOT), the UPRR, and other sources. The pertinent data was used to complete the hydrologic and hydraulic modeling and facilitate the analysis of structural alternatives. This information was gleaned from, but not limited to: as-built plans, existing reports/data, land use plans, city and county reports, geotechnical data, and spatial data (see Appendix B).

Additionally, there was a site visit conducted by the project team on July 10, 2014 with representatives from: Stantec, JE Fuller Hydrology and Geomorphology Inc. (JEF), PCRFCO, COT, and Wheat Design Group (WDG). JEF and WDG served as sub-consultants to Stantec during project as did the Gordley Group (stakeholder involvement task only). This field work allowed the team to understand the drainage problems more fully, identify additional data needs, and initiate discussions relative to potential alternative mitigation methods for future consideration. Photographs and observations were used to document the 14 problem sites that were visited (see Appendix B.1.9).

2.1 Flooding and Drainage Problems within the Study Area

The 14 problem sites (i.e., isolated or individual locations) that were visited by the project team were identified from a list of 13 problem areas (i.e., regional or sub-regional locations) where existing chronic flooding and/or ponding problems were identified (see Appendix B.2). These problem areas were recognized by reviewing drainage complaints provided to Stantec by the County and the City (see Appendix B.1.10) as well as interviews conducted with PCRFCO and COT maintenance and floodplain management personnel. The drainage complaints, approximately 5,000 of them, were compiled from records obtained from the PCRFCO, the COT, and ADOT over the span of last 20 years. The complaints that had been resolved by improvements or were not located within the designated RBMP study area were removed from further consideration. The remaining complaints were plotted on a map (see Figure B.2) and used to identify areas of chronic flooding (i.e., frequent flooding and/or potential for high depth of the flow) and/or

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drainage issues. On October 23, 2014 a stakeholders meeting was held where businesses and neighborhood organizations helped to confirm the existence of those drainage problems and further define the areas of interest (see Section 6.0). In addition, an open house was held on December 14, 2014 to inform the public (i.e., homeowners, home owner associations...etc.) of the purpose of the project and receive feedback concerning ongoing drainage issues in the RBMP study area (see Section 6.0). During these outreach efforts the public was encouraged to fill out comment forms which were used to confirm the ongoing drainage issues (see Appendix F.1), identify any new concerns, isolate the most significant problem areas, and begin a discussion of possible alternatives.

Additionally, following a request for the drainage complaints recorded in the study area, ADOT staff indicated that the existing concrete barricades at the West Ruthrauff Road underpass do not allow runoff to exit the roadway. The existence and locations of these drainage problems were further verified by members of the public during two separate outreach meetings; a stakeholders meeting on October 23, 2014 (see Section 6.2) and an open house meeting held on December 14, 2014 (see Section 6.1).

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3.0 Hydraulic Analyses and Floodplain Delineation

A hydrology and hydraulic analysis was completed by JE Fuller Hydrology and Geomorphology Inc. (JEF) to establish a current baseline model for the existing conditions and to compare local floodplain limits within the RBMP study area with effective information. Both analyses (i.e., hydrologic and hydraulic) were performed using the computer program FLO-2D PRO using input parameters based on PCRFCO Technical Policy 033, with some site specific considerations. The model was developed on a 15-ft grid which allowed flow from impervious surfaces like rooftops and roadways to be shown in detail. These models required the use of such parameters as rainfall, topography, soil, vegetation, land use characteristics and runoff coefficients to determine excess runoff volume totals and flood depths. The models were validated by comparing with a HEC-1 model (see Appendix C) because gauge data was not available for the study area.

The analysis included the 10-, 25-, and 100-year recurrence events, with a 3-hour rainfall duration. Resulting flood depths as well as the 100-year discharges and velocities for existing conditions within RBMP study area are included within the *Ruthrauff Basin Management Plan Technical Data Notebook for Hydrologic Analysis & Floodplain Mapping* (see Appendix C). The computer models prepared and the resulting maps (e.g., flood depths and limits) produced within the referenced report were used by the project team to consider the new floodplain limits, assess potential problem areas, and initiate discussions for remediation. In the alternatives phase these models were modified to analyze the effectiveness of the structural alternatives' ability to reduce flooding and resolve noted drainage issues.

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4.0 FEMA Floodplain Map Revision

In November of 2016, JEF, acting as a sub-consultant to Stantec as a part of the RBMP, submitted a Letter of Map Revision (LOMR) to the Federal Emergency Management Agency (FEMA) for the Flowing Wells Wash and Runway Drive Area (Case No. 17-09-0333P). The purpose of the LOMR is to revise the 1988 Flood Insurance Rate Maps (FIRM) for Panel Numbers 04019C1667L, and 04019C1669L based on structural drainage improvements and better hydraulic modeling method(s). The study was performed in accordance with FEMA Guidelines; HEC-RAS version 4.1 was used to model the hydraulics of the Flowing Wells Wash and FLO2D which has been approved for modeling in Pima County, was used to perform the hydraulic and hydrologic analysis for the Runway Drive area. The full results of the LOMR submittal document including the annotated FEMA panels can be viewed in the *Technical Data Notebook: Letter of Map Revision for Flowing Wells Wash & Runway Drive Area* (see Appendix D). At the time of this report the LOMR is still under review by FEMA.

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5.0 Alternatives Analysis and Remediation Recommendations

The data collected within the RBMP study area included previous studies, previous and new computer hydraulic and hydrologic modeling, and input from the public outreach efforts, that were used to determine areas of flooding as well as nuisance ponding and other drainage issues (e.g., connectivity, diversions, capacity...etc.). This information was used to identify the top nine individual problem areas (see Table 1) of chronic drainage issues and evaluate remediation alternatives, both structural and non-structural, for each of them. In addition, basin-wide alternatives that would be effective in reducing the drainage problems within the Ruthrauff Basin were also developed. All the alternatives were then subjected to a prioritization scoring process. Out of this process a total of 18 recommended remediation alternatives, both structural and non-structural, resulted from the nine identified problem areas as well as seven basin-wide recommendations. The Recommended Alternatives Report (see Appendix E) details this development.

5.1 Alternatives Development Process

The development of the alternatives began with evaluation of a review of reported drainage complaints (see Section 2.0) in conjunction with analysis of the existing drainage conditions within the RBMP study area (see Section 3.0).

The result of these efforts was the identification of nine problem areas, within the overall study area, of recurring or chronic issues where structural and non-structural alternatives were of the greatest need. These areas were mapped based on the relative density (i.e., number in a given area) of complaints, both ponding and uncategorized. Table 1 lists these nine problem areas along with the general problem statement of each area, and a description of area's boundary.

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Table 1 – Alternative Development Problem Areas

Problem Area No.	Existing Problem Statement	Problem Area Boundary*
1	Ponding and flooding issues in low lying areas.	West Curtis Road [S] North Highway Drive and North Camino de la Tierra [W] North Shannon Road [E] Rillito River [N]
2	Poor drainage and ponding issues.	West Gardner Lane [S] UPRR [W] Varies: North la Cholla Boulevard, North Plum Avenue and North Kain Avenue [E] Ruthrauff Road [N]
3	Drainage and ponding issues with houses at grade and unimproved streets.	West Gardner Lane [S] North la Cholla Boulevard [W] Romero Road [E] West Wetmore Road [N]
4	Street flooding and property erosion along Pomona Avenue.	West Wetmore Road [S] Ruthrauff Road [W] North Flowing Wells Road [E] Rillito River [N]
5	Ponding issues in the neighborhood east and north of Pelaar Street.	West Prince Road [S] North Flowing Wells Road [W] North Fairview Avenue [E] West Roger Road [N]
6	Flooding issues because of existing culvert frequently blocked with debris.	General area surrounding the intersection of: West Fort Lowell Road and North Flowing Wells Road
7	Ponding and lot drainage problems.	West Roger Road [S] North Stone Avenue [W] North 4 th Avenue [E] West Wetmore Road [N]

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Problem Area No.	Existing Problem Statement	Problem Area Boundary*
8	Ponding issues caused by blocked existing drainage structures.	General area surrounding the intersection of: West Roger Road at North Tyndall Avenue
9	Erosion problems and nuisance ponding in Richland Heights neighborhood (un-paved roads).	East Kleindale Road [S] North Mountain Avenue [W] North Martin Ave [E] East Prince Road [N]

*the definition of “boundary” for this project may include area(s) adjacent to the limits shown for each problem area.

With the selection of the most urgent problem areas completed, the development of the alternatives best suited for these areas began. The alternatives selection process relied heavily on stakeholder outreach. On February 8, 2016 a workgroup meeting was convened that involved project team members and stakeholders from the county, city, and neighborhood organizations (see Section 6.4.2). The members of this workgroup were broken up into two teams with a facilitator and a “seedlist” for brainstorming viable ideas for alternatives in each problem area as well as for the RBMP study area termed as “basin-wide alternatives”. This process resulted in two comprehensive lists of alternatives to be considered which the project team, in consultation with PCRFC, combined into a single list, by area, of 31 possible alternatives (see Appendix E).

The ideas that came out of the February workgroup meeting were first classified as structural or non-structural alternatives and developed accordingly. The structural alternatives included channels, detention/retention basins, storm drains, and roadway improvements and were all designed using calculations based on the information developed for the existing conditions within the basin (see Section 2.0). In general, these alternatives are:

- 1) Providing drainage through the railroad embankment.
- 2) Slowing water and reducing flood peaks at multi-use basins.
- 3) Conveying water in drainage channels.

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- 4) Conveying water in stormdrains.
- 5) Improving roadways to better convey water.
- 6) Applying practices across the basin that reduce potential for flooding.

Of the original 31 possible alternatives, six are non-structural methods and were classified as area-specific or area-wide and researched on that basis. The result of the alternatives development process, both structural and non-structural, were documented in a memorandum that became the basis for the alternatives analysis phase of the project.

5.2 Alternatives Analysis

The alternatives analysis phase began with a workgroup of 25 stakeholders meeting on June 9, 2015 to establish “Performance Criteria” to rank the various remediation recommendations to come out of the alternatives development process (see Section 6.4.1). The criteria were chosen in coordination with the PCRFCDD as well as the area stakeholders and were weighted to reflect their degree of relevance and resulted in five Performance Criteria which are defined in Table 2.

Table 2 – Performance Criteria Definitions and Weighting

Performance Criteria	Definition	Weighting*
Public Safety	Minimizes risk to the public and improves public access and usage with minimal maintenance	30%
Implementation	Minimize complexity of required agreements, optimize stakeholders' support, ensure compatibility with other agency programs, minimize complexity of regulatory compliance, and optimize timing & phasing	23%

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Economic Vitality	Consistency with goals of PAG Vitality Advisory Committee and the City of Tucson Office of Economic Initiatives.	17%
Performance Criteria	Definition	Weighting*
Community	Compatibility with known community or neighborhood historic values, goals, social interactions, health and well-being, and the beneficial and multi-functional use of land	10%
Environmental Sustainability	Preserve, protect, and enhance the land and water while promoting conservation, multi-mode transportation, and minimizing the heat island effect.	20%

* Out of a total score of 100%

The five weighted Performance Criteria were chosen to rank the recommended alternatives. Individually these Performance Criteria were to be evaluated according to between five and eleven weighted “Specific Criteria” and scored using detailed scoring descriptions (see Appendix E). The scoring of the criteria, both performance and specific, were based upon the evaluation of a scoring matrix (see Appendix E). The initial ranking (i.e., order of priority) of both the recommended structural (see Section 5.2.1) and non-structural (see Section 5.2.2) alternatives would rely upon these criteria. After the initial ranking an opinion of the cost of construction was developed for each the alternatives, not including the area-wide alternatives, and the resulting costs were used to develop a final ranking.

A comprehensive cost/benefit analysis was not performed as part of this study.

5.2.1 Structural Alternatives Analysis

The structural alternatives were analyzed in several steps. The first step involved conducting a fatal flaw analysis using hydraulic calculations. This eliminated several

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storm drains options (e.g., considering a new storm drain system when the existing downstream system has no additional capacity) and potential roadway improvements (e.g., curb and gutter at a location that would likely increase the potential for adjacent flooding). The remaining alternatives were then hydraulically modeled to determine their effectiveness on the extent and depth of flooding identified during the existing conditions analysis (see Section 2.0). For several of the alternatives, only the performance of the alternative, during the 10-year event, was considered as evaluation of a given alternative during the 100-year was deemed impracticable based on engineering judgement and regional experience. The resulting maps (i.e., depth grid comparison of pre-improvement versus post-improvement conditions) can be found in Appendix E.

5.2.2 Non-Structural Alternatives Analysis

The first step in the analysis of the non-structural alternatives was to apply them to the areas where they were needed the most. In doing this it was determined that all but one of them, the Floodprone Land Acquisition Program (FLAP), could be applied to the entirety of the RBMP study area. The FLAP program was particularly suited to the largely commercial zone as is noted in the Recommended Alternatives Report (see Appendix E). Additionally, a maintenance plan, though considered a basin wide alternative, was deemed so crucial that warranted its own section in the RBMP Implementation Plan (see Volume II). Documentation related to the other area-wide non-structural alternatives can be viewed in Appendix E.

5.2.3 Alternatives Analysis Findings

Stantec developed a detailed description of each alternative including: estimate of capacity, area requirements, resulting depth(s) of flow, connectivity, and land acquisition...etc. and the findings of these report are included within the Recommended Alternatives Report (see Appendix E).

5.3 Recommended Remediation Alternatives

Based on review of the findings for each alternative evaluated by Stantec in consultation with PCRFC and during several subsequent stakeholder meetings a list of the recommended alternatives was developed. This list represents the alternatives that were

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deemed most practicable for each noted problem area and included some combinations of several of the individual alternatives as explained in Section 5.2.1.

The recommended alternatives, including structural and non-structural, are summarized in the following table. A more comprehensive table, including: additional alternative details, performance and specific criteria scoring, rank based on scoring alone, and cost data in included within Appendix E. An overall rank each of problem area and the recommended alternative is shown within Table 3. Table 4 documents the ranking of the basin wide alternatives.

Table 3 – Recommended Structural Alternatives

Problem Area No.	Alternative	Overall Rank (Priority)
1	Shannon Road – drainage channel east side of road to the Rillito River.	13
1	Camino de la Tierra - drainage channel on east side of road to the Rillito River with a retention basin and diversion channel system located to the north and east of Highway Drive.	10
2	Construct retention/detention basin at the site of the old airport runway	16
2	Channel system/network immediately east of I-10 between Gardner Lane and Ruthrauff Road	5
2	FLAP/Consolidate parcels for future private owner - Improvement District/Infill Development Incentives	7
2	Retention basin and diversion channel system – along/near Paradise Lane	12
2	Retention basin just south of Wetmore Road	17
2	Retention basin just west of Highway Drive	9

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Problem Area No.	Alternative	Overall Rank (Priority)
2	Retention basin and diversion channel at the east end of Verbena Avenue	14
3	Retention basin/roadway -- west of Romero Road: improve Root Lane with inverted crown cross section and install curb/gutter for additional conveyance to proposed retention basin at west end of Root Lane along with channel/outlet system	1
4	Retention basin and channel -- South of Rillito Street in conjunction with drainage channel on the west side of Flowing Wells to the Rillito River	2
4	Roadway/channel -- Inverted crown roadways, curb/gutter along: Pomona, Rillito, Ruth and Camino Aire Fresca (streets)	14
5	Retention basin - South of Pelaar Street	8
6	Repair channel tiles along Flowing Wells Wash	11
7	Retention basin – western edge of Don Hummel Park	2
8	Reconstruction - Intersection of Roger Road & Tyndall Avenue	4
8	Dry wells – install near intersection of Roger Road and Tyndall Avenue	6
9	Road Improvements - Greenlee Road, Vine Avenue, Kleindale Road, Cherry Avenue, Martin Avenue...etc.	18

*an exhibit was not prepared for this problem area as result of discussions with PCRFC

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Table 4 – Recommended Non-Structural Alternatives

Area-Wide Alternative	Overall Rank (Priority)
Declare entire project area a critical basin (i.e. new development to reduce flows below predevelopment levels)	2
Regular maintenance and solutions regarding agency and residents' cleaning vegetation from channels and enforcing vegetation removal in channels crossing private land	5
Infill incentives	3
Public information/education/outreach campaign -- possibly in utility bills (Tucson Clean and Beautiful)	1
GI/LID	4
Dry wells	6
Floodproofing	7

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6.0 Outreach

Public engagement was a crucial element of this project. Engagement included:

- Individual stakeholder meetings held with key agencies.
- Meetings with community leaders.
- Public Open House meetings were held at critical project milestones of the project to both inform the public of the project's goals and progress as well as to obtain citizen feedback on the projects' objectives and obtain witnessed events of flooding and/or drainage issues and concerns.
- Workgroup sessions used to assemble and evaluate alternatives (both structural and non-structural) considered within this project.
- Periodic project updates.
- A project website.

The following sections contain additional information regarding the type of and information collected and disseminated at each outreach effort.

6.1 Public Open House Meetings

Two public open house meetings were held for the RBMP project at key milestones. The first meeting was held during on December 14, 2014 during the initial phase of the project (i.e., data collection period) to explain to the public the project's goal and objective and to gather feedback on drainage issues in this region. The second meeting was held on November 16, 2016 to present to the public the preliminary findings of the project.

A detailed report of both public meetings was prepared for this task and is included within Appendix F.4 and includes all citizen comment feedback forms collected.

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6.2 Stakeholder Involvement

The primary intent of the stakeholders' meetings was for informational purposes. Stakeholder involvement for this project included two presentations: the first held on July 23, 2014 to all public sector stakeholders (e.g., PCRFD, Stantec, COT, ADOT, Pima County...etc.) and the second was held on October 23, 2014 and was open to all stakeholders (e.g., citizens, homeowner associations, school districts...etc.).

6.2.1 Stakeholder Meeting 1: July 24, 2014

This was the first stakeholder meeting for the RBMP. The purpose of this session was to familiarize the local government stakeholders with purpose, tasks, deliverables, and schedule of the project. The format for the meeting was an informational presentation followed by a discussion. The agenda and meeting summary for this stakeholder meeting are included within Appendix F.1.

6.2.2 Stakeholder Meeting 2: October 23, 2014

This was the second and final stakeholder meeting. The attendees of this meeting were stakeholders from school districts, utilities, and community organizations with the purpose of dispensing information about the RBMP and receiving input from them. The agenda, meeting summary, and relevant documents for this stakeholder meeting are included within Appendix F.2.

6.3 Project Website

A project website detailing the elements, description, and the location of the Ruthrauff BMP has been produced and maintained by PCRFD. Additional information available on the website includes periodic project updates as well as public involvement to date and completed project reports.

6.4 Project Updates

PCRFD has periodically released project updates to inform the public of the project progress to date. There have been 4 updates:

- October 2014

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- December 2014
- November 2015
- November 2016

These project updates and their contents are documented in Appendix F.4.

6.5 Workgroups

In contrast to the stakeholder meetings, the workgroups primary purpose was direct interaction and collaboration of stakeholders with the project team for improving aspects of the RBMP. Workgroup meetings were held frequently to develop potential alternatives to address flood and/or drainage problems within each critical area (see Section 5.1) and to develop performance and specific criteria (see Section 5.2) used to score each potential alternative.

6.5.1 Workgroup 1: June 6, 2015

This objective of this meeting, as described in Section 5.2, was to build a scoring system for ranking the recommended alternatives. The agenda, meeting summary, and related documents for this workgroup meeting are included within the Recommended Alternatives Report (see Appendix E).

6.5.2 Workgroup 2: February 8, 2016

The second of the workgroup meetings involved producing a comprehensive list of alternatives to consider for the RBMP (see Section 5.1). The agenda, meeting summary, and related documents for this workgroup meeting are included within the Recommended Alternatives Report (see Appendix E).

6.5.3 Workgroup 3: August 31, 2016

This was the last of the workgroup meetings after all the alternatives analysis and scoring had been performed. It was intended to inform the stakeholders from government and the neighborhoods of what the recommended remediation alternatives were and how they

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ranked per cost and criteria. The agenda and meeting summary for this workgroup meeting are included within the Recommended Alternative report (see Appendix E).

Appendix A – References

Report on the Existing 100-year Flooding Conditions within the Gardner Lane Area: City of Tucson Contract No. 0401-81, Cella Barr Associates; November 10, 1981

Hydrologic Investigation for Gardner Lane Area: City of Tucson Contract No. 0401-81, Cella Barr Associates; June 3, 1981

Alternative Design Schemes for the Gardner Lane Area: City of Tucson Contract No. 0401-81, Cella Barr Associates; June 16, 1981

I-10 mainline Reconstruction Casa Grande – Tucson Highway (I-10) Ruthrauff to Prince Road Final Drainage Report: ADOT Project No. 010 PM 252 H6241 01C, AECOM; April 2011

Hydraulic analysis program (two dimensional modeling), FLO-2D, Pro Version (FLO-2D Software Inc., Post Office Box 66, Nutrioso, Arizona.

Hydraulic analysis program (one dimensional river analysis), HEC-RAS, version 4.1 (Hydrologic Engineering Center, 609 Second Street Davis, California, January 2010).

Hydrologic analysis program, HEC-1 (Hydrologic Engineering Center, USACOE, June 1998)

Criteria for Two-Dimensional Modeling, Technical Policy, Tech-033, Pima County Regional Flood Control District; August 1, 2013

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Comprehensive Plan Update, Pima Prospers, Planning and Zoning Commission Public Hearing Draft, The Pima County Planning and Zoning Commission, File Number C07-13-10, Resolution No. 2009-63; March 25, 2015

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Appendix B – Existing Conditions Data Sets

This appendix includes a list of data sources used in this report for identifying the existing drainage conditions and identifying problem areas within the RBMP study area. The accompanying photographs of record for the Site Visit (Appendix B.1.9) and the Existing Conditions field photographs (Appendix B.1.8) are included in only in digital form. The spatial files (Appendix B.1.6), including GIS and inlet tables, also accompany this report in digital form only.

B.1 Data Collection Summary

B.1.1 Plans and As-Built Drawings

A list of plans collected for the RBMP are listed in Table B.1.

Table B.1 – Plans and As-Built Drawings

Plan No.	Description	Date
010-D(013)N	I-10 Mainline Ruthrauff Rd to Prince Rd.	3/2011
40SCHL	Homer Davis School Improvements (R-811)	8/10/1979
4BRAUF	La Cholla Boulevard & Sullinger Ave. Storm Drains (4BRAUF)	9/1987
4BRAUF	Ruthrauff Rd I-10 to La Cholla Blvd (4BRAUF)	2/1986
4BRCFR	Roger RD-Romero Road Intersection Improvements	4/4/1983
4FRIVR	Rillito River Bank Protection	6/1995
4FSULL	Sullinger Ave. Storm Drain Outfall Channel Repairs	11/06/2007
4LCITR	La Cholla Blvd - Ruthrauff Road to River Rd	12/2011
4LEMSI	Laguna Elementary School Pedestrian Enhancement Project	4/30/2012
4TOLAY	Wetmore Road Overlay - LA Cholla Blvd to Romero Rd	5/23/1996
4TWETM	Ruthrauff Rd/Wetmore Rd - La Cholla Blvd to Fairview Ave. (WO 4TWETM)	6/05/2003
5FVLII	Fairview Ave. Box Culvert Extension (5FVLII)	11/15/2002
A0001	Rillito Street, Camino Aire Fresco Paving Improvements	2/14/1978
D-2003-003 (5FVLII)	Fairview Ave Box Culvert Extension	11/15/2002
D-2003-007	Calle Arizona at 14 th Avenue Drainage Improvements	12/11/2007

Table B.1 – Plans and As-Built Drawings

Plan No.	Description	Date
D-2006-001	Storm Drain Modification Plans for Tucson Mall Oil Stop	6/2007
D66-006	Grading Plan for Flowing Wells Rd & Romero Road North of Prince	1/1961
D-76-001	Mountain Ave Storm Drain, Hedrick Drive to Rillito River	5/11/1977
D-81-003	On-Site Storm Sewer for Stonybrook Apts.	2/16/1982
D-83-006	Flowing Wells Wash at Fairview Ave. Sheet 6, Alt. C	3/11/1985
D-88-001	First Ave. Storm Sewer at Wetmore Road	10/12/1989
D-90-05	Tucson Mall Storm Drain Alterations	12/12/1990
D-90-07	Tucson Mall Utility/Storm Drain Plans	12/1981
D-95-02	Misc. Drainage Spot Improvements - Wetmore Rd - Stone Ave. to Limberlost	6/23/2000
D-98-05	Northwest Industrial Park, Drainage Improvements	9/1998
E-64-014	Flowing Wells Drainage Channel, Romero Rd to Santa Cruz River	3/2/1967
E-68-008	Flowing Wells Drainage Channel, Box Culvert at Romero Rd.	3/24/1969
E-69-09	Flowing Wells HS Drainage Ditch	12/24/1970
E-69-9A	Flowing Wells HS Storm Sewer Extension	1/12/1976
E-85-009	Flowing Wells Wash Stabilization La Cholla Blvd to Fairview Ave. Phase I	11/12/1987
E-85-009	Flowing Wells Wash Stabilization La Cholla Blvd to Fairview Ave. Phase II	9/19/1989
EMP-SU-479-01	Flowing Wells Rd & La Canada Dr, Roger Rd Roller Coaster Rd Phase I	7/22/1975

Table B.1 – Plans and As-Built Drawings

Plan No.	Description	Date
H-2002-075	Record of Survey Prince to La Cholla	1/10/2003
HYX135	Highway Drive Improvements Rillito River to Emerald Ave.	11/07/2007
I-2003-030	Paving & Sewer Plans for Pueblo de las Catalinas	6/28/1978
I-2005-009 (4TWETM)	Ruthrauff Rd/Wetmore Rd - La Cholla Blvd to Fairview Ave. (WO 4TWETM) (as bid, w/ addendums, Sht 1-3)	6/2003
I-62-007	Westwook Village Apt Paving Improvements	10/2/1962
I-62-025	La Mesa District Paving Improvement (Pastime Rd east of Stone Ave.)	6/1965
I-67-008	Roger Rd Romero to Flowing Wells Paving Improvements	12/12/1967
I-67-009	Mohave, Yavapai Stone Avenue Paving Improvement	10/30/1969
I-67-012	Calle Del Arizona Improvement District Storm Drain System	3/29/1966
I-67-013	Oracle Rd Roger to Chula Vista (ADOT)	5/31/1972
I-68-045	Sioux Ave. Ft Lowell Rd to Delano Drive District Paving Improvement	5/19/1970
I-69-004	Flowing Wells Rd, Prince Rd to Roger Rd Paving Improvement	10/14/1970
I-70-010	Fairview Ave. Miracle Mile to Prince Rd. Paving Improvement	8/2/1971
I-70-047	Plan and Profile Flowing Wells Rd and La Canada Drive	7/22/1975
I-72-038	Oracle Rd Roger Road Intersection	3/1972

Table B.1 – Plans and As-Built Drawings

Plan No.	Description	Date
I-75-19	Romero Road, Prince Rd to Gardner Lane	10/20/1976
I-76-023	Prince Rd Oracle Rd to First Ave. Paving Improvement	1/1977
I-76-024	Oracle Road, Roger Rd to Glenn St	10/23/1979
I-79-023	Prince Rd, N. First Ave to Campbell Ave Paving Improvement	4/1/1987
I-81-047	Street Improvement Plan for Limberlost Rd	1/1982
I-81-068	Oracle Rd Improvements Wetmore Rd to Rillito Lane	11/23/1981
I-813	N. First Ave Navajo to Roger Paving Improvement	4/1964
I-814	N Campbell Ave Drainage and Paving Improvement	5/1965
I-82-014	Wetmore Rd Improvements Oracle Rd to 1st Avenue	5/1982
I-82-055	Wetmore Rd Oracle Rd to First Ave. Paving Project Phase II	6/13/1984
I-82-058	Stone Ave. to Maddux Transition (Prince Rd to Wetmore Rd.)	5/1984
I-821	Prince Rd - Southern Pacific RR to Oracle Rd District Paving Improvement	6/4/1969
I-828	North First Ave Improvement District (Paving, Sewers, Drainage & Structures)	1960
I-83-024 (4BRCFR)	Roger Rd, Romero Rd, Flowing Wells Rd, Campbell Ave Intersection Improvements	11/1985
I-83-038	Romero Rd Prince Rd to Miracle Mile - District Paving and Lighting Improvement	9/28/1987
I-84-043	Limberlost Drive Improvements (Oracle Rd to First Ave.)	8/21/1987
I-85-041	Roger Rd, Oracle to First Paving Improvements	8/12/1988
I-87-012	Tucson Auto Mall Roadway Plans	1/16/1987

Table B.1 – Plans and As-Built Drawings

Plan No.	Description	Date
I-87-035	Stone Avenue - River Rd to Wetmore Rd, Bridge and Paving Project	9/19/1991
I-92-014	Stone Ave. Wetmore Rd to Limberlost Dr. Paving Improvement	6/26/2000
I-94-001	Wetmore Rd Fairview Avenue to Oracle Road Paving Improvement	8/01/2005
I-98-050	Limberlost Drive Drainage Relief Project	3/03/2003
I-98-080	Ruthrauff Rd - Miracle Mile TI	11/1997
N-64-2	Prince Rd –SPRR Paving and Crossing Improvement	8/1966
R-204	Flowing Wells Rd.	7/1956
R-276	Ownership West Wetmore and Highway Drive	5/1957
R-297	Ownership La Cholla Blvd	12/1960
R-315	Curtis Road	12/1962
R-414	Kain Road	1/1966
R-502	Proposed Deeds South of Wetmore	8/1965
R-560	Fairview Ave.	7/1970
R-817	Wetmore Road-Fairview Ave Intersection Improvements	11/1990
R-87-008	Flowing Wells Wash Stabilization La Cholla Blvd to Fairview Ave. (Right-of-Way)	4/1987
S-84-031	Romero Rd Prince RD to Miracle Mile - R/W Acquisition	7/1984
S-86-45	Drainage Access Easements for Flowing Wells Wash Stabilization	5/1986

B.1.2 Existing Reports/Data

A listing of existing reports collected for the RBMP are listed in Table B.2.

Table B.2 – Existing Reports

Date	Name	Author
March 23, 1981	<i>Preliminary Drainage Study Report, Ruthrauff Road I-10 to La Cholla Blvd.</i>	Cella Barr Associates
June 3, 1981	<i>Hydrologic Investigation for Gardner Lane Area,</i>	Cella Barr Associates
July 16, 1981	<i>Alternative Design Schemes for the Gardner Lane Area</i>	Cella Barr Associates
November 10, 1981	<i>Report on Existing 100-year Flooding Conditions within The Gardner Lane Area</i>	Cella Barr Associates
August 15, 1983	<i>Critical Watershed Management Plan, Ruthrauff Road Area</i>	Cella Barr Associates
August 15, 1983	<i>Main Report, Critical Watershed Management Plan, Ruthrauff Road Area</i>	Cella Barr Associates
December 17, 1993 (Revised November, 1995)	<i>Existing–Conditions Hydrologic Modeling for the Tucson Stormwater Management Study, Phase II, Stormwater Master Plan</i>	Simons, Li & Associates, Inc.
December 15, 1995	<i>Final Report, Tucson Stormwater Management Study, Phase II, Stormwater Master Plan</i>	Simons, Li & Associates, Inc.
April 2011	<i>I-10 Mainline Reconstruction, Casa Grande-Tucson Highway (I-10) Ruthrauff Road to Prince Road, Final Drainage Report</i>	AECOM
June 16, 2011	<i>Flood Insurance Study, Pima County, Arizona and Incorporated Areas</i>	Federal Emergency Management Agency

B.1.2.1 Interstate 10 and Union Pacific Railroad Improvements

The capacity of drainage structures at the UPRR and I-10, and conveyance to the Santa Cruz River are the limiting boundary condition for much of the runoff in the Ruthrauff Basin Management area. ADOT and UPRR have recently completed drainage improvements in the Ruthrauff Basin Management Area to convey 100-year peak discharges concentrated at existing drainage structure locations. Additional drainage structure improvements are proposed in the study area by the UPRR. A summary of existing and proposed drainage structures at I-10 and UPRR in the study are listed in Table B.3. Storm drains will be identified for the Hydrologic Analyses and Floodplain Delineation task.

ADOT is also in the processing of preparing construction plans for the Ruthrauff traffic interchange which will include drainage structure changes in the Ruthrauff Road and I-10 area.

Table B.3 – Drainage Structures at I-10 and UPRR

Location	Size/Type		Comments
	Existing	Proposed	
I-10, north of Ruthrauff Rd.	2-8'x6' CBC (one plugged)	60" RCP	Proposed under design for Traffic Interchange
UPRR, north of Ruthrauff Rd.	4-72" SSP (2 plugged)	Augment with 3-96" SSPs	Proposed preliminary design
I-10 and Frontage Rd. approximately 1500 ft. south of Ruthrauff Rd.	4-10'x4' CBC (2 plugged)	N/A	Two cells are currently plugged until downstream ROMP channel is complete
UPRR, approximately 1500 ft. south of Ruthrauff Rd.	4-60" SSP	TBD	Under preliminary design
UPRR, approximately 1700 ft. north of Gardner Lane	2-48" SSP	N/A	No corresponding I-10 structure

Table B.3 – Drainage Structures at I-10 and UPRR

Location	Size/Type		Comments
	Existing	Proposed	
UPRR, approximately 400 ft. north of Gardner Lane	2-36" SSP	N/A	No corresponding I-10 structure
I-10 at Gardner Lane	4-10'x6' CBC	N/A	
UPRR at Gardner Lane	none	7 or 8 72" SSPs	Proposed under preliminary design
I-10 at Flowing Wells Wash eastern frontage inlet	5-10'x7' CBC	N/A	Junction structure east of East Bound Frontage
I-10 at Flowing Wells Wash western outlet	4-12'X10' CBC	N/A	Junction structure east of East Bound Frontage
UPRR at Flowing Wells Wash	2-143-inch X 100-inch SPA	2-96-inch Steel Pipe	Existing to Remain

B.1.2.2 Rillito River Outfalls

Conveyance to the Rillito River on the north edge of the basin also limits drainage. Outfalls from the study area to the Rillito River include storm drains, open channels, and culverts. The open channels include the North Mountain Avenue Wash, west of Campbell Ave. and the Sullinger Wash, west of La Cholla Blvd. Storm drains and culverts will be identified for the Hydrologic Analyses and Floodplain Delineation task.

B.1.3 Land Use Analyses

B.1.3.1 Pima County Comprehensive Plan

Pima Prospers is the name of Pima County's Comprehensive Plan update effort. The Ruthrauff Basin Management Plan project area lies within Planning Area 8, Central. An Infill Incentive District lies within the study area (see Section B.1.3.3 Economic Development Zone, below). In

addition, a Community Development Target Area (Flowing Wells) lies within the study area. Targeted areas are designated to receive priority for available US Housing and Urban Development (HUD) entitlement grant funding for community revitalization and economic development activities, including infrastructure improvement. The draft land use map for the study area is available at the Pima Prospers website: Pima Prospers Maps Central. The Flood Control and Drainage Element is Section 4.9 of Chapter 4: Physical Infrastructure Connectivity Goals and Policies.

B.1.3.2 City of Tucson General & Sustainability Plan

The City of Tucson's current General Plan was ratified by voters on November 5, 2013 and declared for adoption on November 13, 2013 by Mayor and Council. The Existing Land Uses, 2013 Exhibit LT-3 from the Plan is available in Chapter 3, The Built Environment on the City's website: Chapter 3 The Built Environment. The Future Growth Scenario Map is available on the website at: Future Growth Scenario Map. Like existing conditions, building blocks in the area include industrial, mixed-use corridors and existing neighborhoods. The Plan includes a Green Infrastructure component directed at infiltrating stormwater as a resource to grow vegetation.

B.1.3.3 Economic Development Zone

Much of the area adjacent to the railroad on the I-10 alignment in unincorporated Pima County has been amended in the comprehensive plan as an infill incentive district (Co7-08-01 Flowing Wells Neighborhood Association and Community Coalition – N. Highway Drive Area Plan Amendment). This includes 449 acres and specifies rezoning. As a requirement for this rezoning, the District asked that a comprehensive drainage plan for the area be developed, which is one of the reason this most-recent version of the Ruthrauff Basin Management Plan is being implemented.

B.1.4 Tucson Stormwater Management Study (TSMS) Data

TSMS watersheds in the study area include the Ruthrauff Wash Watershed (EG), the Flowing Wells Wash Watershed (FW), the Wetmore Wash Watershed (HR), the Stone Avenue Wash Watershed(HG), the First Avenue Wash Watershed (GR), North Mountain Ave. Watershed (GQ) and the Tucson General Watershed (GM). A summary of 100-year peak discharges for TSMS nodes in the study area are listed in Table B.4.

B.1.5 Geotechnical Data

Hydrologic soil group data was provided by PCRFC and is provided in the Data Collection Summary CD. The Natural Resources Conservation Service Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>) provides soil data and information produced by the National Cooperative Soil Survey which can be utilized for planning purposes. This data will be utilized as applicable during alternatives analyses. In addition, two USGS reports authored in December 1999 contain data regarding the surficial geology and geologic hazards of the study area. "Surficial Geology and Geologic Hazards of the Tucson Mountains, Pima County, Arizona, Avra, Brown Mountain, Cat Mountain, and Jaynes Quadrangles (Open-File Report 99-22) and Surficial Geology and Geologic Hazards of the Northern Tucson Basins, Pima County, Arizona, Tucson North and Sabino Canyon Quadrangles (Open-File Report 99-21). Surficial deposits in the study area include Holocene floodplain and terrace deposits, and late and middle Pleistocene river terrace deposits.

B.1.6 Spatial Data

Spatial data, in the form of ESRI shape files and image files are provided in the both the Ruthrauff Basin Management Plan Technical Data Notebook for Hydrologic and Floodplain Mapping in Appendix C and in Appendix G. Land use classes, hydrologic soil groups, building outlines and streets were provided by the PCRFC to facilitate curve number generation for the FLO-2D modeling. In addition, 2008 Pima Association of Governments (PAG) arials and the associated LiDAR dataset were provided by the PCRFC. Current parcel data for the study area was obtained from the Pima County GIS FTP site.

Table B.4 – TSMS Data

Node	Watershed	TSMS Code	Location	Q100 (cfs)	Status
DG-No430	FLOWING WELLS	DG	Flowing Wells Wash at Santa Cruz River	3523	verified 06/05
DG-No420	FLOWING WELLS	DG	Flowing Wells Wash at Upstream Union Pacific Railroad	3353	verified 06/05

Table B.4 – TSMS Data

Node	Watershed	TSMS Code	Location	Q100 (cfs)	Status
DG-No400	FLOWING WELLS	DG	Flowing Wells Wash at Kilburn	3210	verified 6/05
DG-No236	FLOWING WELLS	DG	Prince Rd. at Stone Ave.	227	verified 6/05
DG-No235	FLOWING WELLS	DG	Prince Rd. at 1st Ave.	241	verified 6/05
EG-No080	RUTHRAUFF	EG	I-10 North of Ruthrauff Rd.	1440	verified 6/05
EG-No060	RUTHRAUFF	EG	North of Gardner Lane	1513	verified 6/05
EG-No050	RUTHRAUFF	EG	I-10 and Gardner Lane	1680	verified 6/05
EG-No030	RUTHRAUFF	EG	Flowing Wells and Prince	639	verified 6/05
EG-No040	RUTHRAUFF	EG	I-10 and Prince	942	verified 6/05
GM-No030	TUCSON GENERAL	GM	Rillito River	281	Draft
GM-No020	TUCSON GENERAL	GM	Limberlost	not compiled	Draft
GQ-No050	NORTH MOUNTAIN AVE	GQ	Rillito River	897	verified 6/01
GQ-No040	NORTH MOUNTAIN AVE	GQ	North of Roger Rd.	786	verified 6/01
GQ-No030	NORTH MOUNTAIN AVE	GQ	Roger Rd.	531	verified 6/01

Table B.4 – TSMS Data

Node	Watershed	TSMS Code	Location	Q100 (cfs)	Status
GQ-N0020	NORTH MOUNTAIN AVE	GQ	Roger Rd.	328	verified 6/01
GQ-N0010	NORTH MOUNTAIN AVE	GQ	Prince Rd.	345	verified 6/01
GR-N0020	1ST AVE	GR	Limberlost	343	verified 10/05
GR-N0025	1ST AVE	GR	Wetmore	313	Do not use
GR-N0030	1ST AVE	GR	Rillito River	632	Draft
GR-N0010	1ST AVE	GR	Roger Rd.	227	verified 10/05
HG-N0050	STONE AVE	HG	Rillito River	1069	Draft
HG-N0010	STONE AVE	HG	Roger Rd.	389	Draft
HG-N0040	STONE AVE	HG	Wetmore	1073	Draft
HR-N0030	WETMORE	HR	Rillito River	445	Draft
HR-N0020	WETMORE	HR	La Canada	911	Draft
HR-N0010	WETMORE	HR	Limberlost	667	Draft

B.1.7 Utilities and Other Existing Conditions Issues

Utilities of note include fiber optic lines and Tucson Water reclaimed water lines along I-10 and the UPRR, a fuel line (Southern Pacific Pipeline/Santa Fe Pacific Pipeline) along UPRR, and a large sewer line along Prince Road. Utility companies will be contacted during the project as necessary to obtain pertinent information.

To date no data gaps have been identified, but data needs will continue to be assessed as the project progresses. Field survey needs will be identified as the project progresses. Rights-of-Entry needs will be identified as the project progresses.

B.1.8 Field Photographs

An extensive number of photographs were recorded during the project and several of them were taken during or immediately after a discharge (i.e., excess rainfall) event and are categorized based on the date and location where the photographs were taken. The photos digital files only and not printed here.

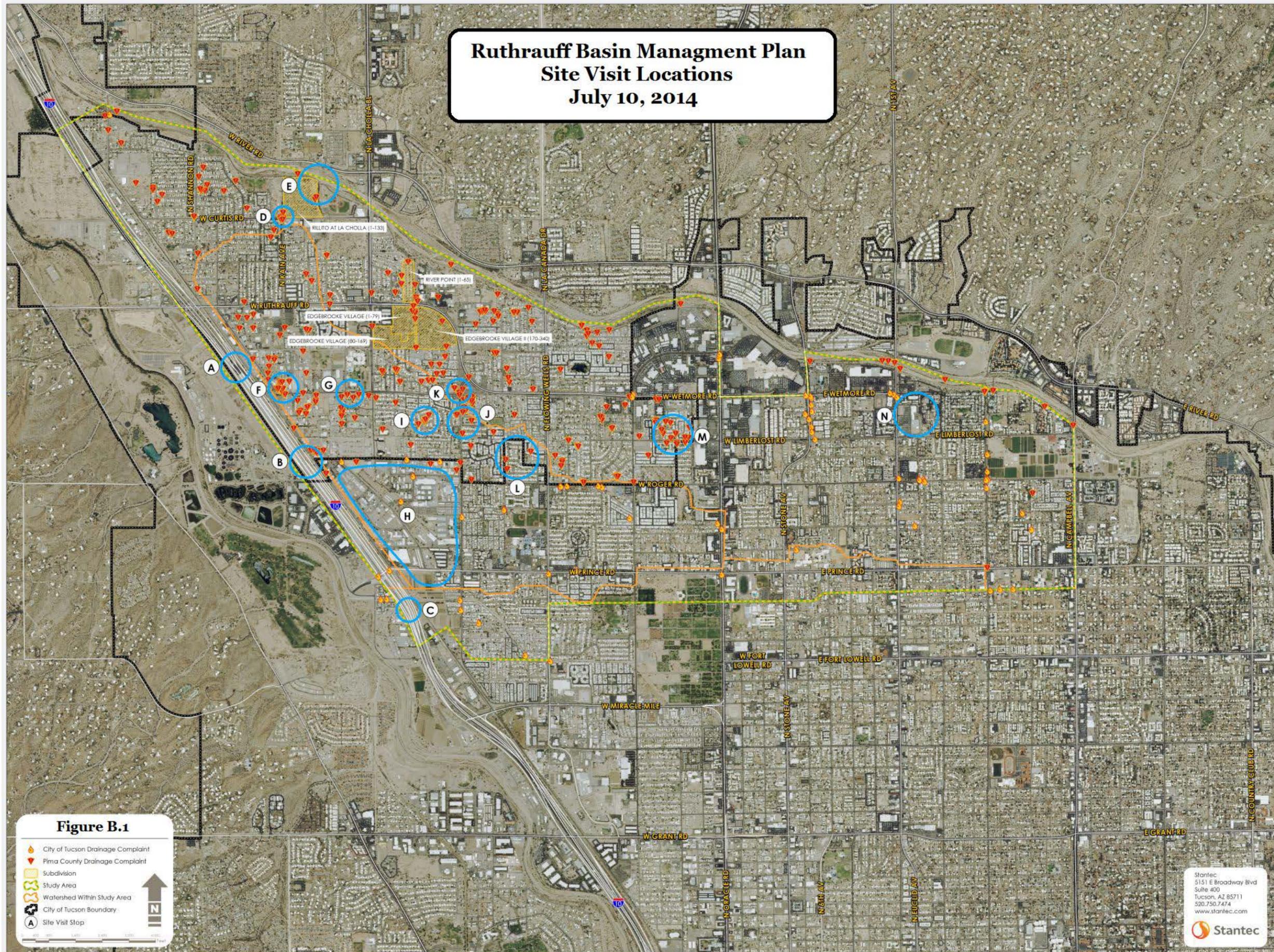
B.1.9 Site Visit

During the project, several site visits were conducted. Table B.5 summarizes the project team's observations while in the field and Figure B.1 indicates the site visit locations. Photographs of record taken during the site visit exist in digital form only and are organized by which agency took them.

Table B.5 July 10, 2014 Site Visit Summary

Site Id	Location	Discussion
A	I-10 and ROMP Culvert (outlet)	ROMP channel completion planned in future, ROW acquisition in process. Ponding water observed at I-10 culvert outlet and within channel. Erosion observed at top of riprap bank protection. I-10 culverts constructed (two closed interim), railroad culverts constructed.
B	I-10 and Gardner Lane Culvert (outlet)	I-10 culvert complete. Upstream railroad culverts will be constructed in the future.
C	I-10 and Flowing Wells Wash Culvert	I-10 culvert complete. Upstream additional railroad culverts to be constructed in the future.
D	Curtis Rd., Kane (alignment) Channel, outlet at Rillito	Ponding in streets and properties. Channel outlet is single pipe at Rillito.
E	Sullinger (alignment) Channel adjacent to Curtis Park, north of Curtis	Failed erosion control for tributary drainage. Sediment accumulation in the Rillito River at the outlet.
F	Wetmore/Highway Dr.	Flows from the east floods businesses/ponding along Wetmore and Highway Dr. No outlets at railroad. New development west and south of curve.
G	Wetmore/Plum	Low finished floors, ponding, small berms.
H	Gardner Industrial Park	Sheet flow throughout, existing AO Zone.
I	Root/Paseo Reforma	Ponding at intersection, no outlet.
J	Romero/Root Lane	Low finished floors adjacent to Romero, existing irrigation ditch.
K	Ruthrauff/Wetmore Intersection	Intersection has been re-constructed, drainage issues may remain.
L	Pomona/Gardner	Irrigation ditch west side of Pomona, adjacent to mobile homes, No outlet at alley at Gardner.
M	Limberlost/14th Av.	14th Ave channel outlets at Limberlost stormdrain inlet. Grate inlet gets clogged.
N	NE Corner Limberlost/First Ave.	Existing commercial development detention basin outlet is inadequate. Ponding occurs on upstream properties Storm drain inlet is fabricated out of wood.

Figure B.1 July 10, 2014 Site Visit Locations



B.1.10 PCRFD and COT Drainage Complaints of Record

The drainage complaints submitted to the County and the City are listed in Table B.6 and the locations of those complaints are shown in Figure B.2.

Table B.6 -- PCRFC and COT Drainage Complaints

SITE LETTER	CASE NUMBER	DRAINAGE COMPLAINT
	4	When the apartment complex resurfaced the parking lot, they blocked the weep holes. Water now stands between 1' to 1 1/2 deep at the MH Park when it rains. LOGO: Part of Fairview Limberlost Wetmore drainage problem.
	21	Sheet flooding across trailer park. Would like to place wall south of park to divert flow onto Fairview. Would like hydrologist to meet with Mr. Garter for ideas. LOGO: Tim met with HOA on Monday, complaint closed.
	29	Flooded when it rains, wants to meet with hydrologist to discuss. Culvert damages & does not convey flow. Flowing wells irrigation just released 1 million gallons into streets. LOGO: C.O.T.
	47	Road was re-surfaced in August making problem worse. His building & all those to the north flood. He went to Jerry Worrell who couldn't do anything was referred to us. Has also corresponded with rich management. Long history. 8/1/01 - See report prepared by Engineering & Consultants
	60	Referred by the City Manager's office. Long history of flooding in the streets. LOGO: No Action taken as of July 15, 2002
	66	Neighbor grading in County R.O.W. LOGO: Gravel is at grade.
	111	Has concerns that the grade of the alley is flooding his property. LOGO: Berm has been constructed by Operations
	131	Someone has placed survey stakes in Co. owned wash. He wants to know what's going on? LOGO: No action at this time, not sure why stakes are there. LOGO: Not Pima County
M	140	Water from Limberlost flows down 16th pl. & floods property, complainant says the county paved alley correctly 20 years ago, long history, spoke to D. Janders 18 months ago who said he would get back to her????
	161	Ponding water, no drainage. LOGO: No other solution at this time FCDAC committee looking into it at the 6/21/00 meeting.
J	187	Filled in drainage way diverting the flow to pond in the Kingdom Hall parking lot. Needs advice. LOGO: No action, County trenched V-ditch.
	240	Next door neighbor has added fill to his lot & has redirected flow of up to 8 on her lot. LOGO: No action, non-regulatory.
	243	Fairview & Limberlost there is a drainage ditch where water is ponding & mosquitoes are breeding. LOGO: Service # 106830
J	250	County workers filled in drainage ditch of property west of ours & church on corner. LOGO: No action, letter sent County trenched V-ditch
	275	Kain south of Ruthrauff, roads pond. Shoulder needs to be re-done. Forwarded to Ops 8/24/00 as well. LOGO: No action
G	277	Water went inside his house. LOGO: Referred to Steve Dolan.
F	278	Water went inside. LOGO: Service request sent to Operations # 106832
	280	At the end of El Caminito Pl. water ponds. The ditch that runs to the north is not carrying the flow. Mosquitoes breeding. LOGO: No action, no sign of mosquitoes tadpoles yes, water is draining, minor depression water will evaporate within the week
	281	Water went inside house. He states that the wash directly behind his property wash is clogged. LOGO: Sent service request to Operations # 106833. 8/29/00 - Spoke to Jerry H., plat shows that easement is an irrigation ditch may not be County responsibility.
	284	Natural drainages along Romero blocked. Water diverting. LOGO: Non-regulatory.
	307	Major ponding on Shannon(12-18). Long history. LOGO: Continuing problem, FCDAC is working situation
I	331	Melody Lane alleyway. At the west end of Root Lane, drainage ditch has mosquitoes breeding. Forwarded to Randy Baird. LOGO: Randy went out 9/11/00, ditch dry. Steve Dolan will talk to Ms. Ferry
	338	Shannon/Carnuba drainage problem, Flooding, water ponding, mosquitoes breeding. LOGO: FCDAC working on a solution. Sprayed for mosquitoes.
F	385	Ponding in the roadway. Road shoulder washed out. Check list attached. LOGO: No action
	1001	Culvert problems, drainage way needs repair. LOGO: No action, road drainage problem.
I	1037	Neighbor to south bull-dozed a new road which crosses at least 2 regulatory washes. Check for in-fill washes cross washes north portions of 214-53-0100 & -0140. LOGO: All washes are free of debris. Bank stabilization added to one slope as per grading permit. Alerted Mike H.
G	1060	Property to west (Groundskeeper) has just put up a 20' X 20' berm in front of their property which floods Duanes property even more (berm in our R-O-W?). No action taken
	1063	Ponding along Sullinger & Wetmore. No action taken
F	1064	ponding along Wetmore. No action taken
I	1102	Drainage way at the end of Root Lane needs to be cleaned. Service request sent to Operations, waiting to hear back from Director's office. LOGO: 6/4/01 - Alicia from the director's office informed us drainage way was cleaned out last Wednesday 5/30/01. Ms. Ferry was pleased.
	1104	Yard/landscaping flooded. No action taken
B	1130	Ponding, driveway damaged, road/shoulder washed out. Gave to Steve Dolan on 8/13/01. No action taken.
	1150	Drainage way needs to repair yard/landscaping flooded. See check list & letter attached. LOGO: No action taken.
	1175	MH, yard, landscape flooded. Logo: lot to lot drainage.
	1201	Shannon & Carnuba flooding problems. Streets flooded, mosquitoes breeding at corner of Shannon & Carnuba. LOGO: PCHD went out and treated, no mosquitoes breeding at the time.
	1220	Complainant states to the north of property drainageway needs to be maintained. Please let Debbie or Deanna know if point needs to be moved. 5/8/12 - LOGO:The drainage infrastructure is not publicly maintained. The drainage infrastructure to which you refer is a private drainage easement as shown on Sheet 3 of 3, of the Final Plat for Shamrock Center Block 1, a subdivision of record in Book 60 of Maps and Plats, at Page 91. A copy of the plat is enclosed. The homeowner association and/or the property owner is responsible for maintenance of the drainage infrastructure.
	2113	
F	2131	Given to Steve Dolan. Commercial building flooded. Drainage way needs to be repaired. Ponding in roadway. Pima County blocked the flow. LOGO: No action taken. (dr)
	2134	Church south of Rauthrauff put in a new parking lot diverting the flow. LOGO: No action taken. (dr)
L	2230	Person flooded in city limits. Development shown on attachment is in the county. House is flooded. LOGO: 8/14/02 referred immediately to zoning 9/15/02 memo from zoning saying there are no violations 10/28/02 site visit to lot indicated that it is vacant and naturally vegetated. LOGO: No further action (dr)
G	2283	All water runoff from Wetmore Rd., makes a huge ditch on property. Mrs. Nickles feels road needs grading. Customers cannot come in due to all the water in front of business. Water has almost entered building with today's rains. LOGO: No action taken (dr)
	2315	Autumn Figueroa works for the city and she noticed somebody filling up and grading a drainage ditch on the east side of Romero. As a result, with recent rains, the water has been ponding really bad on the roadway. She thinks the blading clogged it up. Here's the map. Could you please take a look and keep me posted? Thanks. Please respond back to Annabelle. LOGO; Could not find problem, no way to locate. E-mailed Annabelle JH
	2320	Mr. Harry Busch called regarding ponding water on his street. States there is no place for the water to drain. Mr. Busch wants someone go out and look at his property. Please respond back to Suzanne so she can forward to Kiki . LOGO: Letter to neighbors, see attachment. No further action.
	2350	
I	2357	Melody Lane alleyway. Mosquitoes in a drainage on Root Lane West of Romero Rd, on the other side of barricade where water is standing. Randy Baird (PCHD) went out to investigate. Respond back to Alicia in community relations. LOGO: 9/23/02 - Area in question is dry, negative for mosquitoes. No further action. Notified Community Relations.
G	2449	Neighbors across from him are putting up a berm. Feels this berm will divert the natural flow of water. Mr. Fike says that the flooding has improved and now with this berm being put in it will go back to flooding there properties once again. He mentioned he will be taking photos of the process of the neighbors putting in this berm. He would like to meet with Hydrologist so he can give the photos then. LOGO: 2/24/03 Non regulatory wash. No FEMA nothing on the subdivision plat lot to lot, no action.
F	3034	Flooding/Ponding in roadway and drainageway needs cleaning. LOGO: spoke to Mr. Richard Rhodes, husband of Monica, about the status. He has been concerned that future La Cholla widening will increase his flooding problem. It was determined earlier that the La Cholla road project will not increase his problem, that will be solved by Floodplain Management hiring an as-needed consultant to determine drainage alternatives. A preferred alternate and cost will be determined for potential construction during the La Cholla widening. Henry Goglin and I just talked to Maggie Shaw about rezoning conditions for a future project at the Northwest corner of La Cholla and River. The future project may limit alternatives to solve the Trisha Lane flood problem. I asked for a drainage easement to potentially help solve the problem affecting the Rhodes on Trisha Lane. If you need more information, please call me at 740-6428. Steve D.
	3076	West of 2088 kids are using the drainageway as a skate park. Mr. Strawn would like to know if the County maintains this and if so could they put rocks the size of golf balls to deter the kids from skating there. It could be a potential hazard. LOGO: No further action, work is in private landscape buffer.
	3089	There is ponding in the yard/landscaping flooding. Neighbor diverted flow. LOGO: 5/21/03 Site Visit Could not locate any regulatory wash or any other jurisdictional problems. No action, referred her to zoning. (dr)
	3102	Rillito River at North Campbell bridge. Large drainage pipe clogged, needs to be checked. See attached information. LOGO: No problem found
K	3123	Was told that the paving of the neighbor's property would cause draining into the retention basin. Would like for Hydrologist to check to see if this is the case. LOGO: Private detention basin HAG dr
	3150	Supervisor Day's office received a phone call from Councilwoman Kathleen Dunbar's office about a drainage pipe at Campbell & River - near Chuys. The complaint regards standing water in this pipe. It sounds like a storm water drain and the City says it's in the County. The complainant is worried about health issues (mosquitoes, etc). LOGO: Sent service request log out (HAG) #110298 (dr) UPDATE: Jerry Worell gave a two-3 week time frame for the problem to be resolved. 9/22/03 - Service request has been completed per Oscar Felix.
G	3207	Needs berm around corner so water does not flood properties. LOGO: No action, non-regulatory.
	4002	
J	4048	Neighbor to the east is blocking the flow and this floods the Saitas property. Needs advise on what can be done. LOGO: No blockage of flow found. Gave advise.
	4061	drainage channel on the north perimeter of Rillito Downs, the Bromley Wash. Conrad Yrigolla from Operations took a look at it and it does need work. I would like one of your field personnel to take a look at it, and then give us or not some direction/scope of work. Update: 4/22/04 It is County property, service request will be sent to Operations and an IGA needs to be made. LOGO: Service request sent to Ops # 110335. 4/30/04 - Update on Service request will be completed the week of May 3-7.
	4193	Wash that runs in between River Vista & Shamrock Pl, on Rauthrauff Rd needs to be cleaned out. Breeding mosquitoes. Update: 10/8/04 - Fax sent to Kay, will be inspected. LOGO: Service request sent to Operations # 110075. 1/20/05 - No action taken by Operations, service request logged out.
	4201	Repair fence- fencing should continuously enclose public drainage easement. LOGO: Fence repaired on 10/15/04 by the developer. SR # 110056.
	4231	Riverside Crossing drainageway needs to be cleaned out. Irma R. logged in at Operations under service request # 9299. This was logged in through the Director's office. LOGO: Service request completed by Operations 1/6/05.
	5014	Neighbor digging behind his fence. subdivision plat (Palmdale) shows area as a public alley, NOT a drainage way. In any event work should require a Right-of-Way Use Permit (did not check if one was obtained). RFCDD will not consider it a complaint until all work was done and natural drainage had been altered, blocked or changed in any way. We will be happy to investigate the area upon completion of the digging. Logo: Bill Buntins group (Field Eng) has looked into this issue and no action will be taken.

SITE LETTER	CASE NUMBER	DRAINAGE COMPLAINT
	5017	Drainage way NW of MH Park needs cleaning out. Causing ponding in park roads. LOGO: Service request sent to Operations # 110089. SR # from Ops 9652. As of 2/8/05 - Jerry Hedayati will not take action, needs documentation showing a platted drainage way. 4/4/05 - No action taken, it is an alley.
	5051	
	5146	The retention basin is overgrown with vegetation, and needs cleaning. LOGO: The retention basin is private, and the responsibility of the HOA. Complainant called and given advise on type of work that can be done grading vs hand removal. No further action.
	5219	Concerned with the neighbors dumping trash and debris in the drainage ditch. There is a fence that runs through the ditch, when it rains it clogs. Please respond back to E. Trevino District 3 X8251. LOGO: Private drainage easement, no further action.
	5250	Drainage way around M.H. Park needs to be cleared & reopened. Jerry H. referred to FCD. 9/2/05 - Complainant contacted. 9/8/05 - Non-regulatory. LGOO: 9/16/05 - Flow is non-regulatory road drainage, Department of Transportation issue referred him to Operations.
	5334	Horse ramp from the North bank of the Rillito River Park East of Camino De La Tierra has soil erosion. There has been one minor pedestrian injury. Update: 3/22/06 - SR to Ops # 110165. LOGO: Service request completed 4/12/06.
	5349	
	6109	Graffiti all around where the old Home Depot was at Oracle and the Rillito River. LOGO: Graffiti cleaned up by Ops
	6113	
	6136	Wash to the East of his property needs to be cleaned out. Work Request sent to Ops 7/5/06. LOGO: Work Order # 0700468, completed 9/19/06.
	6162	Mr. Newell is having problems at 2241 W. Wetmore, with flooding. The water does go into the home when the flooding occurs. Mr. Newell would like to know what it is that can be done. Would like to be contacted with what is going to happen. Logo: Letter sent, referred to L. Robison of Engineering. 9/7/06 Marisa spoke with Mr. Newell, called to report further problems with his complaint and that the home did flood once again. Response was sent to his first complaint. Marisa did agree to meet with him once again. Marisa did not make any promises that anything would be done
L	6193	Runoff came to this intersection at City side and should go westerly through Carefree Village MHP (at Pima County side) as the aerial photo with contour indicates. However, the MHP built a berm and blocked the flow. A huge lake formed over City side. City needs your coordination to let the owner of the MHP to drain the standing water and not damaging the MHP residents. This is an urgent situation especially West Nile issue. LOGO: No action taken by RFCD
	6318	
	6414	Constituent called regarding vegetation that needs trimming at 4901 N. Oracle, north of the Rillito River at the walk/bike path by the Metro Auto Sales. I contacted the supervisor out in that area and he advised me to first report this to Flood Control. It is south of the Auto Sales in the wash. LOGO: Informed Dominic at Operations that this belongs to Parks and Rec. It has been referred to them.
	6434	Developer land behind her property has been graded, as a result her property is starting to erode. She feels her land shifting, and soft spots in different parts of her property. States that when the County went in and put in pipes all this started to happen. Needs to be checked out. LOGO: No action taken, constructed channel is not considered a regulatory or floodprone area, as defined by section 16.08.600.
	6478	States that the drainageway in the City owned by the County is eroding away. He can see it from his home. Over by where Dillard's parking lot is in the drainageway, the cemented walls are eroding, and crumbling away. When the river fills up, it just seems to pond and not flow like it should. There is a sandbar about seven feet high, not allowing the water to flow. He can meet with hydrologist to explain. LOGO: Inspection to be made between 8/31/06 -09/8/06. Informed complainant
	6487	Wash needs to be cleaned out. Possibly private. Please respond back to Cynthia Henry of Community Relations. LOGO: Task completed 2/26/07 0700457
B	6538	To the west of the railroad track there is a drainageway that needs to be cleaned. LOGO: Referred to Operations, within ROW that needs to be cleaned out.
F	6549	States that she has been complaining for at least five years about her neighbors regarding their property causing water to flow into her property. No one here at the district has taken any action even though they tell her they will correct the problem. Update: 10/6/06 - Rick H., has this in his office. 1/8/10 - Logo, no action taken to date.
I	6561	At the end of Root Lane there is a drainage way that needs to be cleaned out. 9/28/06 - Given to Mike C. LOGO: No action by IMD no regulatory wash or public channel. DOT alley easement was clean.
	6591	There is ponding in the alley behind the home. Concerned about mosquitos. LOGO: No Action per MT
	7053	The North West Fire District is requesting the removal of dry weeds at this basin. LOGO: Work done by Ops 3/22/07.
	7065	Mr. Hook states that the basin needs to be maintained. Work request was submitted on 3/9/07, from a different complaint. Given to Rick 3/22/07. LOGO: Work completed by Ops
	7130	Mr. Cordova states that between Oracle Rd and Stone Rd inside the Rillito River, someone from the mall has been trimming the bushes and dumping all the debris into the wash, might divert the flow. 5/25/07 Tucson Mall Landscaping company will be taking care of this problem, will check back in two weeks to make sure it was done. Per MC LOGO: No action taken at this time, see attached e-mail from MCA.
	7134	Mrs. Thurston states that inside the Rillito River between Oracle and Flowing Wells there is a plastic cover that needs to be removed. Not sure why the cover is there, but pieces are blowing away into her property. LOGO: Letter sent, marker removed.
	7159	Jack from the Health Dept states that this drainageway needs to be inspected. It is filled with vegetation creating pockets of water where mosquitoes are breeding. It has been treated for mosquitoes. It is hard to get down into the drainageway because of the thick vegetation. Complainant who called in also called the Mayor's office. LOGO: No action taken, within COT jurisdiction.
	7185	
E	7215	Suzette Howe states that the sediment build up in the Rillito Creek between La Cholla and Shannon, only has three feet between the top of the bank protection and the channel. LOGO: No action taken.
	7237	Complainant states the neighbor to the west has built there property higher and water is standing still on Mr. Krogstad's property. Needs advise on what can be done. See attached blue complaint form. Update: 8/9/07 - Given to BZ of PDD. LOGO: No action taken, Development Services issue.
F	7242	
	7305	Complainant states to the east of property there is no proper drainageway for water to flow. Complainant mentioned it is flooding her property. See attached blue complaint form. LOGO: No action will occur by RFCD, referred to DOT for review.
	7307	Complainant states there is a road directly in front fo home that is flooding properties. See attached blue complaint form. LOGO: No action will occur by RFCD, referred to DOT for review.
	7310	
	7363	Complainant states to the north of property there is a culvert that run's down alley to Rillito River there is a lot of debris and this is backing up. Needs to be maintained. Please call first wants to meet with Hydrologist. See attached blue drainage complaint form. LOGO: No action will occur by RFCD no ordinance violations found. Will refer to DOT for review.
M	7364	Complainant states drainageway to the north of property is not draining properly. Needs to be maintained. See attached blue drainage complaint form. LOGO: No action will occur, referred to DOT for review.
J	7381	Mr. Broner (principle of Homer Davis Elem) states that there is a drainage pipe on Romero Eastside of the street that needs to be cleaned out. Due to the drain being clogged, kids might get hurt. Needs to be inspected. Update: 8/9/07 - Rick went out to inspect, and has file. LOGO: No action taken by RFCD, referred to DOT Ops and Community Relations for their review.
I	7395	Complainant states there is a drainageway that needs to be maintained. It is at the end of Root Lane. See attached blue drainage complaint form. LOGO: No action will occur by RFCD, referred to DOT for review.
	7396	
L	7410	CCC would like FPM to do research, please see attached. CCC would like this done within 2 weeks. LOGO: Was in COT it was a legal non-conforming use.
	7437	Complainant states New Subdivision Twin Palms has pred concrete in the drainageway. Concerned because there is no access to homes if there is an emergency. See attached blue drainage complaint form. LOGO: No action taken, letter sent, non-regulatory.
	7445	Complainant states there is a drainageway in front of home that needs to be maintained. Also concerned about the mosquito's, I gave him the Health Dept. number as well. See attached blue drainage complaint form. LOGO: No action not maintained.
	7478	Complainant states there is a wash to the east of there property that needs to be maintained, weeds need to be removed or trimmed. See attached blue drainage complaint form. UPDATE: 9/26/07 WR sent to Ops. LOGO: Mowed by Ops in November 07.
	7549	Mr. Buys states that the box culvert has caused considerable damage to the floor banks of Northmanor wash just north of the Rillito in the new subdivision being built by standard pacific. Needs to be inspected. Located within the COT City limits. Update: 3/27/08 - WR sent to Ops. LOGO: WO 0811654-08, closed 7/17/08.
	7576	
	7594	
	8006	Mr. Maseman contacted us by email stating that a couple of months ago, he noticed a water main leak with water coming up in the channel of one of our neighborhood washes. He called this problem in to Tucson Water Dept. They sent out a crew and some equipment. They left a large dirt mound in the channel of the wash and it's been this way for over two months. Their signs and barricades were abandoned and have been vandalized. Yesterday (12/27/07), he saw a Water Dept. worker in the neighborhood working on an unrelated problem and asked him about the dirt mound and reminded him that it's likely to partially dam the wash and flood nearby residences. He quite impatiently told me that they were aware of it and there was no flood danger. His concern is that the wash is higher than the adjacent residences. A berm has been constructed on both sides of the wash for flood protection. If this berm is breached due to an obstruction in the wash, property damage will be inevitable. The wash is located near the Northeast corner of Northmanor subdivision. The problem is about 100 yards Southwest of the intersection of River Road and First Ave.1/8/10 - Logo, no action taken to date.
	8055	Mr. Hook states that the basin needs to be maintained. Work request was submitted on 3/9/07, from a different complaint. Given to Rick 3/22/07. LOGO: Work completed by Ops
	8062	Complainant states there is a wash behind her home. She would like to see if Pima County can place signs that read "No Motorized Vehicles Allowed". See attached blue drainage complaint form. LOGO: Letter sent giving advise
	8079	El Cert not submitted per requirements. NOC letter sent 3/14/08.
	8094	
	8107	
	8151	
	8339	Mille states that ever since the Limberlost roadway improvement project, she continues to get flooded out. On 8/13/08 she woke up to Mud all over her house. Would like for someone to inspect. Please respond back to C Brichta from DOT, Community Relations. LOGO: No action will occur by RFCD, will refer to DOT for review
	8342	Karen Black states that the weeds need to be cut in a property next to a school, east of Kain Avenue. Conrad Y of DOT Ops, mentioned property might be owned by Flood Control. The property states PC ownership. Connie M(RFCD) is checking it out. Received this complaint from D. Miranda DOT, Ops. LOGO: Complainant contacted by phone, WO completed per PW, 1/27/09. WO 0900519 -45
	8389	Mr Bustamonte states that the basin needs to be inspected for maintenance. It is full of weeds and debris creating standing water. It has been treated with mosquito dunks. 9/22/08 WR sent to Ops. Logo: WO completed per PW, 1/27/09.
	9001	Drainageway needs to be inspected, see info attached. 1/21/09 Update: WR sent to Ops. 5/1/09 - Work completed
	9002	

SITE LETTER	CASE NUMBER	DRAINAGE COMPLAINT
	9005	Complaint of couch and trash in the wash located 1/10 mile East of Cmo De La Tierra and the river crossing. Needs to be inspected. LOGO: Clean up has been completed
	9021	Complainant states the curb cut into City property is if legal? This is located within floodplain in the Ruthrauff Basin Study. Diesel fuel is also being washed in City property during rain storms. There is a second contact person for the City Of Tucson Water Chuck Faas # 837-2231. See attached blue drainage complaint form. LOGO: No action will occur, no ordinance violations found.
	9048	Mr. Hook states that the basin needs to be maintained. Work request was submitted on 3/9/07, from a different complaint. Given to Rick 3/22/07. LOGO: Work completed by Ops
	9059	Needs to be inspected for vegetation maintenance per PW. LOGO: Due to access issues to the drainage, unable to do the vegetation maintenance in this area at this time
	9148	Southeast side of Oracle at River Rd, large trees growing shelter for transients. Complainant wants them removed. LOGO: By email 6/5/09. Area in question belongs to ADOT.
	9157	Complainant states they spoke to the Flood Control District last year about having them talk to the property owners on either side of the drainage channel. The property owners need to clear the channel of excess sediment and vegetation so the water will continue flowing. Right now the blockage may cause standing water and consequently a breeding ground for mosquitoes and perhaps, West Nile Virus. LOGO: No action taken, parcel within the City of Tucson, privately owned
	9179	Wash North of 1901 W Rillito Rd needs to be inspected for weeds and debris. Update: 8/13/09, clean up was completed and disposed of. Mowing within the drainage way will happen within a week.
	9184	Complainant states the drainage ditch to the south of 4842 N. Shannon Rd. needs to be maintained. When it rains water over flows onto complainants property. See attached blue drainage complaint form. LOGO: Referred to DOT maintenance for their review.
	9217	
F	9232	Mrs. Lopez states she is having street flooding issues. Needs to be investigated. Given to FPM 3/2/10. LOGO: Per MCO discussed with Mrs. Lopez advised that per Conrad with DOT regrading would be done to Lily Ave. No field visit required.
	9273	Ms. Borgwald states that the property East of her is constructing a wall. She is wondering if they are building the walls properly because she is concerned that the wall will disrupt the drainage. She would like to have someone take a look at it, because she is elderly and wants to make sure it is done right so that her property will not be flooded. Needs to be inspected. LOGO: No action will occur, no ordinance violation found
	10016	Conrad requesting inspecting of wash for dumping mattresses etc that needs to be cleaned out. Original complaint initiated from ADEQ. 01/26/10 - You referred a complaint to us about some mattress and trash debris that need to be cleaned up in a drainageway just south of Ruthrauff Road and in the Edgewood Subdivision. I removed the debris and disposed of them in the landfill. LOGO: Work completed 1/26/10.
M	10048	Complainant states there is flood water run-off onto his property. See attached letter. LOGO: No action will occur, no ordinance violations found
F	10052	Mr King stating the Lopez's have put in a retention basin on their property (2509, 2510 W Wetmore), Now they are pumping out the water onto the road creating a muddy road. His vehicles are getting stuck, and cannot drive through the roads. The sheriff's dept told them to call DOT, and Conrad forwarded it to us for enforcement if there are any violations. Conrad is going to go out and take a look. LOGO: No action will occur, no ordinance violations found. 3/8/10 - letter sent to Kyle King returned, resent to PO Box 50272, Tuc, AZ 85703.
F	10226	Complainant states neighbor has diverted flow and is causing ponding, flooding, erosion and mud. Drainageway needs to be repaired. See attached drainage complaint form. LOGO: No action will occur, no ordinance violations found. Will refer to DOT for review.
M	10231	Mr Vogel states that when it rains the lot East of his property has excessive runoff that diverts through the alley onto his property flooding the bottom of his Mobile Home. They have had to add fill along the fence to keep the water out. Wants to know if something can be done to divert the water away from his property. LOGO: No action will occur, no ordinance violations found.
	10346	
	10371	Complainant states wash needs to be maintained. 9/28/10 - DC placed on routine maintenance - to be completed within 2 months. Ltr sent to compl. Pdf of DC is on the beast. Work completed 7/2011
	10428	North end of Idaho Lane is impassible on foot and by car because there is no drainage for flow from Limberlost. All flow drains to Idaho Lane
	10431	Mr Churchill states there is a huge amount of bush and tree growth in the bed of the wash. He is very concerned, preventative maintenance work is overdue in the Rillito Wash and would like for it to be inspected. Email attached
	10451	There are unpermitted additions that are built. See attached blue drainage complaint form. 12/10/10 NOC letter sent. Combined with Viol 10-451 & FPUP 09-311.
	10474	Terry states at the intersection of Diamond St and Sullinger Ave, fence has been damaged at the Southern end of Sullinger drianage. 12/15/10 - Work completed.
	11001	Mr Zimmerman states that the suspect added fill to the front of property. Water ponding about six inches deep, cannot enter 2529 W Poppy without wading thru water to open gate. LOGO: No action will occur, no ordinance violations found
	11023	
	11050	Mr Cordova states a Homeless camp needs to be removed underneath the bridge, South bank at the Rillito River. LOGO: The drainage infrastructure is not publicly maintained by the District. It is located within the City of Tucson city limits, no action by RFCD.
	11090	
	11108	
	11114	
	11159	
	11179	Conrad states that the swing flood gates at River and Oracle in the Pima Wash are broken off hinges. Needs to be investigated for repair. LOGO: Work completed 8/9/11.
	11240	Conrad Yrigolla states Mr Stevens has complaints about neighbors to the East. They have constructed a berm along the shoulder of the North side of Poppy Ave diverting the flow. 10/3/11 LOGO: No action will occur, no ordinance violations found
	11241	
	11267	
	11268	
	11276	
	11284	Ms Kalahare (nichole.kalahar@tucsonaz.gov) would like to know who is responsible for removing graffiti and where is the access ramp. Area is at 1st Ave bridge and Rillito River. LOGO: The drainage infrastructure is not publicly maintained by the District. Research shows the City of Tucson annexed the area specifically First Avenue road right-of-way, on September 20, 1982. According to the Arizona Revised Statues section 11-806.01.J, the annexing jurisdiction, in this case the City of Tucson, is responsible for maintenance of the bridge. LOGO: Drainage Infrastructure is not publicly maintained by RFCD. It belongs to the COT.
	11319	
	11343	
	12067	Complainant states channel may not be draining so wall might be at risk. Please let Mr. Carrillo know if anything can be done. Please let Debbie or Deanna know if point needs to be moved. LOGO: 2/17/12 - 1. The drainage infrastructure is not publicly maintained. The drainage channel south of 2336 West Rau River Road is Common Area B, as shown on Sheet 4 of 5, of Rillito at La Cholla, a subdivision of record in Book 58 of Maps and Plats, at Page 11. It is the responsibility of the homeowners association to maintain the drainage infrastructure. 2. The drainage infrastructure requires vegetation maintenance by the homeowners association to allow stormwater conveyance
	12089	Complainant states to the north of property drainageway needs to be maintained. Please let Debbie or Deanna know if point needs to be moved. 5/8/12 - LOGO: The drainage infrastructure is not publicly maintained. The drainage infrastructure to which you refer is a private drainage easement as shown on Sheet 3 of 3, of the Final Plat for Shamrock Center Block 1, a subdivision of record in Book 60 of Maps and Plats, at Page 91. A copy of the plat is enclosed. The homeowner association and/or the property owner is responsible for maintenance of the drainage infrastructure.
	12136	Complainant states there is graffiti in wash and bridge that needs to be removed. Please let Debbie or Deanna know if point needs to be moved. LOGO: 4/26/12 - Light Trash debris were noted in the channel from River Road to the confluence of the Rillito River. The trash will be removed during a routine vegetation maintenance of the channel.
	12167	Complainant states wash is full of dirt and vegetation, wash needs to be maintained. Please let Debbie or Deanna know if point needs to be moved. LOGO: 5/8/12 - Never returned calls
	12170	Pastor Lee Mowery, Northwest Baptist Church, called his contact in Transportation, approximately two month ago, as he was instructed when the basin was constructed. Nothing has been done to clean out the trash or mow the grass and weeds. It will not be an easy task as there are many rocks hidden in there. In case you need it, Pastor Lee's phone number is (520) 888-4677. LOGO: 4/24/12 -Your concern is located in the road right-of-way or involves infrastructure that is maintained by the Department of Transportation.
	12176	There is erosion of soil-cement front face. Please let Debbie or Deanna know if point needs to be moved. 5/23/12 - forwarded to Russ Wise in Engineering. LOGO: 9/25/12 - 12-176 required no repair or maintenance
	12177	There is erosion of soil-cement front face. Please let Debbie or Deanna know if point needs to be moved. 5/23/12 - forwarded to Russ Wise in Engineering. LOGO: 9/25/12 - 12-177 was completed by resurfacing the existing soil cement bank lining.
	12180	Complainant states to the north of property drainageway needs to be maintained. Please let Debbie or Deanna know if point needs to be moved. 5/8/12 - LOGO: The drainage infrastructure is not publicly maintained. The drainage infrastructure to which you refer is a private drainage easement as shown on Sheet 3 of 3, of the Final Plat for Shamrock Center Block 1, a subdivision of record in Book 60 of Maps and Plats, at Page 91. A copy of the plat is enclosed. The homeowner association and/or the property owner is responsible for maintenance of the drainage infrastructure.
E	12191	Complainant states there is too much sediment and vegetation, is concerned about flooding. Please let Debbie or Deanna know if point needs to be moved. LOGO: It is not within the scope of the Infrastructure Management Division of the District to evaluate flow capacity within a major watercourse. Therefore, this complaint has been forward to the District? Engineering Division to respond to your concern. Update: forwarded to Engineering (Larry Robison 5/23/12) . Assigned to Russ Wise. UPDATE - 1/31/14 per Russ Wise he has not received it yet? 5/1/14 - PER MCO, logout, forwarded to IMD (Russ Wise).
	12196	Complainant states neighbor cleaned back yard and put the trash next to complainant's house. Would like someone to investigate concern fire harzard & possible flooding. See attached blue drainage complaint form. 6/1/12 LOGO: No Viol, no letter sent per MCO. 6/5/2012 - Drainage complaint re-opened per MCo. 6/8/2012 - LOGO: No action taken no ordinance violations found.
	12201	Someone is dumping a truck load of construction debris into the Rillito River. LOGO: No letter sent per MCO.
J	12255	"WATER IN HOME" Mrs. Davila states culvert close to home over flows onto property and went inside home. See attached blue drainage complaint form. 7/23/12 LOGO: No action will occur regarding this issue. 8/1/12 - letter sent to Root Lane returned, resent to 6605 N Pomona Rd
	12297	his is within COT limits but was caused by Pima County actions (reportedly). Says several months ago the county re-did the bike and pedestrian path along the Rillito River behind her property. In doing this, dirt got pushed up against her wall drain holes and her yard flooded on 7/15/12. Would like dirt removed so drainage is restored. Please let Debbie or Deanna know if point needs to be moved. LOGO: Carlo DiPilato will be calling contractor to remove pile. 12/17/13 - Letter sent to Mr Lazzeroni. Copy to Operations for their review.
F	12301	Complainant states water is being diverted onto property. See attached fax. LOGO: No action will occur, complainant was advised per MCO.
	12428	Ben left a message on 243-1800 number with no return phone number. He states where the bridge is there is standing water lots of mosquitoes. Needs to be inspected. Please let Deanna or Debbie know if it point needs to be moved. LOGO: 8/31/12 - treatment completed.

SITE LETTER	CASE NUMBER	DRAINAGE COMPLAINT
	12462	Drainage way between 4931 and 4941 N Fellows needs to be inspected for maintenance. Complainant states trees are blocking the phone lines. Originated from County Administrator's office. LOGO: 9/14/12 - This concern was referred to us from DOT staff Lori Witz about a drainage way needing to be cleared so that the phone company could work on the elderly property owner's land line. I had just arrived at the location to see what needed to be done and Conrad pulled up to investigate it as well. He had AAA staff close by and offered to have his crew clear the alley drainage that morning. So thanks to Conrad and his AAA crew this was taken care of on 9-13-2012. I have attached some before and after photos of the drainage for your viewing. Using this email I will close out this concern in our database.
	12484	Request came Via Supervisor Bronson's office. Flowing wells neighborhood Association meeting a Phoebe Robinson has a drainage concern. 9/24/12 - dg called Ms Robinson left message. LOGO: No letter sent per MCO
	12485	Harvey Trucking Property and the adjoining recycling business off of Highway Drive share an alleyway with folks off Emerald, they are blocking the drainage with debris, how can the have this cleaned up? Also mosquitoes are becoming a problem due to this. Please respond back to Kiki Navarro from Supervisor Bronson's office. LOGO: no letter sent per MCO
	13001	Borderland Const. has been moving debris into the Roller Coaster wash between River and Roller Coaster for the new subdivision. LOGO: 1/15/13 - The debris has been removed.
	13006	Areas along the Rillito River need to be inspected for maintenance in the following locations, between Stone and Oracle across from American Home Furnishings, East of Stone Ave. bridge toward North side, viewed from small bridge on N. side between stone and Oracle more metal sheets, cart between Stone and Oracle, another between Stone and Oracle and under the bridge at Oracle, near Sam's Club near electrical pole. LOGO: Work completed 2/28/13 with the help of Parks and Rec
M	13086	When out on drainageway inspections an area resident told Suzie and Mare that ever since the suspect property was developed, including the detention basin at the south end of the property, flowing now goes south in alley rather than continue west like they use to. See attached blue drainage complaint form. 4/20/13 LOGO: No violation, no letter will be sent per MCO.
	13103	
	13104	
	13105	
	13112	
	13113	FPUP 11-370 for existing solar needs to be issued. See attached blue drainage complaint form. 5/13/13 NOC letter sent. Combined with FPUP 11-370 & Viol 13-113
	13168	
	13226	Complainant states he has observed water flowing along Wetmore when it rains. Concerned that the new wall will block the drainage. Please see both drainage complaint forms attached. LOGO: No action will occur, no ordinance violations found.
	13244	Drainageway needs to be maintained. Let Debbie or Deanna know if point needs to be moved. LOGO: 8/29/13 - The inspection of the drainage channel revealed a small amount of trash in the bottom of the channel that had washed out of the culvert under the commercial complex during a previous monsoon storm event. The removal of the trash has been placed on our routine maintenance schedule and is expected to be removed in the month of September
	13258	
	13273	Grates missing at Pomona Ave just south of the Rillito. LOGO: 9/5/13 - The grates cover a drop structure culvert to the Rillito River. At first glance there are four (40" L X 24" W X 3 1/2" H) grate sections missing. Further investigation revealed one section in the bottom of the catch basin probably a miss calculation in weight during a prior removal attempt. So after retrieving this one it still left three sections missing. Angel Burruel (Ops) had three spare grates that could be modified to fit. Worked completed.
	13295	
	13313	Ms Nielson is requesting clean up at the Rillito River between Campbell and 1st especially by the Tucson Mall. Needs to be inspected for maintenance. Please let Deanna or Debbie know if the point needs to be moved. Complaint originated from Annabelle Valenzuela, DOT Community Relations. update: 10/18/13 - Letter to compl; DC on Best; maintenance to be completed by end of October. LOGO
	13361	KC received a call that miscellaneous items debris and garbage located at the Rillito 50 yards from La Canada on the wastside needs to be cleaned out. Debra Clark (Tucson Clean and Beautiful) put yellow tape around the area of concern. Please let Deanna or Debbie know if the point needs to be moved. Thanks! LOGO: I was able to locate and remove trash and debris piles 50' East of La Canada Overpass. All trash and debris were hauled from the site to the landfill. I attached a few photos for you to review. Thank you for forwarding this request and we will close this concern in our database as of this E-Mail.
	13363	Wabash St. to Rillito River has been altered, wash needs to be maintained. Let Debbie or Deanna know if point needs to be moved. LOGO: 11/26/13 -Your concern is located in the road right-of-way or involves infrastructure that may be maintained by the Department of Transportation.
	13380	Massive dumping throughout the washes owned by RFCD. Needs to be investigated for maintenance. Please let Deanna or Debbie know if the point needs to be moved. Thanks! LOGO: 12/23/13 - You recently referred this concern to our office about trash and wildcat dumping along Pima Wash in the area of N. Oracle Road and W. River Road. We have investigated the section of Pima Wash that runs through the Mahinpey parcel #10505023F were the Flood Control District has Flowage Responsibility across this property looking for the dumping areas. We found a couple of old homeless camps high on the east bank of the wash behind the commercial property on Oracle Road. The camps and trash are located on the Mahinpey parcel #10505023F not within the 100' of wash bottom where the Flood Control would have maintenance responsibilities. With the camps and trash being located on private property it would be the property owners responsibility to clean this site. I will use this email to close out this concern in our data base.
	14031	Mr. Perez has concerns with safety of pedestrains on the loop. LOGO: There will be no additional signage, but there will be centerline and edge striping. Compliant originated from Diane Luber (Cmmunications)
	14074	
	14118	Pathway by ditch needs to be maintained. Would like to meet with Hydrologist. LOGO: After attempts to locate the issue, its presence could not be physically verified. 5/16/14 - DOT Operations has created SR #14007790 for this concern.
	14140	Mrs. Hickman received a complaint that at the Rillito River/wash just NE of the "Sun Circle" which is along the Rillito/River Park trail. This part of the wash has lots of trash and is located just outside the LaEncantada at Riverside Crossing apartment complex. This part of the trail is very heavily used by bikers and walkers the trash is a definite eyesore. Please let Deanna or Debbie know if the point needs to be moved. Thanks! LOGO: 5/30/14 - Recently you submitted a concern about trash and debris in the Roller Coaster Wash west of River Rd. The Districts vegetation maintenance crew has removed the trash and debris in the wash and trimmed the mature trees and vegetation on both sides of River Rd. in the Roller Coaster Wash.
	14149	Location: PTN S320' E360' SE4 NE4 2.61 AC SEC 17-13-13, (10117036C). Issu is that when the reservoir was put in it started to back up and flood the property. There is no proper drainage for the Church. The water has no where to go, the Church structure got damaged and has a mold problem. Please let Deanna or Debbie know if the point needs to be moved. LOGO: 5/21/12 - Your concern is located in the road right-of-way or involves infrastructure that is maintained by the Department of Transportation. UPDATE: 5/21/14 - SR #14007902 created by Operations.
	89022	People using wash as a roadway. No evidence of traffic. Wash in good shape.
	89039	Storm drainage routed to spillway- causing mud and sand on road. Forwarded to operations 4-4-89
	89063	Flowing Wells Co. pushing dirt in wash in flood prone area. Non-regulatory discharge.
	89070	Had 3 lots and yard flooded last rains. Blames neighbor. Letter to Markham re: Wetmore Square detention plans- future.
	89250	Water runs off of Kimberly right into his property. Has talked to Ed Moore 's office 2 weeks ago. Secretary was supposed to transfer to us.
G	90037	New sewer line construction has severely altered drainage onto his property (its pouring onto his property as we speak). Violation could not be found - log out. (HAG 03/30/90) Shoulder invert has been repaired. Drainage along road. No further action
D	90048	Arizona Underground has been filling property t 2520 W. Curtis. Property w as 2 feet lower that the above complainant's property, it is now 2 feet hig her. Water flow is now diverted onto his property. See memo to file Section 16, T13S, R13E, dated May
D	90103	Lives in Cul-de-Sac. Shannon Road is higher, drainage from Shannon is ponding 150 into cul-de-sac, approximately 2' deep. His car had to be pulled out thi morning, it stalled in the water. Sez a bulldozer could channel the drainage to the Rillito. At 11: 15 am . Met with Mr. Root. It appears that the channel along the eastside of Shannon Road is in need of regrading and clearing of heavy vegetation growth. Also 24 C.M.P.'s sould be cleaned out in order to eliminate the problem.
H	90147	Drainage ditch south side of overtopping water drained thru yard into shop approx. 2 inches deep. In City of Tucson. Owner called City of Tucson log out 7-27-90
	90156	Neighbor opened drainage. Apartments now being flooded. Memo written concerning this problem by Dave Smutzer to John Bernal & E d Moore. This is a regional problem City/County joint effort.
D	90159	Drainage ditch does not channel to wash, lives in 2nd property from road (m ost other's are m.h.s.) every time trucks pass thru water comes to door. N eighbor (m.h.) has patio washed out. Ponding stays 5-6 days. Is represent ing 6-8 families in street.
K	90161	Flooding entire backyard and storage shed. Please call her back going. She has to unlock gate to area. (Complex is on 1901 W. Wetmore). Site visit by Fran Dostillio. Very small localized ponding. Roof runoff which has been brought offsite with gutter
D	90188	Developers curbs lower than flood levell. No way for water to flush out. Sam Gutierrez met with Mr. Dickerman at site on 9/18/90. Mr. Dickerman sta ted that he was not aware of the problem, but he would talk with Mr. James Rice (his tenant)
	90218	Water from alley is supposed to drain in wash instead it flooded her yard and pool. This is the 3rd time its happened. I ran her 75 dollars to get her pool cleaned. 10:35 am. Met with Mrs. Claire Jackson at problem area.
F	90239	This man had dug a drainage so that when flooding the water would drain out to Wetmore. A sewer line was put right over it and in front of his house. He wants someone to come out and put his drain back up. c
B	90246	Wash in front of business overtops every time it rains. Lake in driveway a nd yard. No ingress/access for staff or customers - They have to close dow n. Met with Mr. Clayton Kiewel, owner of Desert Building Materials.
	90259	
D	90273	No drainage - Water 2' deep in front of home. Water ponds for days. Sam Gutierrez met with Mrs. Cox on 9/18/90 to discuss flooding problem. Mrs. Cox stated that she was tired of the street flooding, regardless of the amount of rainfall in the area
	90361	Mr. Dahl has never had a problem with flooding until last week when someone graded the acres behind his house. Now the water has been diverted into his yard and next good rains will und up in his living room. In a NE-SE direction to try to control runoff to some degree. He already talked to Mr. Dahl out at the site and will be brining equipment back out to the to do some corrective work, hopefully the Arcing Brems. He also said there was a storm sewer
	90367	Street dumping runoff on property.
	90380	There is no culvert for drainage. Water drains straight down the street flowing down main entry way of subdivision, carrying sand, silt, rock causing hazard and maintenance problems. Site visit by Dan Yersavich 10/10/90. Water from Sabino Canyon Rd.
	90434	Northmanor wash - Moquitos breeding up and downstream of box culvert. Ma y need to reair inlet & outlet. Reported by Environmental Health Division. Site visit by Mikle Shore (no date) Called Keith Oliver and Operations to rectify situation. See me
	90449	Northwest end of easement causing flooding on complex. Site visit by Fran Dostillio 11/14/90. Private platted 8ft drainage easeme nt in NW corner of subdivision has a wall with gate, wood fence and shed on it.
K	91009	Alanon building across Romero Road built up their property and diverted flo w across the street to Mobile Home Park. Neighbor to the south built a bui lding on their property last year and diverted more flow. In last rains hi s park was like a quagmire
F	91011	Pima County cleaned out drainage ditches in the area recently. Now flow fr om our drainage ditches is blocked by two Southern pacific drainage ditches . These are approximately 1000 feet apart and are extremely overgrown/ Flow is being diverted
F	91015	She would like to speak to someone about a drainage problem she is having w ith water coming into her property. Flow is coming from adjacent building (recreation hall of Victory of Assembly of God Church) on the east side of her property.

SITE LETTER	CASE NUMBER	DRAINAGE COMPLAINT
	91023	
	91030	North end of Idaho Lane is impassible on foot and by car because there is no drainage for flow from Limberlost. All flow drains to Idaho Lane.
	91043	
	91111	Back up of water flow. Park next door put decorator walkway and cement wall, she feels this will cause problems in monsoon season. Did not see decorator walkway or cement wall on Interior of Mobile Home Park is completely fenced. Chain-link around the perimeter and slatted chain-link too.
	91153	Racetrack Wash crosses First Avenue. Box culvert - do we maintain? Memo sent with Tax Maps - right-of-way highlighted BJD 7/23/91.
	91154	Wash running behind the Circle K, just north of River Road - is it our resp onsibility? Memo sent with tax maps - right-of-way highlighted BJD 7/23/91
	91217	
D	91249	2602 W. Golda sits across from Diamond Grove Mobile Home Park. Flow from p ark drains west to Plane and ponds so badly it is a traffic hazard during r ain (later it becomes a health problem) Mr. Montgomery feels the County cha nged flow at a low spot
	92069	ARC Grading Co. at 2541 W. Zinnia has dumped dirt & concrete debris in ease ment in back of their property. Runoff from area used to flow thru easement, now it backs up onto their property. Mr. Lewis has talked to ARC and explained the concrete
	92088	
	92092	Complaint received from John Bernal. Meet with Mr. Smith to discuss possib le alternatives to flooding problems. See Violation letter to Lloyd Patterson (Certified receipt signed 6/15/92) from B. J. Davis. 05-04-93 Terry H. wrote memo to file.
D	92166	Neighbor has half a garage built - he has placed slump block 4 feet high 4 from her fence. this is diverting flow from M.H. awning - now flow is going to Mrs. Spears property & into swimming pool. Referred to Dale Diffie in Zoning Enforcement. They will handle. Logout : No Action. Area does not lie in a Floodplain. Referred to Zoning Enforcement. Permits were obtained.
	92233	On the corner of Sahara and halfway down the block going east,when it rains thr streets flood so bad that the water is above the curbs, She has a bad time trying to get out of her property. Her car is always stalling from the rain. The water reaches to Operations reconstructed the approaches (wb) to Shannon Road for: Pallm Vista, Palmyta, Canauba, Sahara, Palmetto, Royal Plam, to allow drainage to drain via a dip in the approach. Some evidence of water still ponding at Palmetto and Sahara but appears.
J	92278	Right of way along the east side of Romero .north of school to Wetmore is to be paved. Should Operations remove culvert or can it remain? it was privately installed at 4302 N. Romero Road. Spoke with Ted Ramirez. He paved grader ditch up to 12 CMP and left CMP in place. I recommend paving around opening inlet and outlet CMP to prevent run off from eroding driveway around CMP. he agreed.
	92343	Alley backing up with water. Water came to within 4 inches of the house. Berm at botton of fence to keep water form comming into complex. Mr. Sear cut small trench at alley end to let water out but Apartment Manager filled in again. RTH sent letter.
	92353	The house almost flooded. If they hadn't block the flow it would have flo oded. Meet with Mr. Patrick out there. He is able to meet in the morning. Site visit 02/25/93. Advice given.
	93010	No drainage on this street and drains on his property. Water is rising due to this problem. Private property in mobile home park.
	93021	Kain is ponding water for long periods of time. Can it be graded to drain into the Ruthrauff storm drain? Site visit: Both sides of Kain, south of Ruthrauff looks like swamp land. Standing water. Back 150' on east side and 100' open trench
F	93024	
K	93027	One foot standing water on property. Flows slightly from lot in front of h er to her property. Feels drainage insufficient for area. Has problems wi th any rainfall event. Private property. Non-regulatory. Within private mobile home park.
D	93048	Most rains: Intersection of Palmetto and Shannon ponds curb to curb and is difficult to get into residences on cul de sac. See photo. Drainage ditc h runs north and south along Shannon. Met with owner. Gave Flood Preparation and Repair Manual.
	93049	The whole right of way is filled with water and it takes approximately three weeks to dry up. Therefore, the mailman will not deliver mail due to bein g stuck in the right of way. 02/22/93. Site visit. One big mud hole.
	93058	Resides on Limberlost and is at the last house on a deadend. He is calling in reference to a alley way between his home and an apartment complex. T here is 2 1/2 - 3 1/2 feet of dirt between the area and in its place is a h igh hole where the dirt was
	93067	Road is very badly rutted. It is across the whole width of the road. Faxed to Operations. Logout: 7/1/93, No Action this is a private road with a non-regulatory flow.
	93103	
	93170	When they use fire hydrant water flows down the alley & right under his mobile Ponds in yard causing damage. When rains come his home will be damaged. Neighbor had complained 5 years ago & the (Edmond Larry) County Admitted they goofed
D	93215	Debris dumped between 2pm Mon 6/14 & 8am Tues in Rillito River. Consultant (Sanjay Sangani) was on site at these times. Curtis La Cholla Ltd Partnership. Contact Janet prior to issuing violations as County is currently in an unrelated lawsuit. Logout:
	93230	Unmaintained easement. Overgrown grasses both wet & dry (potential fire hazard). Rodents, snakes, & mosquitos inhabiting easement. Mosquito problem is main concern. Has children & fears they will play in easement. Logout: A survey has been sent to Ops.
D	93310	E/W streets directly in front of peroperty is full of debris causing the water to become stagnant in the wash. This needs to be cleaned out. N/W near Shannon & Curtis Drainage ditch runs off Shannon. Logout: Referred to Operations 9/7/93
	93312	The road ponding problems are getting worse. Logout: referred to Operations 9-7-93 RTH.
D	93337	La Cholla/River Rd. Wash that runs behind Ed Moore's house is not flowing properly. It is being diverted & going onto her property, into her stables & buildings. Water has gone inside her building. Logout:
	93349	In front of their driveway, the paved road has cracked. It needs to be redone also in front of the house where the gate is there are a lot of pot holes that need to be fixed. Logout: referred to Operations 9/7/93 RTH
	93351	Road flooded water to her front door. LOGO: Operations cleaned out drainage channel.
	93394	
	93448	Flooded stockroom Logout: Advice of letter sent.
	93451	
D	93453	W. OF SHANNON RD. See memo attached.
	93464	W/ of 2413 W. Wetmore on the S/S of the street there is a vacant lot. Someone is filling it with dirt raising the level of the lot. Onquest is concerned, because when it rains it will divert the natural flow of water causing problems to this property.
	93480	Putting in fill, diverting the flow to damage his property. LOGO: Violation notice sent 94-005.
F	93481	Parking lot was paved all the way to the street. It was paved flat instead of having a dip, causing all the water to divert onto Richins property. Logout: Not a FP issue forwarded to Trans. Eng 1/14/94.
	94022	Would like someone to look at restricting access to Friendly Village Wash at County ramp into wash. Logout: To be included in CIP handrail contract.
	94039	The access road into the bottom of the friendly village wash is not sealed off. Vehicles are creating problems - Try and meet the week of 2/28/94. Logout: Handrail to be installed by P.C. CIP contract
D	94062	Flooding problems, that there has been no attempt to addres her concerns in the area. See memo from Mary Lou attached. Logout: I recommended a storm sewer be installed. RTH
K	94063	After Curtis Rd. was resurfaced, the roadway slants toward the fire station and the bays are flooded each time it rains. See Attached. Logo: This complaint was referred to D. Ballesteros as a road drainage problem.
	94071	
	94089	Elevation of rd. has been raised ruining property. Black toping on road causing runoff to go directly onto his property. Water is not draining properly. LOGO: Transferred to Damon Ballesteros in Transportation.
	94115	East of her property, up the hill someone is filling in a lot w/dirt, that she feels eventually will cause problems when it rains. Next to Victory God Church. Logo: No action, site to have detention basin.
	94129	New building to east of Rascon is increasing flooding. Victory Assembly of God Church. Logo: No action, non-regulatory
F	94141	Fill material & earthwork happened 5 months ago & a couple of weeks ago. Does owner have permits (as stated in mass mailed ltr. dtd: 5/27/94 from KSA re: location within ruthrauff basin 100-yr floodplain. Logo: Turned into violation #94-05
	94218	Ground squirrel around embankment could cause damage. Logo: No Action - insignificant burrowing, integrity of gunite channel top of bank is good.
	94233	Calle Lampara needs to be graded. Letters attached. Logo: Not a floodplain issue.
	94263	State farm has office & built retention basin with overflow channel. Possible bacterial growth is well from lack of maintenance to channel & standing water. Logo: Non-regulatory
	94274	
	94281	Mobile home w/in 50' of 27 mile wash. Is this legal? Logo: No action complaint resinded by Ann Abrams. W2 NW4 NE4 NE4 EXC N210' E173' & EXC N30'
	94300	
D	94321	W/of home the drainage ditch needs to be maintained. Water is ponding on Sahara causing the curbs to erode. He feels this is caused by poor engineering. Logo: Referred to D. Ballesteros 12/6/94.
M	94327	Water flowing across park since May 1994 this has never happened before. Logout : Drainage from Sports Authority parking lot to the east, referred to the City.
	94342	Excavating channel of Rillito wash. Pocket of erosion possible of bank. Logo: Steve Mellon of the Ashton Co. will keep an eye on the embankment with the upcoming rains to head off any erosion problems.
	95040	40-50 bank (60-100'), 100' from tower. Logo: No Action ; KLPX recommended to do own protection; P.C. working on plans for future.
I	95062	Southside of property there is a drainage ditch clogged. Water is ponding on on Pso Reforma North. He has water all the way up to his sidewalk. Logo: County maintained drainageway, request for mowing.
F	95148	City recently reclaimed waterline in wash to east of Gardner Lane(between highway & 1-10) In the repair they dumped dirt in wash. Complaints to City unsuccessful Make field visit to dtermine extent of fill in wash. Work w/ city on solution Existing problem
	95186	On the west side of property starting at space #34 to 44, there is a big pile of dirt that needs to be removed. When it rains water diverts into the park & stands about 3 ft. high. LOGO: Jerry H. is blading shoulder.
	95192	
B	95195	Was COT work done. 1-1/2 inches of water in office. Logo:COT to fix mess.
	95207	Lives at W. Star Mobile Home Park(Romero & Gardner) the owners filled in a large retention basin & now it filled up & almost lifted up his storage shed. LOGO: No action owner needs to elevate shed.
	95210	Water going down alley tends to go north through his yard & up to his patio. States there's a dirt berm on southside of alley. Jerry Hedayati has seen this one. LOGO: No action non-regulatory.
D	95214	Weeds blocking the Rillito & a tree blew down next to his property which is owned by the County. LOGO: Service request to clear weeds 9/6/95.
G	95232	In the past the County graded the front of his property at a slant in the low spots, not they are grading flat. This has caused 6 of water to go into his warehouse. It happened 2 weeks ago, & again last night. LOGO: Referred to D. Ballesteros for future problems.
	95243	Behind her home the wash is filled with debris & weeds causing wash to overflow. Needs to be cleaned out. It is between Edgebrook I & II on Ruthrauff. LOGO: Request to Operations to clean drainageway
D	95244	The outlet grate located at the storm sewer outlet for the Sullinger drain is half plugged. Grate needs to be cleaned. Logo: Service request sent to Operations 8/23/95.

SITE LETTER	CASE NUMBER	DRAINAGE COMPLAINT
	95245	The road inlet located to the south of the intersection of La Cholla & Noreen is buried with debris and mud. Needs to be cleaned out. Logo: Service request sent to Operations 8/23/95
J	95248	Had flooding inside front porch & in addition. Tried to divert w/towels. Neighbor on the northside covered up irrigation ditch, which they said County told them they could do this. Since the ditch has been covered lots of flooding has diverted onto Warskow's property. LOGO: Sent letter suggesting amicable agreement.
G	95251	Water went in his garage. It is not from the normal runoff, but from runoff that comes from the street. County went out & covered ditch causing problems. Wants to meet with someone in field. LOGO: Operations will try to grade shoulder. Referrd complainant to Transportation for future problems.
	95253	Behind her home new trailer court put up a wall & graded the dirt up high. Runoff diverts onto her property. She had 3' of water under her trailer. LOGO: No action. Wall will help in long run, actually blocks flow.
	95268	Office Depot added a building to their store since then runoff diverts thru American storage & into the park Way Vista Mobile home park. Four to five inches of water is under the mobile homes when it rains hard. LOGO: No action City approved facility
	95273	Not properly elevated per FPUP #93-066. LOGO: No action, trailer elevated.
J	95276	Ditch filling up on east side of Romero, flooding mobile village park several inches deep. LOGO: No action, referred to Damon.
	95302	Flooding in alley. No action, alley not that ad Jerry H. said not a problem.
	95303	Drainage of maintenance with channel north of grant rd at Jack Rabbit Dr. fence is down & large hole is developing next to soil cement. (Operations service request #1000467 rec by JRC from Ben Sarvis). LOGO: Service request sent to Operations #100467.
D	95308	Drainage full of debris & tires & smells bad. LOGO: No action non County non-regulatory told Ms. Molis to contact DEQ.
	95314	Bermed fence keeping water in mobile home park. North side. LOGO: No Action non-regulatory lot to lot.
	95317	Runoff has increased susequent to the construction of the Sporty Authority complex. The sports authority is in the COT. This was a referral from Gwen of Ed Moore's office. LOGO: Frank Souza stated that the detention was oversized having a capacity of about 3 times the City requirement. A new bookstore being built opted not to use this basin(nor is it required). He gave us a copy of his memo, however, requesting the bookstore utilize the detention
	95330	Drainageway full of vegetation. LOGO: Public drainageway, Operations will clean it.
J	95337	Flooding from the parking lot looks like a lake everytime it rains, can anything be done. LOGO: No action, non-regulatory operations can't do anything.
	95349	Behind his home the easement is filled w/fill, diverting the flow onto his property when it rains. The easement is higher than the house. LOGO: Non-regulatory no action.
I	95370	Southside of his property someone graded the Rd, & dumped all the dirt in the wash. Wants dirt taken out. LOGO: Jerry H. will remove
	95379	Drainage maintenance with channel north of Grant Rd at Jack Rabbit Dr. Fence is down & large hole is developing next to soil cement. LOGO: Referred to COT Floodplain Section(Frank Sousa) by letter of 10/25/95. Drainageway & surrounding area are within the City of Tucson.
	95409	Suspect has begun building a new structure without permit. He has put up 8 pilons, and is in the 100yr floodplain. Can anything be done, before he continues to build. Complainant has put in complaint to Zoning? LOGO: Has permitted, informed Sharon.
J	95429	Flow west of wetmore is being dammed possibly on Pima County ROW, by suspect to the west & is causing shallow flooding on TC: 104-07-0480 property. COMPLAINANT WANTS TO REMAIN ANNONYMOUS. LOGO: Sent to Transportation 12/13/95.
K	95434	Neighbors filled in small swail with fill dirt & now property gets throughly flooded. LOGO: Non-regulatory, but looks County owned
K	95439	Ruthrauff and Romero by Shamrock foods motorcycles are a nuisance. They are driving on flat land County drainageway and Rillito River. LOGO: Pima County permits YMCA to use land as motorcycle/off road vehicle training site. Sent notice to Mr. Watson.
	96035	Neighbor westside of complainants developed his half of 10 acres raising his land. Suspect has put in big sewer drains in the middle of his property diverting onto Krotenberg is worried & concerned. Wants to know what can be done at this point. LOGO: Was all approved by Pima County
	96060	At the corner of Cmo. Feliz & Ruth, their is a large dip that floods when it rains. Water ponds there for at least two weeks, can anything be done? It is located at the end of her yard to the asphalt, where the neighborhood watch sign is. LOGO: Sent letter No action
	96134	S.W> quad, rillito creek & Campbell ave standing water, 12' diameter sewage. Industrial waste H2O Where's it coming from????? LOGO: Service request sent to Operations 6/28/96 #101133
	96218	See Tim for background & problem
M	96271	While protesting a rezoning case, someone told her alley behind her house and alley leading to that alley from main road, might have a drain to drain flood waters. Also alley might need to be regraded since there are hugh pot holes. MISC. LOGO: No action taken
	96276	Complainant states to the north of property drainageway needs to be maintained. Please let Debbie or Deanna know if point needs to be moved. 5/8/12 - LOGO:The drainage infrastructure is not publicly maintained. The drainage infrastructure to which you refer is a private drainage easement as shown on Sheet 3 of 3, of the Final Plat for Shamrock Center Block 1, a subdivision of record in Book 60 of Maps and Plats, at Page 91. A copy of the plat is enclosed. The homeowner association and/or the property owner is responsible for maintenance of the drainage infrastructure.
	96277	Every year for the last several he has been flooded out. Says Pima County told him that if he graded drainage ditch that the County would maintain the culverts. Pima County hasn't & he flooded out last night. LOGO: Operations will be cleaning drainageway out. 1/6/97: Another letter sent out to Salzaber.
B	96281	Neighbor has diverted flow, may be a civil matter. (ED MOORE'S OFFICE) LOGO: See complaint #96-350.
D	96337	They have a lot of standing water on their street, & have grown mosquitos. T. Morrison faxed to Randy Baird already. LOGO: No action letter sent
D	96344	Flood problems on Palmetto, Saguaro & Carnuba. She is requesting storm drains. This area is located just south of the Rillito, east of the freeway & north of Curtis rd. LOGO: Sent letter stating improvements haven't been approved.
	96381	End of drainage at Call Lampara immediately east of Via Entrada, someone is making a dirt rd in the wash. He thinks it is a floodplain area. LOGO: Violation letter sent to suspect No. 96-007.
	96399	5722 N. Trisha Lane, County maintained rd, Sunset & La Cholla, water ponding in street. LOGO: Referred to Damon in Operations.
I	96411	On the eastside of property neighbor has a pipe that is draining out ponding water creating mosquitoes. LOGO: Non-regulatory flow
	96434	Trench PV dug is making water flow on Stier's property. Flowing water moving blocks under trailer. Call Ronald with procedure. LOGO: Non-regulatory flow
	96480	Says the alleyway runoff has changed diverting into his property. Please respond to Peggy with findings. LOGO: Sent service request to Operations No 101198. Service request completed 12/17/96
K	96483	Wants to know who owns the basin. This is a mosquito problem, Randy knows aware of. LOGO: Called Randy, basin dedicated to Pima County
	96486	Flooding coming into business off roadway. LOGO: No action no funded improvement plans rejected by BOS
	96511	Clean drainageway(see photo) and remove debris along fence. Please call ahead. LOGO: Sent service request to Operations No. 101196, X-ref 96-53. Service request completed 12/18/96
D	96518	Came from Peggy in the Director's office , please give Peggy a update. Significant flooding in alley flooding back yard. Wants someone to take a look. LOGO: Sent service request to grade alley #103077. Service request completed 12/16/96
	96519	Concerns that a project being built behind her property to the east by Shamrock Dairy. They have advised Mr. Watson that the water will be diverted. Please let Peggy know of findings. LOGO: No action
D	96531	Curtis/gardner school, property adjacent to west(higher) drainage coming off and draining through degulis property-concerned with future rains/drainage impacting her mobile home park. LOGO: No action X-Ref 96-511(DC)
	96549	
D	96551	When it rains, street floods water doesn't drain for at least a week. Large puddles in front of his house. Might be a Trans issue. LOGO: Maintenance request #102736.
D	97011	Ponding/drainage problem on Plain Ave(westside of mobile home park). LOGO: Service request sent to Operations #102738
	97033	Mr. McFarland would like to build a workshop 4' from his east lot line in easement. Please investigate. LOGO: complainant was mistaken
	97038	Suspect north of his property is dumping 400 loads of dirt onto land that will create lots of runoff to Silko's property. LOGO: Tim called Silko to let him know permit has been obtained.
	97061	Corner lot, The whole corner floods and then drains into her yard. Water stands a very long time and becomes green and stagnant. Would like to meet hydrologist in field. LOGO: Service request sent to Operations # 102737.
F	97105	On the eastside of her property, suspect is developing the land and raising it. Do they have permits. logo: Sent request to Operations # 103152.
M	97130	Wants To Meet W/Hydrologist. There is a wall on the eastside near Limberlost creating improper runoff and ruining the rds. Wants to know who is responsible for the wall, and how do they take care of the problem. LOGO: No action.
K	97134	Swale dug out in front of building eroding again. Eric Shepp has details. LOGO: Sent service request to Operations 103154.
	97138	
D	97160	Mr. Powell was referred to MLJ via Supervisor Bronson's office. His complaint is historic ponding in front of his house. Recent chip-sealing of street may have compounded issue. I informed him no flood control improvements are scheduled in area for next 5yrs. Someone needs to set up a meeting, wants pictures taken of area, and is aware no action might result of this situation.
	97173	Road flooded water to her front door. LOGO: Operations cleaned out drainage channel.
	97255	New deveopment called River Point has been developed raised & sloped. All the runoff diverting directly into his back yard from the alley. Needs advice. LOGO: Sent service request to Ops# 103110, completed 11/4/97.
D	97293	Box culvert needs to be cleared out on Curtis about 1/4 - 1/2 mile west of La Cholla. LOGO: Service request # 103114 sent to have culvert cleaned and drainage regraded/repaiared.
	97296	At north exit of park (Alsis Lne) 400' west of Romero suspect has elevated his property and changed natural drainage. Call manager to let them know when you're coming out. LOGO: Landscaping material does not appear to effect flow. Wetmore realignment may help ponding.
F	97310	School built block wall which impounded water. They then knocked holes in wall to allow to drain which is causing problems to a business to the west. He has requested a field meeting with the hopes that we may be able to recommend an acceptable solution . LOGO: Letter sent to Dr. Pedicone regarding findings.
	97311	
D	97330	Would like to know if his property has flooded in the last 15 years, he has lived there 4 years. LOGO: There is no record of any flooding on the proeprty, or in the complaint files.
	97390	Look at past complaints of area, long history. LOGO: no comments
	97420	Race track wash silting up culverts partially filled in, reducing designed capacity. LOGO: Sent service to Operations #103136
	97425	
	97437	Wash across the street needs to be cleaned out. If it rains vegetation will uproot & clog up the drains under River Rd. LOGO: Sent service request to Operations # 103141. Service request completed 11/12/97
D	97523	Shannon/Curtis area, streets flood out approx 1 1/2 - 2' in deepest part, still has rain puddles from last rain, no drainage at all for rain - close to school - worried kids will get hit. LOGO: Area is a historic problem, no funding available to fix at this time.
D	97527	Shannon/Curtis, street flooded, no drainage, just ponds. LOGO: Area is a historic problem, no funding to fix at this time, see other complaints for area.
D	97542	Mr. Powell called this complaint into Diana Durazo of Supervisor Bronson's office. The road ponds very badly. Please meet in the field and follow up with Ms. Durazo. LOGO: Service request sent to Operations # 103171 12/29/97.

SITE LETTER	CASE NUMBER	DRAINAGE COMPLAINT
	98009	Behind her home there is piles of debris and old tires, scrap metals on top of the bank of Rillito. Can anything be done to have it cleaned out. LOGO: Called auto salvage yard, they will remove car parts and junk.
M	98044	Wants To Meet W/Hydrologist. Northwest corner of her property needs to be cleaned out. Water is not draining properly & is diverting onto the front yard. LOGO: Sent service request to Operations 3/6/98 #104412.
F	98054	There is ponding & shallow flooding to businesses on east Lily near Highway Dr. LOGO: New business at 4420 Hwy. Dr. has filled in R-O-W blocking flow. Owner removing fill by 2/19/98.
	98057	La Cholla/I-10, Ruthrauff east of Kain. Kain road floods a lot, needs to be evaluated referred to Ops, wants us to look at as well. LOGO: Letter sent advising of situation.
G	98062	Suspects directly across from her are filling in washes & berming up the water to divert onto Ms. Plum's. She cannot get to her mailbox because of ponding problems. LOGO: Called Mr. Ball again about his concerns on the Water's property. Told him I did not see a further ponding problem.
D	98100	WANTS TO MEET WITH HYDROLOGIST. West of his property, there is a vacant lot that has water ponding. It looks like a big lake, potential for mosquitoes. Can anything be done. Please respond back to Diane X8051 & Mary Lou Johnson. LOGO: Memo to Mary Lou Johnson with copy of letter.
G	98114	Getting additional runoff easement now blocked off with 6 feet block wall. The company on La Cholla has built up their property. 12 to 18 so now there is more runoff. LOGO: Permitted & built correctly, no action
	98149	40-50 bank (60-100'), 100' from tower. Logo: No Action ; KLPX recommended to do own protection; P.C. working on plans for future.
K	98170	Wall blocking flow. LOGO: No action on request of complainant.
	98195	County went out and graded shoulder of road. Now his MH park is flooding out. Water has gone inside. LOGO: Letter sent.
J	98197	Water went inside home. LOGO: Letter sent.
M	98198	Wash was cleaned improperly, flooding his yard. LOGO: No action taken
M	98203	D Janders sent Ops to clean drainage 2 months ago, neighbor's & self flooded out in back yard 7-8 deep- water coming off Limberlost. LOGO: No action taken
	98206	Neighbor & Mr. Watson yards were flooded. LOGO: Letter sent to Mr. Watson.
D	98220	Kain Ave & Ruthrauff, a portion of the street is currently under water & will remain that way for months to come. BOS/DIR. LOGO: No action taken
K	98237	Severe ponding in the shoulder area on the northeast corner of property. Jerry H. looked at this & thinks the recent landscaping in front has blocked the drainage creating the ponding. LOGO: Jerry H. to take care of problem.
	98245	Road flooded out, has photos to show, please call before going out. Water went inside her home October 11, 1997. LOGO: No action private rds.
	98260	Business across the street blocked a natural drainageway. Business went bankrupt leaving everything. Nursery did get water inside building. LOGO: No action taken forwarded to Director's Office.
D	98270	Carapan at Curtis is submerged underwater. Diane from Supervisor Bronson's office has pictures to show. LOGO: Operations graded north of R.O.W. of Curtis from Davis to Shannon to drain west to church at NW corner of Shannon/Curtis. Church wall has holes for drainage.
	98303	Flowing Wells ID constructed berm, diverted flow at request of suspect - would like corner removed & tree at ditch for resolution. LOGO: No action taken
D	98424	Adjacent property owner(Garden of Tucson?, Pima Co.?) has graded lot & backed up flows onto Lucy's M.H. Park. LOGO: Service request sent to Operations.
	98465	
	98523	Channel under Ruthrauff flowing north has dirt piled 2-3 feet across it. Blockage is about half way from Rauthrauff to River. LOGO: No action taken
	99040	Suspect is breaking down a stock yard and dumping all the debris & trash into the wash, blocking and diverting the flow. Can anything be done? LOGO: No action at this time
	99061	WANTS TO MEET WITH HYDROLOGIST. Behind his property there is a common drain that is shallow & filled with debris. County went in 5 years ago & paved it. They have not been out since and now water is diverting. LOGO: Sent service request to Operations #105912
	99081	Drainage from City improvements in Price & Garner Bus. area will cause ponding. LOGO: No action at this time.
	99094	Right of way drainage problem. Water just sits next to road ROW. See DC 96-551 LOGO: City performed maintenance on shoulder.
	99103	Rain water running off of shuffle board court onto our road & causing it to wash out. LOGO: Appears to be non-regulatory <100cfs local nuisance flow onto Iroquois a private road. Met Ms. Patton & suggested rip-rap to spread rather than concentrate flow.
	99109	Parcel of NE corner of Fairview/Roger is filling in drainage ditches south of Wagons West. Couldn't find any Dev Plans. LOGO: No evidence of drainage ditches in area except possibly along roadways, no action.
F	99156	Water went inside her business It is worse than before. Water from I-10 crosses over Wetmore and land into her property. Needs help. LOGO: Business lowest floors at grade in Ruthrauff basin. Suggestion letter sent to angel & Gilbert Lopez for flood proofing measures they can do.
D	99157	Every since new development went up south of his property and was built higher, water is diverting through his alley and washing out his yard, water went under his mobile home and ponding on his property. LOGO: No action, too late to respond due to work load.
B	99159	Entire lot was flooded and water went inside the building. LOGO: VR spoke to TDM, LRS,SD. Consultant analysis done; recommends expensive culverts under tracks (RR) will not solve problem. CIP funds needed. Cost benefit not good. VR explained problems to Mr. Knevenston, and provided background materials & flood protection materials
J	99160	Ditch that runs between Wetmore and mobile home park keeps clogging and diverting the flow. County went out and dug a septic tank at the church. Corner and the church put in a beam which all diverts back to the mobile home park. Because of all the water flooding under his mobile home, he has had to have his mobile home leveled 3 times at \$70-100 each time. LOGO: No action, non-regulatory
	99161	Water went inside home. Needs advice. LOGO: Local property problems. Recommended to owner fix roof rain gutter, improve flow path around house, eliminate ponding north of house against north wall, improve drainage across road to north.
K	99181	Ever since the County went in and paved street making it higher, water has diverted onto their lot, church has put in berm and mobile village keeps taking it out. Needs advice. LOGO: Non-regulatory, no action.
	99207	Referred by Jerry H. Water from alley way diverting onto her property. Runoff coming from other trailer parks. Jerry has some options to help, give him a call x2639. LOGO: Jerry H. will take care of problem.
	99216	Given to Steve Dolan. No action taken.
	99217	Problem with road runoff comes down and diverts all over her property. Water is settling her MH. Needs help. LOGO: Non-regulatory, no action.
G	99238	Sahuaru trucking has diverted the flow to directly run straight into Ms. Birkholz's property, needs advice. LOGO: No action, letter sent.
	99240	
I	99241	Director's office. At the west end of Root Lane, drainage ditch that has mosquitoes breeding. She says that the ditch has been cleaned in the past. Forward to Randy Baird at Consumer Health. LOGO: Mark from Consumer health went out to inspect. No standing water remains in ditch.
K	99260	Suspect north of McPhalen's property has piles of asphalt (chip seal) in front of his property. He is going to dam up the washes and divert the flow. LOGO: Service request sent to Operations # 106770.
	99263	
	99268	Wants to meet with a hydrologist. Wash is now carrying water, it has not in the past. Something had changed the flow north of his property. Wash is very shallow and will overflow.
F	99300	Experiencing lots of runoff. Wants to meet with a Hydrologist. Will fax back a drainage complaint check soon with details,
	99333	West of her property there is a drainage ditch that needs to be cleaned out. Mosquitoes are breeding in the ditch & in a pond in the middle of the road. LOGO: Sent service request to Operations # 106784.
	99338	Wants to meet with hydrologist. Jim please verify if this is City or County. LOGO: Referred to City of Tucson.
	99341	
G	99358	Water went inside home, he says he is getting all the runoff from main roads La Osa & Plum. Water needs to be diverted. LOGO: Letter sent.
	99364	Alley behind his property has been built up over the past years, now he is getting all the water from the diversion. His MH is starting to sink with the dirt being so soft and wet. LOGO: Letter sent.
D	99371	The street in front of his house floods, water goes up half up his driveway. Water ponds for weeks, looks like a lake full of Mosquitoes. UPDATE 9/14/99: From Randy Baird (Consumer Health) This area has been addressed on three previous complaints, all with negative mosquito larvae findings. LOGO
	99372	Water ponds for two weeks after it rains, full of mosquitoes. Update: 9/8/99 spoke to Mr Pankow, no more mosquitoes, ditch does not flow properly. LOGO: Sent service request to Operations #106784.
	99376	
D	99378	Water ponds. No action taken.
D	99379	At Caranuba & Shannon water ponds, mosquitoes breed. Road needs to be looked at. Referred to Randy. Update from Randy 9/21/99 nothing can be done, County aware of problem and is working on trying to fix the situation, Steve Dolan from floodplain Mgt., working on this. LOGO: Referred to Randy Baird
D	99382	Rds pond, mosquitoes breed. referred to Randy Baird, Floodplain working on a solution. LOGO: No action.
	99387	Drainage easement creating problems slope is high needs advice. Mosquitoes breeding informed Randy. LOGO: Responsibility of HOA.
D	99395	Refer to Randy, mosquitoes ponding in water
	99401	
	99402	Due to the way County went and built up Sullinger Rd., water is diverting and went inside their building last night. Needs advice. LOGO: Letter sent.
	99405	
	99405	The water goes into his property and onto his house when it rains (from the street). LOGO: Letter sent, no action.
	99406	Water inside home from yesterdays storm. Carpets 6'-7' wet, no damage to walls. LOGO: No action, advised tenants.
M	99413	There is an alley north of 755 W. Limberlost TH when it rains the water runs off into N 16th and it floods and it floods her property & neighbors too. LOGO: private property.
	99415	
	99419	Drainage ditch at Pamona & Gardner is clogged with debris? Mosquito problem too. UPDATE: 9/27/99 from consumer health, area in question is dry. Notified Ms. Gomez 10/1/99. LOGO: No other action taken.
	99421	New park courtyard constructed behind her property. Developer plugged all the drainage holes in back which is causing the ponding.
	99426	Alley behind her house is not paved & it floods when it rains; & it takes a long time for the water to dry up. They have a lot of mosquitoes. UPDATE: 9/27/99 from consumer health, no mosquito larvae found. Called Ms. Ortiz with response 10/1/99. LOGO: No other action taken
	99427	Alley behind her property developed craters, ponding water creating mosquitoes. LOGO: UPDATE: from consumer health, no larvae found. Notified complainant by message 10/1/99. LOGO: No other action take.
	99454	Wants to meet with hydrologist. Due to the foot wall built from River Point Development, water is being diverted. He had 6 inches of water on his property, renters could not get in or out. LOGO: Long history-see Opha Watson file, sent letter.
	99475	
	99490	

B.2 Summary of Flooding and Drainage Problems

The following is a list of the major flooding and drainage problems identified by examination of the existing conditions data within the study area.

B.2.1 Freeway (Gardner Lane) Industrial Park

The Gardner Lane Industrial Park is located south of West Gardner Lane and north of West Prince Road, between North Romero Road and Interstate 10. The majority of this area is mapped as an AO Zone (1 ft. depth) on the currently effectively Flood Insurance Rate Map for Pima County and Incorporated Areas (Panel 04019C1669L, June 16, 2011) see Appendix D. This area is primarily drained by an under capacity channel along West Gardner Lane which outlets to the west and the UPRR tracks. This flow is impeded by the railroad tracks and, to the north, railroad spurs because no outlet drainage structures exist. A future drainage structure is proposed at the UPRR at this location. This structure is expected to accommodate all 100-year flow concentrating at West Gardner Lane and convey it to an existing, new structure under I-10. Photos were taken of the area during a significant rain event on September 8, 2014 (see Appendix B.1.8). Estimated 24-hour rainfall in the area was in excess of 1 inch.

B.2.2 Wetmore Road and Highway Drive

Several businesses have experienced flooding in the area. Ponding along West Wetmore Road and North Highway Drive is prevalent.

B.2.3 Root Lane

West Root Lane is located west of North Romero Road and south of West Wetmore Road. Due to inadequate conveyance to the west the storm runoff ponds at Root Lane and Paseo Reforma. Homeowners have reported ponding depths above the street curbs. Photos from the September 8, 2014 event of this area are contained in Appendix B.1.8. In addition, homes adjacent to North Romero Road have low finished floors and portions of an old irrigation ditch have been filled in. One homeowner in this area has reported flooding.

B.2.4 Simmons/Tuttle Area

This area is located north of West Prince Road and west of North Fairview Avenue. Runoff in this area drains to an alley, south of West Pelaar Street and to a storm drain at the corner of West Pastime Road and North

Flowing Wells Road. Ponding occurs upstream to North Tuttle Avenue and West Simmons Street. Ponding depths above the curbs and into driveways have been reported. Pictures of the area have been provided by the City for two storm events, August 12, 2014 and September 8, 2014 (see Appendix B.1.8).

B.2.5 Wetmore and North Plum Avenue

North Plum Avenue is located south of West Wetmore Road and west of North La Cholla Boulevard. Homes have low finished floors and homeowners have reported flooding in the past.

B.2.6 Sullinger Channel

The Sullinger Channel is located north of West Curtis Road and west of North La Cholla Boulevard adjacent to Curtis Park. Riprap erosion control has failed for tributary drainage and sediment has accumulated at the outlet of the channel at the Rillito River.

B.2.7 Curtis/Kain

Numerous complaints in this area, located west of North La Cholla Boulevard and north of West Ruthrauff Road. Ponding occurs in the intersection because an existing channel does not convey runoff to Rillito River due to insufficient grade. A single 36-inch pipe exists at the Rillito River.

B.2.8 Curtis/Shannon

Roadway ponding is prevalent north and east of the intersection of West Curtis Road and North Shannon Road as well as within the neighborhood northeast of the intersection.

B.2.9 Pomona

North Pomona Road is located north of West Roger Road and west of North Flowing Wells Road. The swale adjacent to the west side of Pomona Road may be inadequate to convey flow away from adjacent mobile home park and upstream homes.

B.2.10 14th Street Channel

Channel outlet (storm drain inlet) clogs with debris.

B.2.11 Prospect/Nidito

Ponding observed at intersection during the December 8, 2014 storm event.

B.2.12 Limberlost/1st Avenue Detention Basin

City has had reports of flooding from the detention basin located on the eastern side of the commercial complex.

B.2.13 Mountain Avenue and Prospect Lane in the vicinity of Limberlost

Ponding runoff for extended periods of time.

B.3 Spatial Data

The spatial data related to the existing conditions compiled by Stantec is included in digital form only. The spatial data compiled by JEF can be located in Appendix C and Appendix D and the alternatives spatial data is located in Appendix E.

**RUTHRAUFF
BASIN MANAGEMENT PLAN**

VOLUME I OF II

DRAINAGE IMPROVEMENT PLAN

**Appendix C – Technical Data Notebook for Hydraulic
Analysis & Floodplain Mapping; Special Pima
County Study No. 2; November 2015; JEF**

The report compiled by JEF for the PCRFCO detailing the Hydrology and Hydraulics of the Ruthrauff Basin Management Plan study area. The entire report, including all related appendices, exhibits, data...etc. is included in digital form only.

**RUTHRAUFF
BASIN MANAGEMENT PLAN**

VOLUME I OF II

DRAINAGE IMPROVEMENT PLAN

**Appendix D – Technical Data Notebook: Letter of Map
Revision for Flowing Wells Wash & Runway
Drive Area; Case No. 17-09-0333P; JEF**

The Letter of Map Revision report prepared by JEF and submitted to the FEMA in November of 2016. At the time of this report, the FEMA has not issued approval or comments regarding the information contained within this report.

The entire report, including all related appendices, exhibits, data...etc. is included in digital form only.

**RUTHRAUFF
BASIN MANAGEMENT PLAN**

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DRAINAGE IMPROVEMENT PLAN

Appendix E – Recommended Alternatives Report

This appendix contains the Recommended Alternatives Report which describes the development, analysis, and recommendations for both structural and non-structural alternatives that was provided to PCRFD by Stantec.

The entire report, including all related appendices, exhibits, data...etc. is included in digital form only.

**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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Open House #1 Summary

Open House #2 Summary

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

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

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

- 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

- 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

5.) Summary/Next Steps

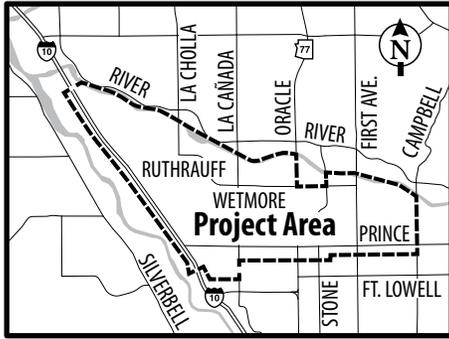
Evan Canfield

- 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.

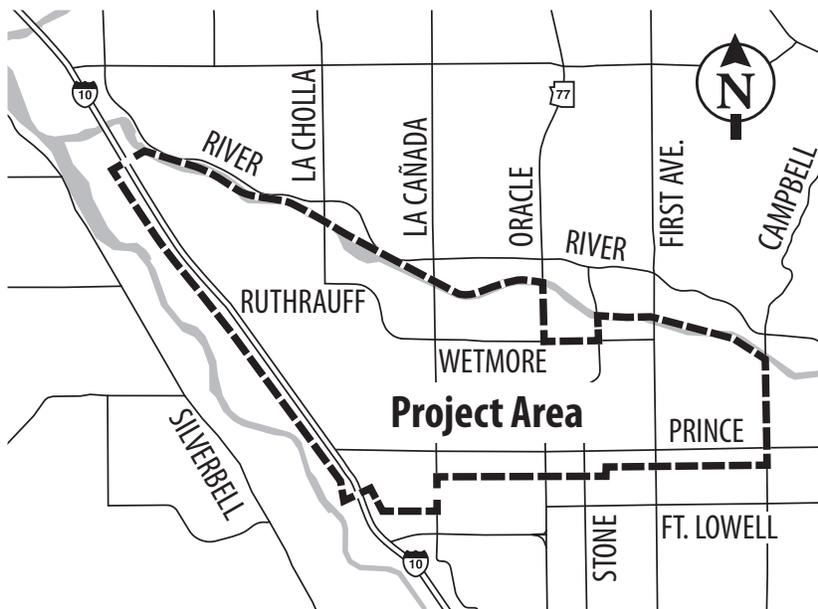
Pima County Regional Flood Control District • City of Tucson

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

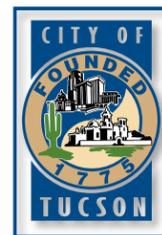
Please contact us if you would like more information or have photos or information on flooding or erosion issues within these watersheds that you would like to share with the District.

Evan Canfield, PhD, PE, Project Manager for the District evan.canfield@pima.gov

John Wise, PE, Project Manager for Stantec 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

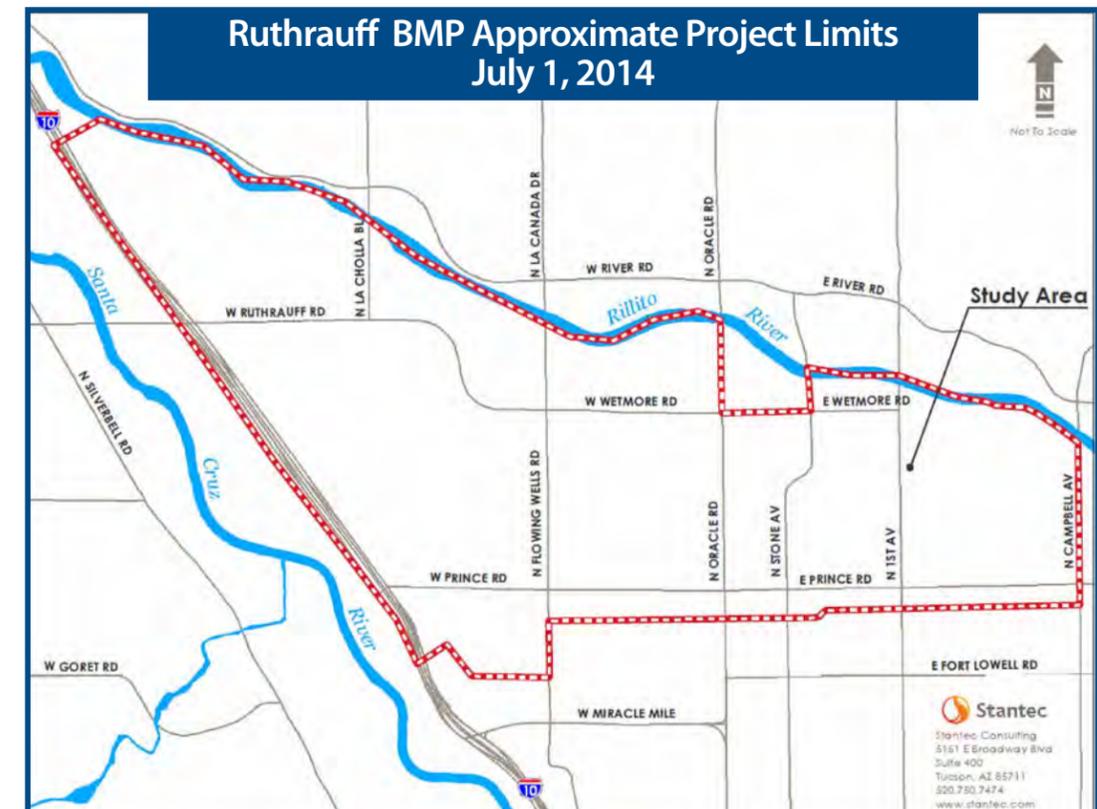
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent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

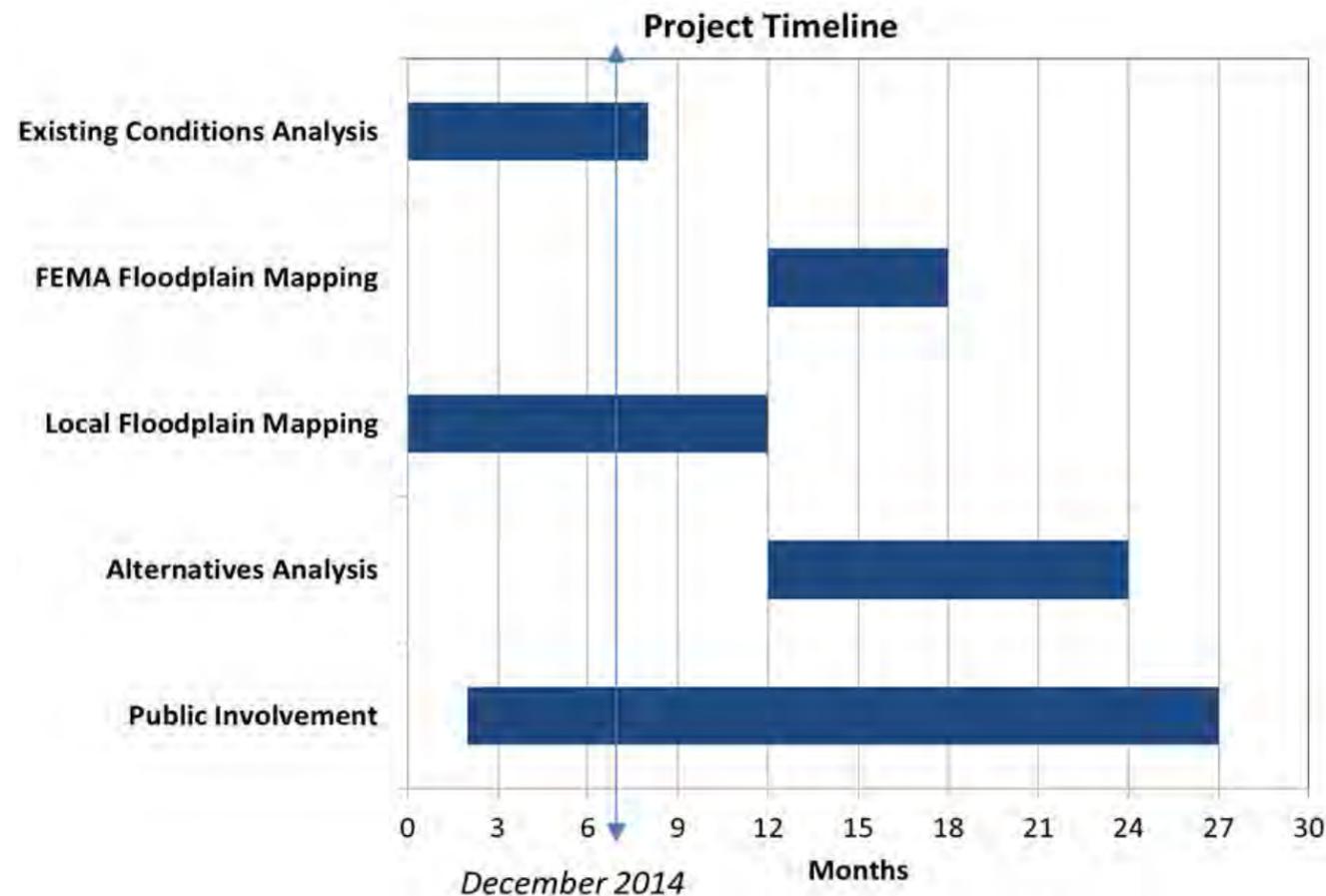
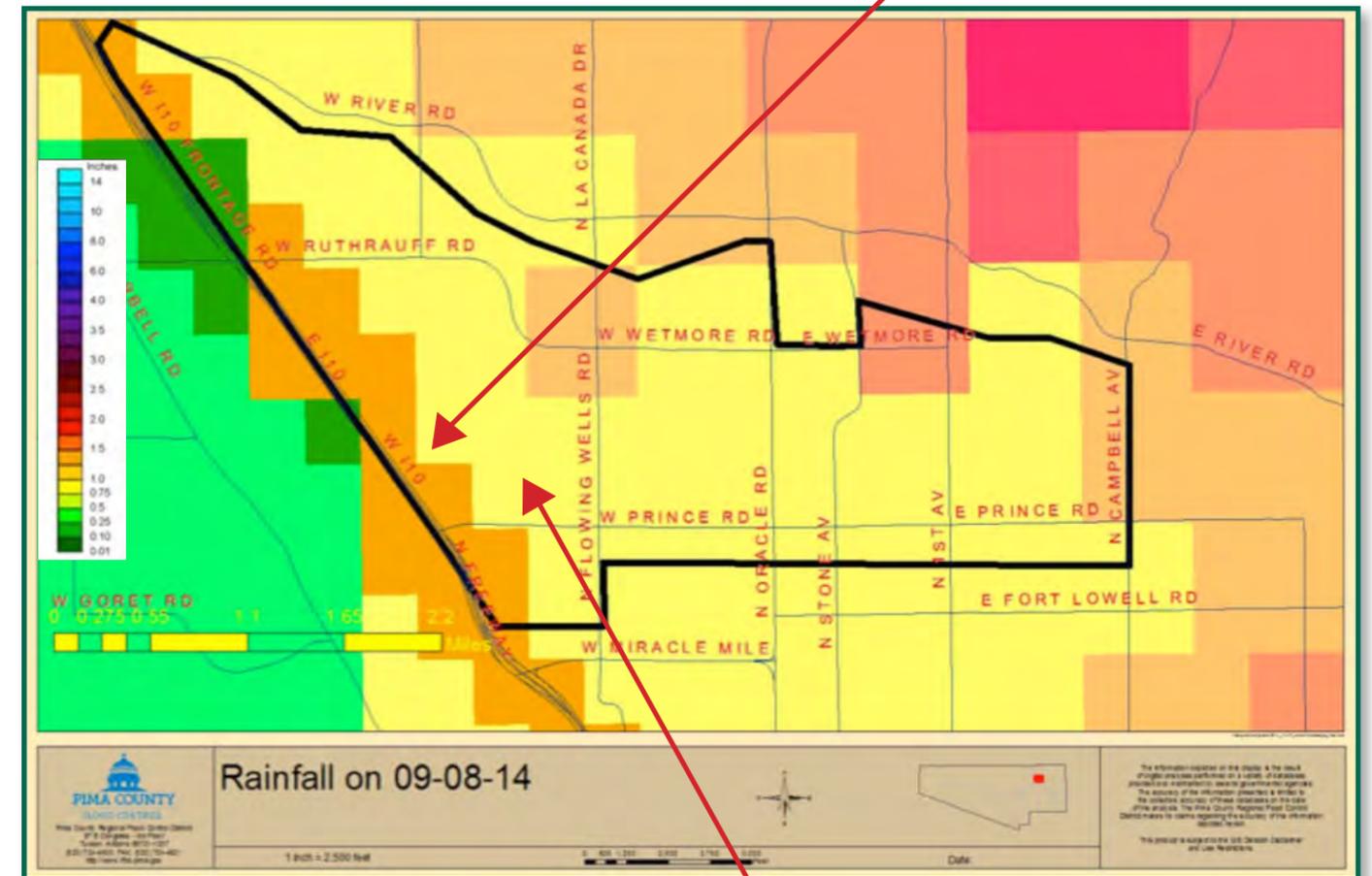
Because much of this area experiences sheet flooding, it is an ideal area for mapping using a grid-based approach, which is a relatively new technology. The grid-based maps show how water flows more accurately than the approach used in the current floodplain maps.

- **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: _____

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) 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
GATES 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

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

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*

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Attention: Evan Canfield

FAX # 520-724-4632

Email to: evan.canfield@pima.gov

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. ^{street flooding} 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.

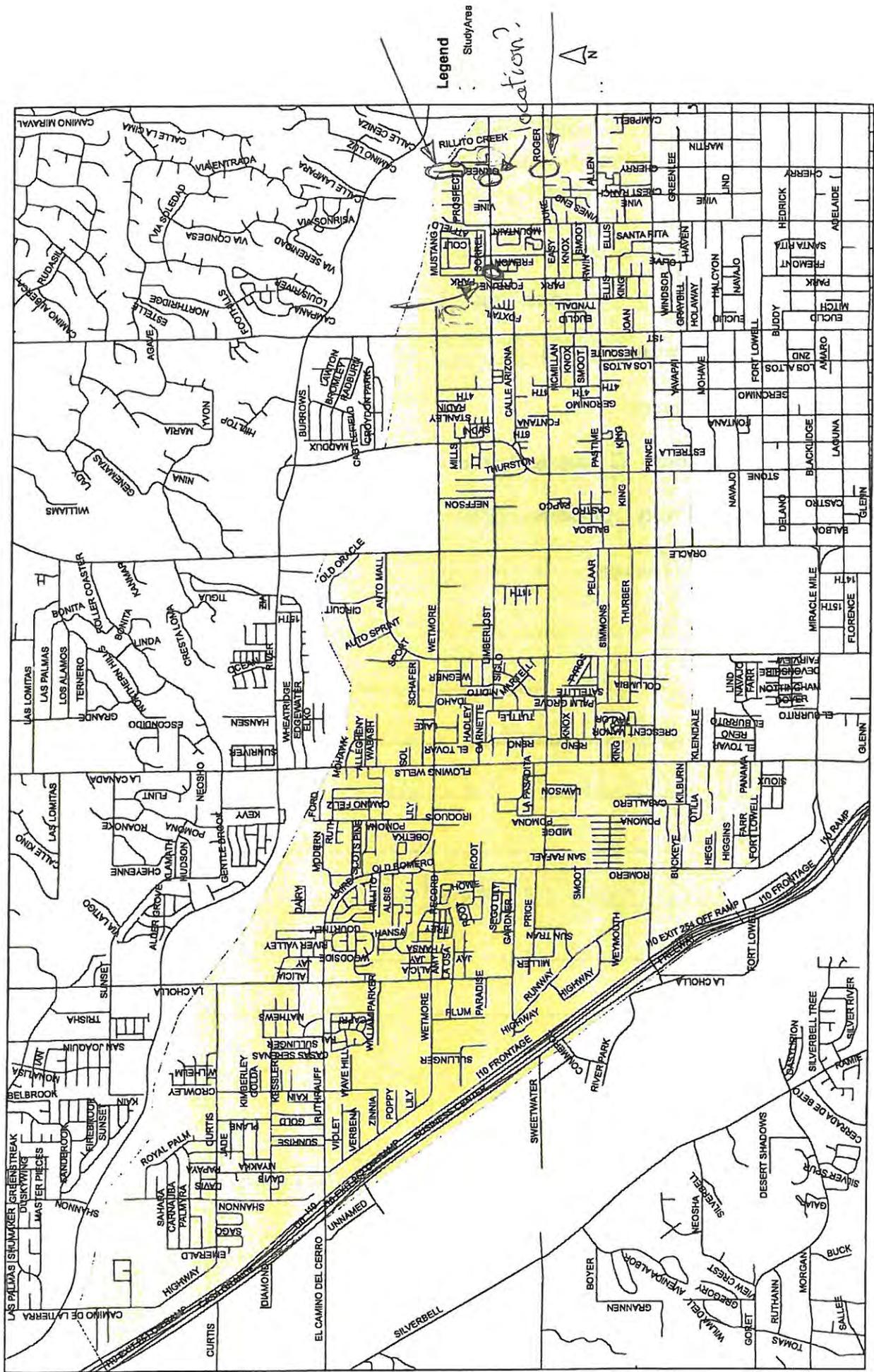
Thank you for your reachout

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

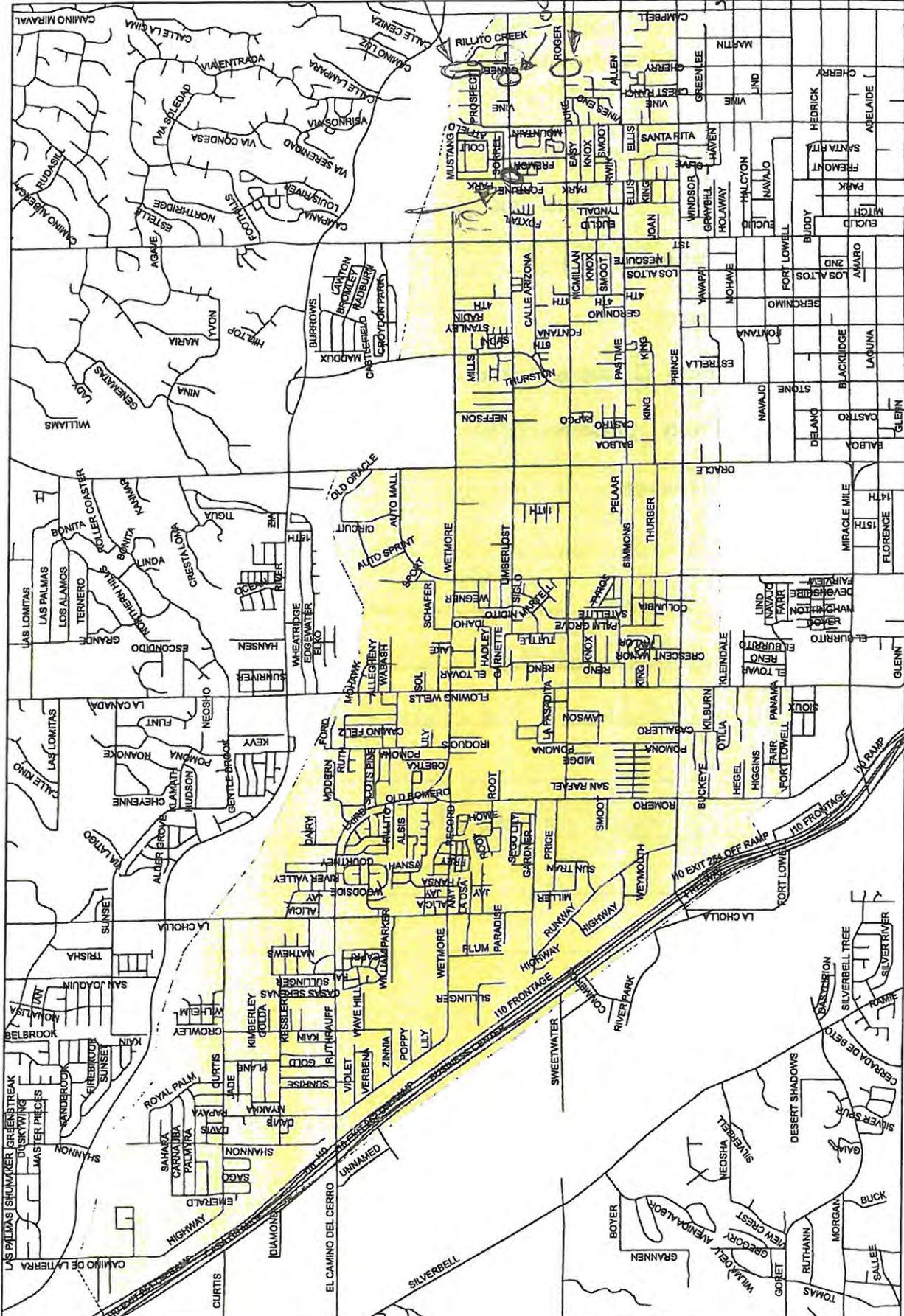
Email to: evan.canfield@pima.gov



Legend

Study Area

location?



Legend

Study Area

location?



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 Rialto 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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Tucson AZ 85701-1797
Attention: Evan Canfield

FAX # 520-724-4632

Email to: evan.canfield@pima.gov

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:

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

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:

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97 E. Congress
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Attention: Evan Canfield

FAX # 520-724-4632
Email to: 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

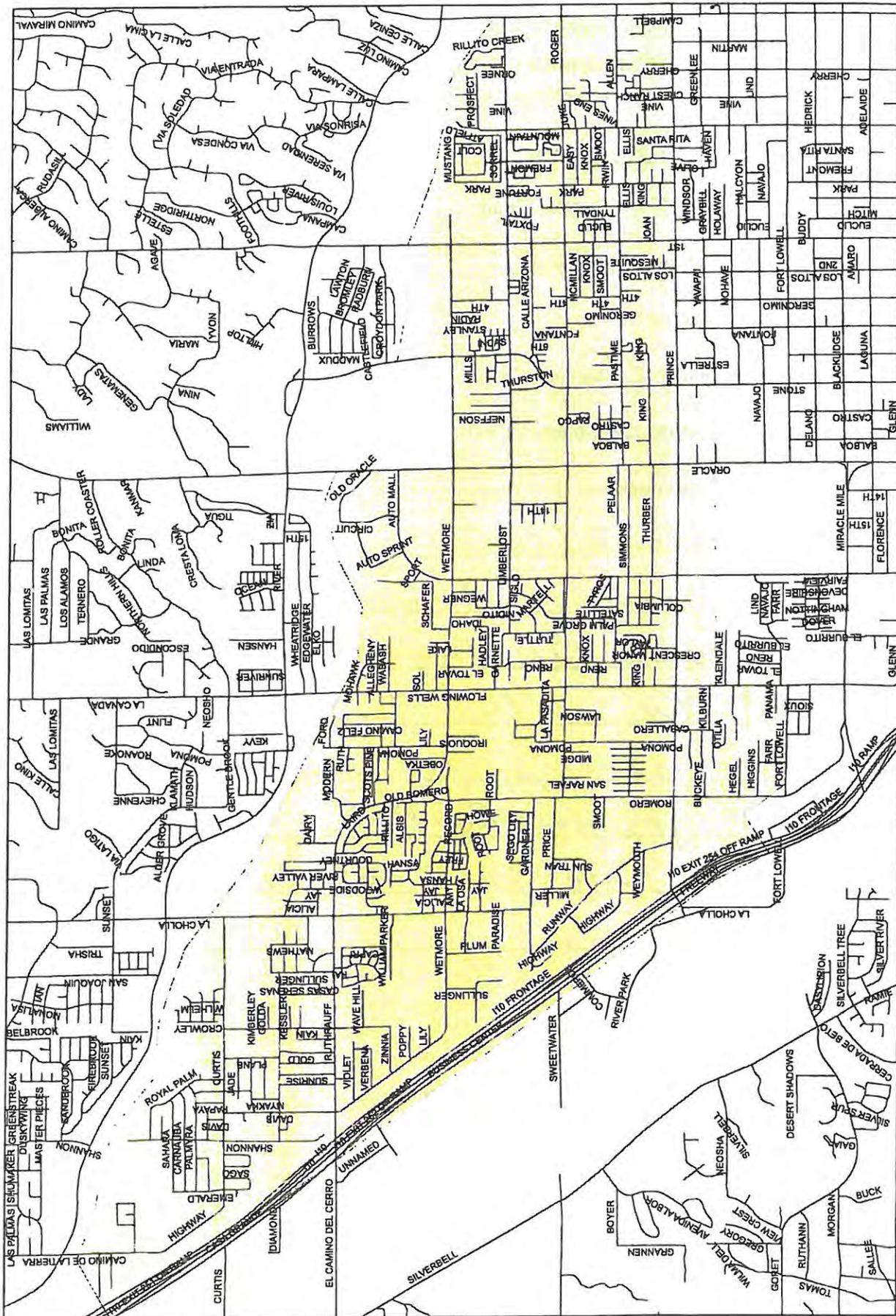
Comment/Concern Reinwater from neighborhood
all runs west to The Alley dividing
Emerald Ave with Hervey Trucking
and The scrap metal yard but
can not go any further so it
Backs up into and floods [REDACTED]
N. Emerald Ave

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
Tucson AZ 85701-1797
Attention: Evan Canfield

FAX # 520-724-4632

Email to: 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) 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:

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

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
Attention: Evan Canfield

FAX # 520-724-4632

Email to: 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] 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:

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

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

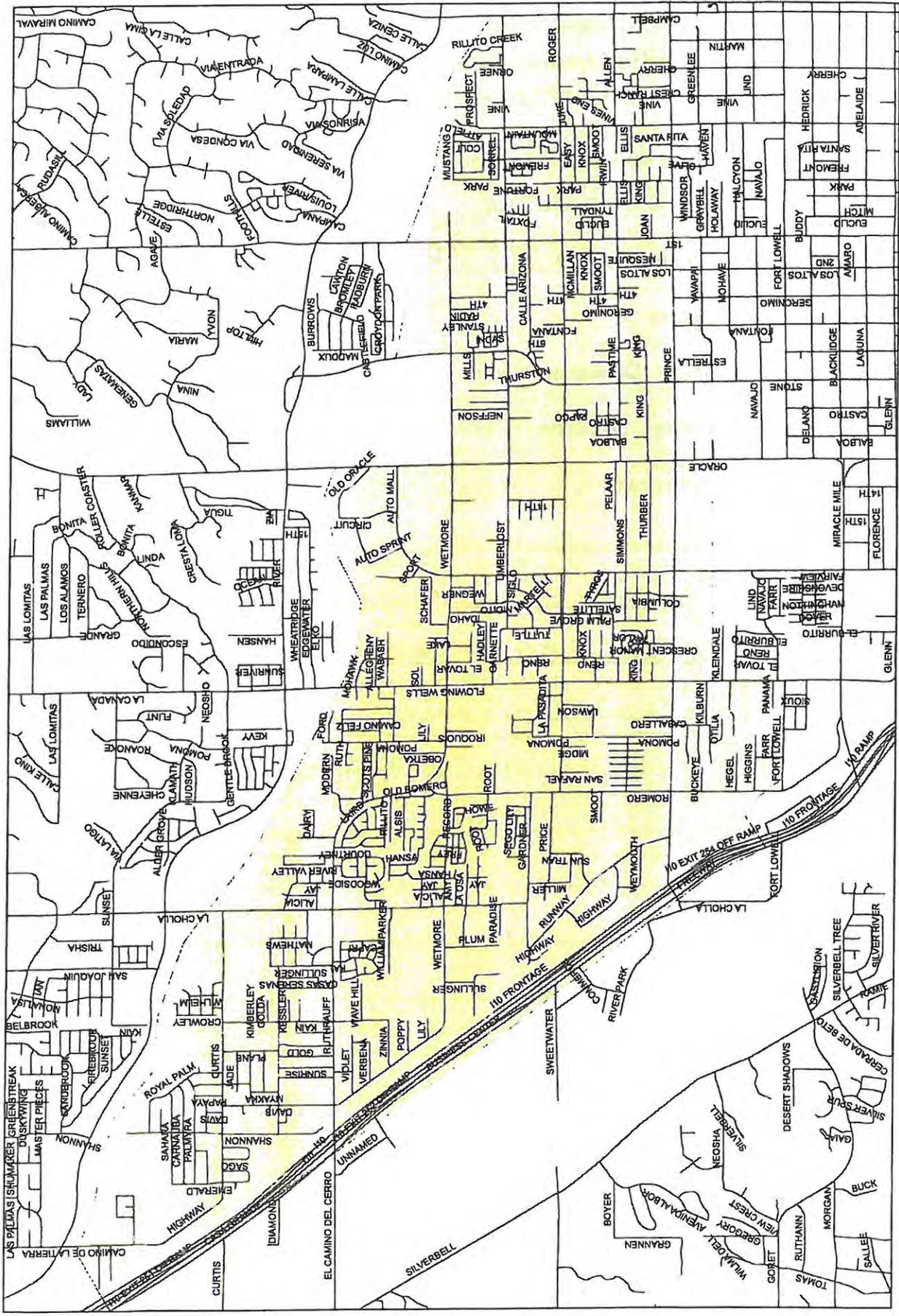
Prior to 2001, our house had to be evacuated because of River overflow/flooding. Worried about it happening again!

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

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



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.*

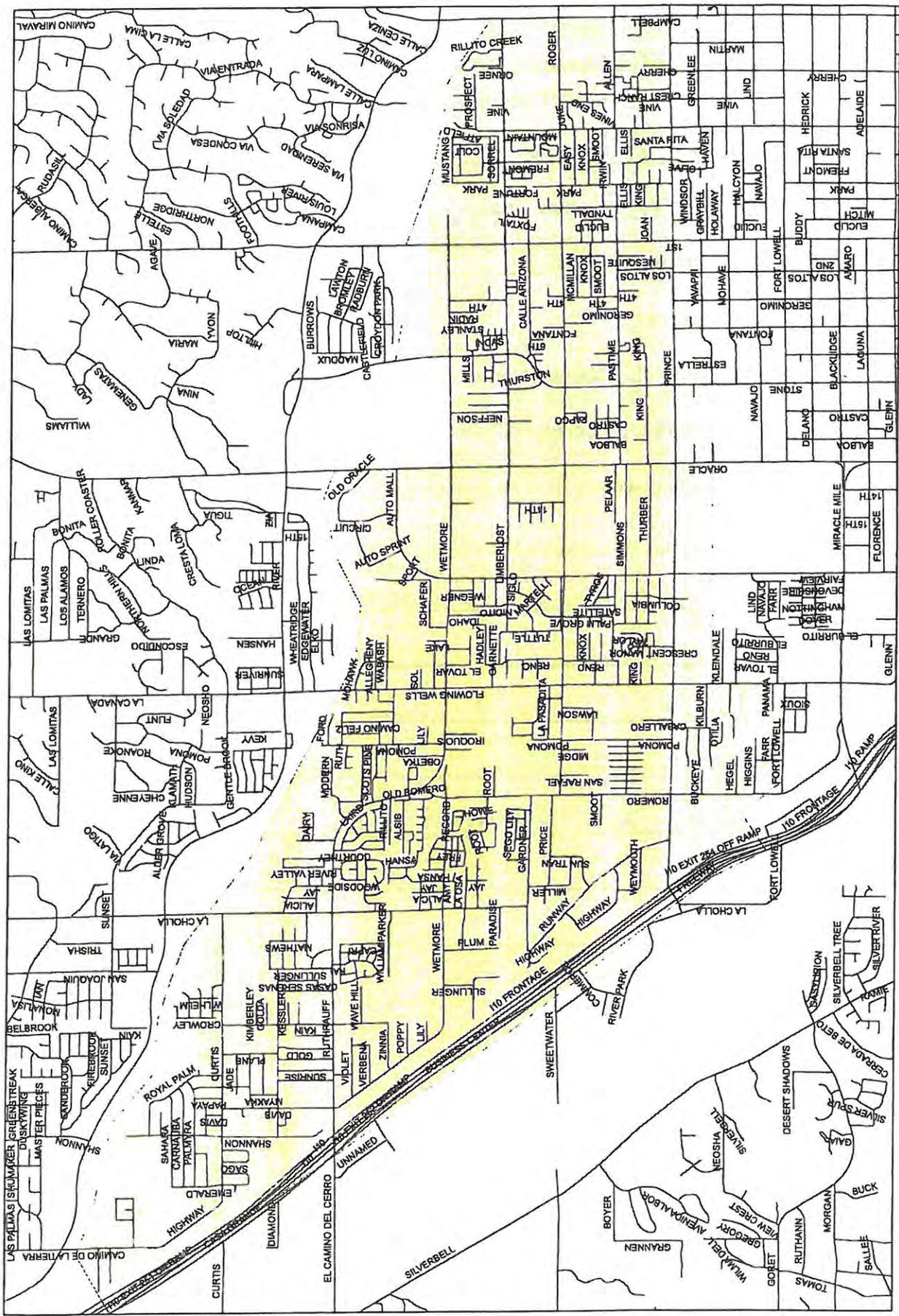
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97 E. Congress
Tucson AZ 85701-1797
Attention: Evan Canfield

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: _____

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

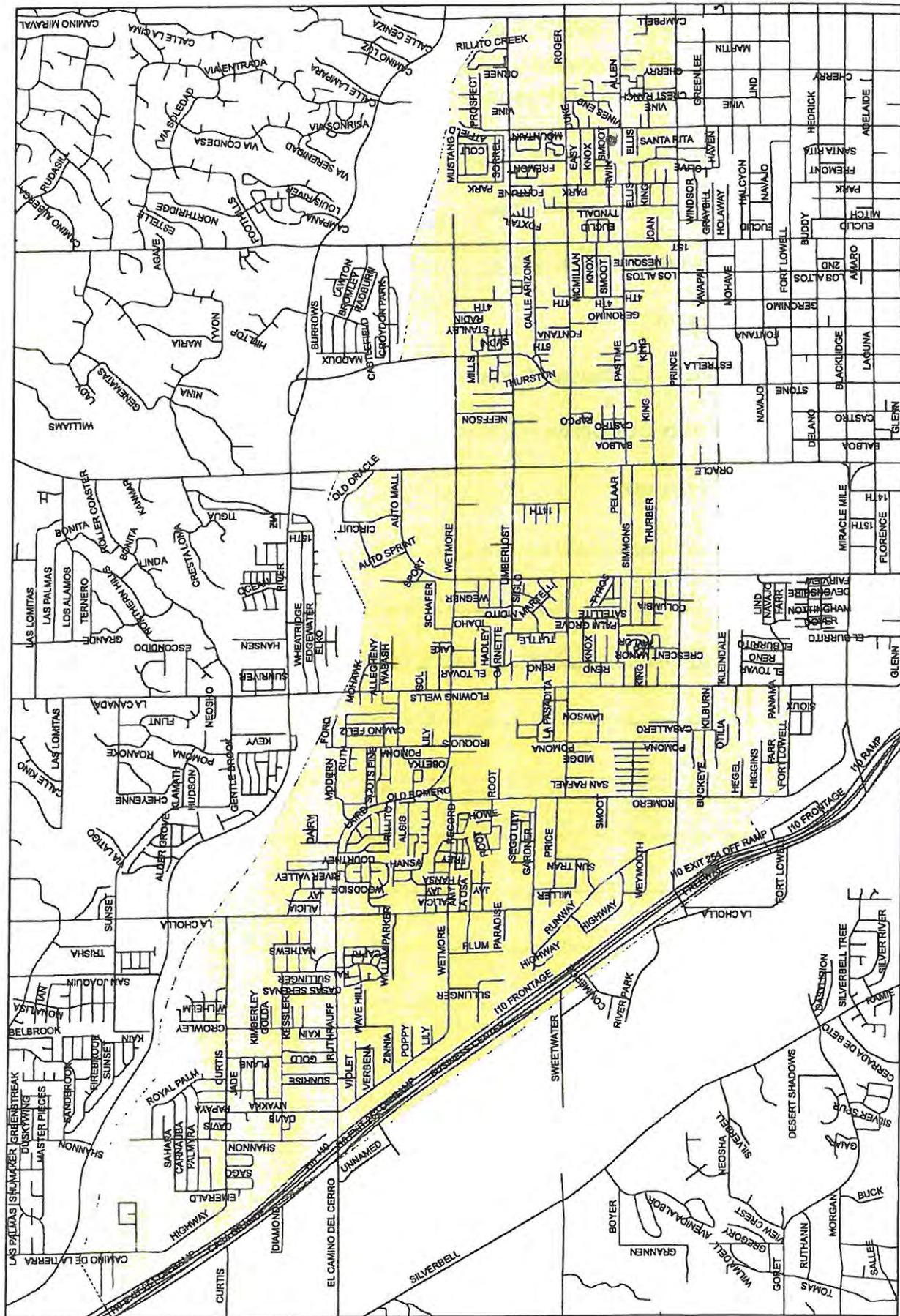
If you would like to send this form in later, below is the mailing address, FAX number and Email Address:

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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



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:

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

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

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

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

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

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

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:

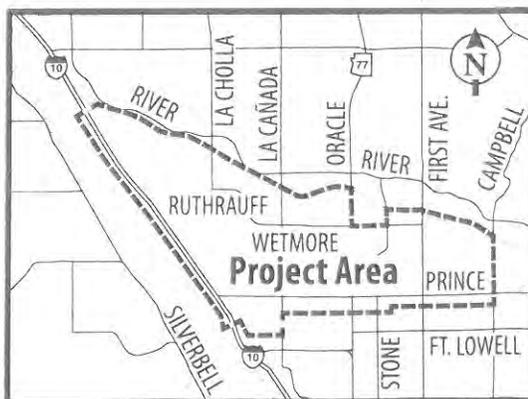
Wednesday,
November 16, 2016

Time:

6 – 7:30 p.m.

Location:

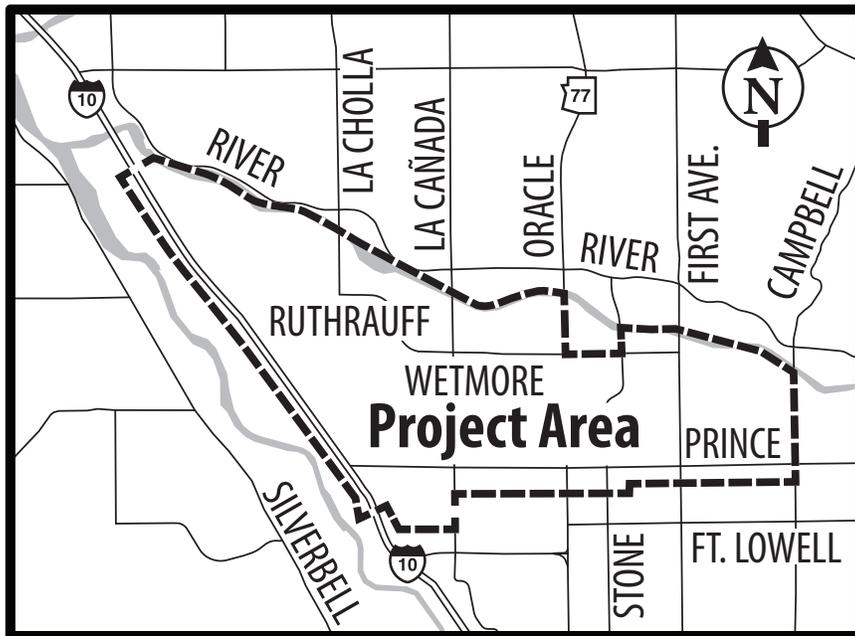
Ellie Towne Flowing Wells
Community Center
1660 W. Ruthrauff Road



OPEN HOUSE

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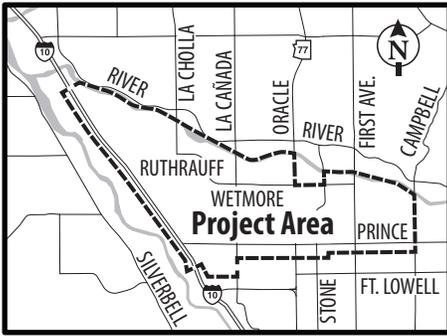
Ellie Towne Flowing Wells
Community Center
1660 W. Ruthrauff Road

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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)

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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

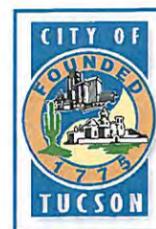
John Wise, PE, Project Manager for Stantec john.wise@stantec.com

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

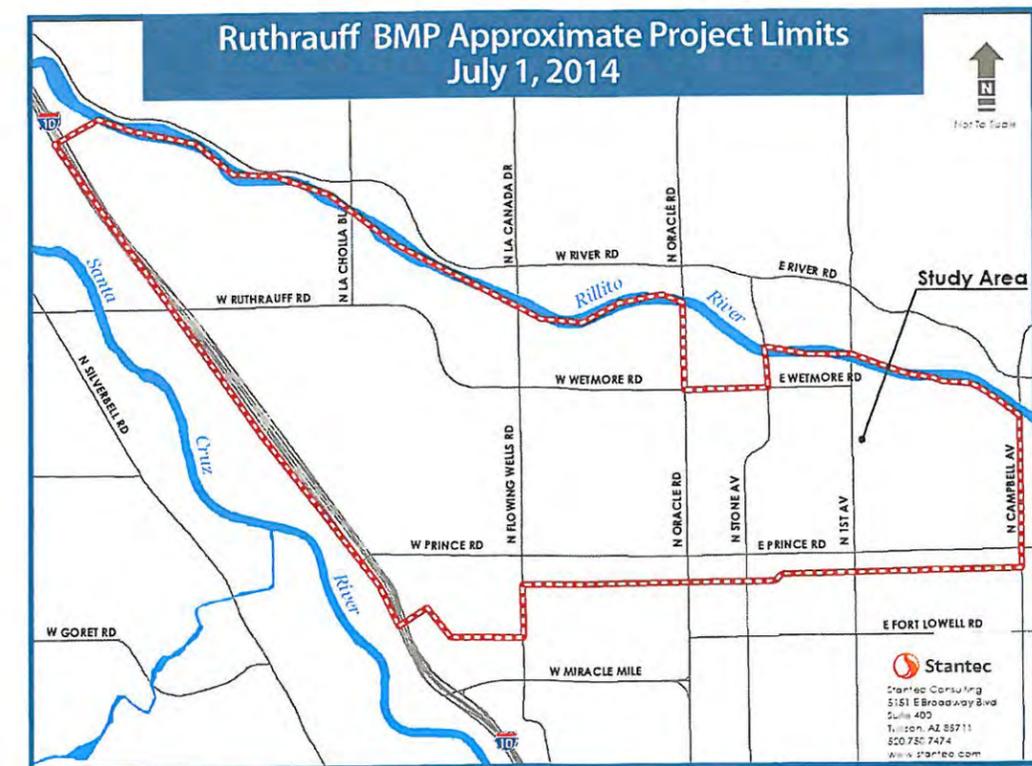
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent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

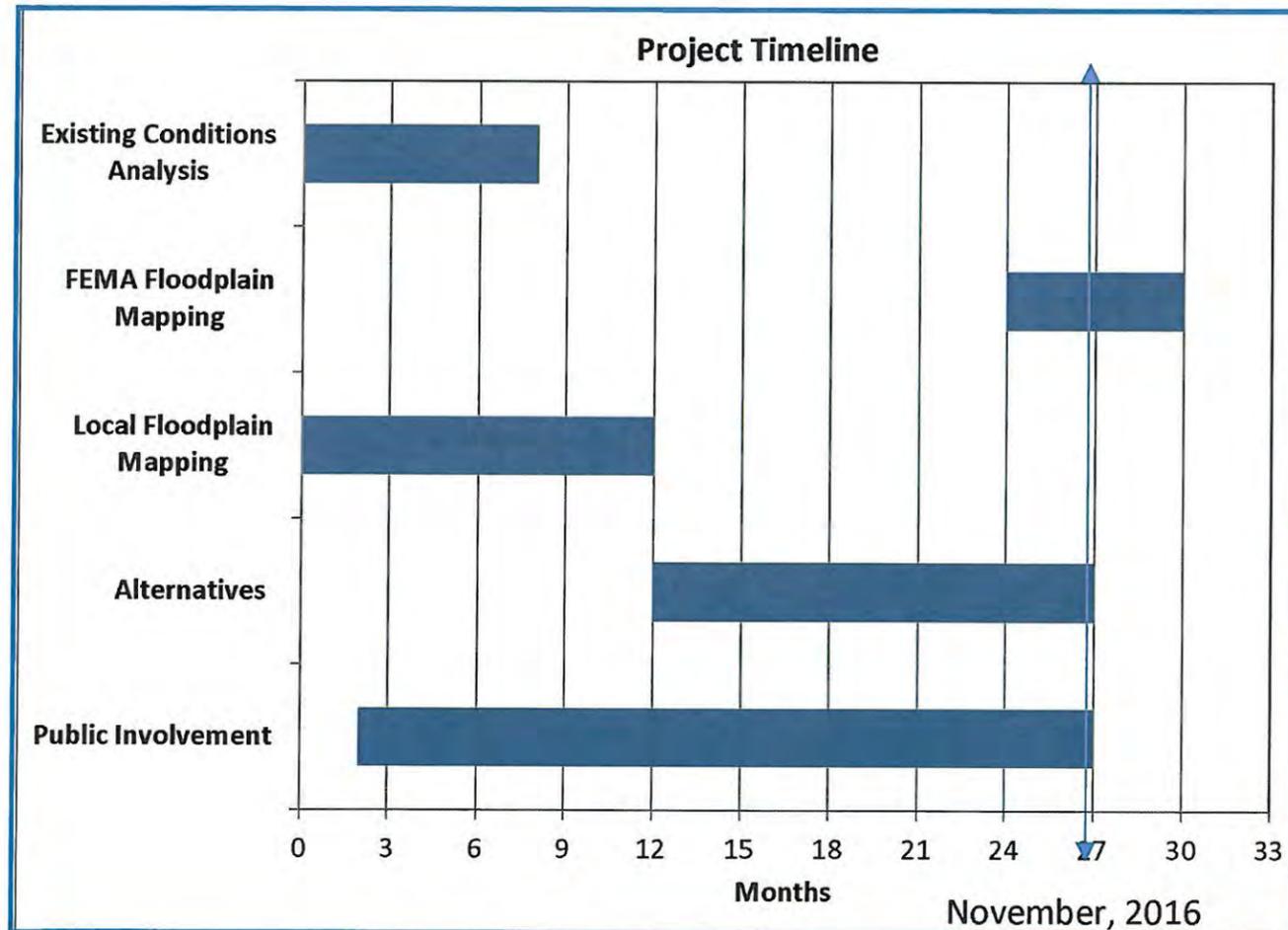
An Alternatives Working Group of 15 stakeholders met in February, 2016 and evaluated nine problem drainage areas on the basin and identified 46 different possible drainage solutions and seven area-wide alternatives for further evaluation by the Ruthrauff Basin Management Plan team.

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

Public comments are an important part of the project and are welcome at any time for review and consideration. Please send comments to Evan Canfield at Pima County Regional Flood Control District, 201 N. Stone Avenue, 9th Floor, Tucson, Ariz. 85701; phone: 520-724-4600; or email: Evan.Canfield@pima.gov.

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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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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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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 Open House
 Ellie Towne Flowing Wells Community Center
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COMMENT FORM

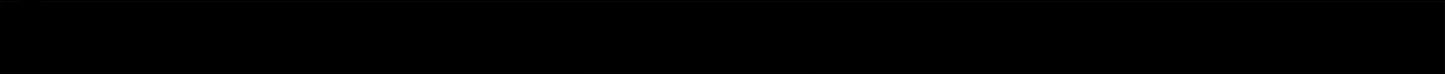


The alley ~~behind~~ running N & S
 east of alleyway is full of trash
 see Terry Hendricks

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



Also contact →



Address: _____ City: _____ State: ZIP Code: _____

 Phone: _____ Email: _____ Date: 11-16-2016

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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 ^{other} 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.

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 1st 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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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

Name: Address: City: State: ZIP Code:

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Ruthrauff Basin Management Plan
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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
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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 ^{Optional} 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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COMMENT FORM



flurry up and construct channel along
wetmore. Water builds up along my 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

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

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

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

- 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

- 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 or John Wise john.wise@stantec.com).
- Deliverable production is ongoing.

6.) Adjourn

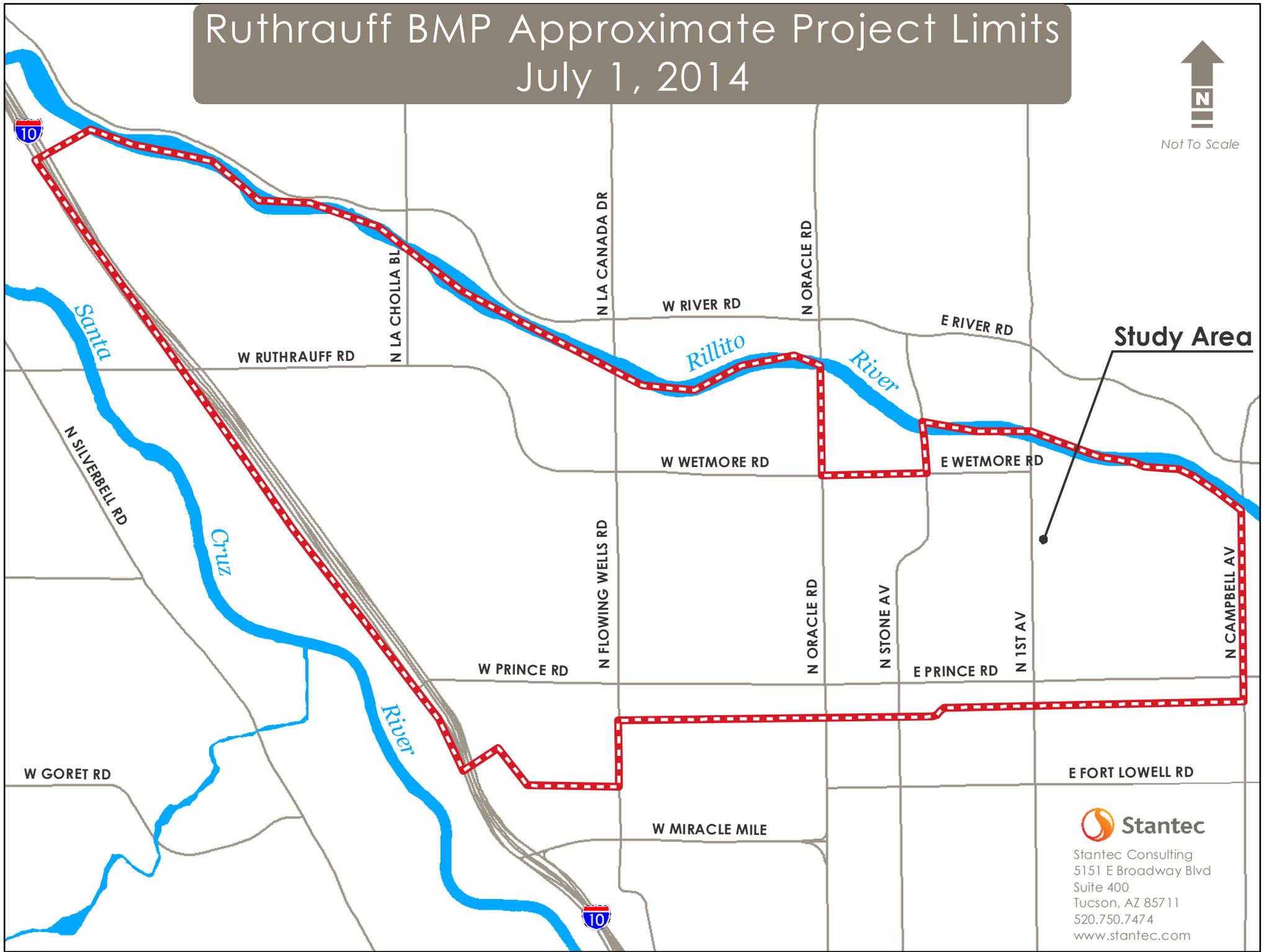
Evan Canfield

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

Ruthrauff BMP Approximate Project Limits July 1, 2014



Not To Scale



 **Stantec**
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

John Wise, PE, Project Manager for Stantec 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

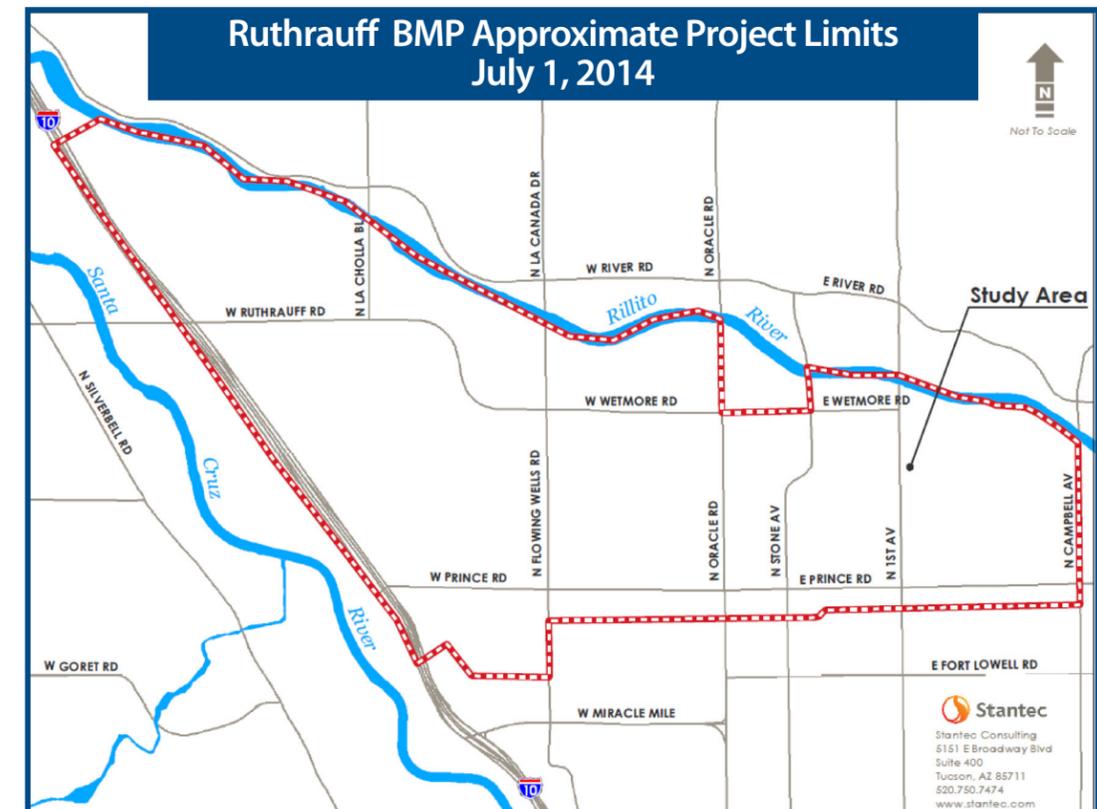
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent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





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

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Evan Canfield, PhD, PE, Project Manager for the District evan.canfield@pima.gov

John Wise, PE, Project Manager for Stantec john.wise@stantec.com

Past and Upcoming Events

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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

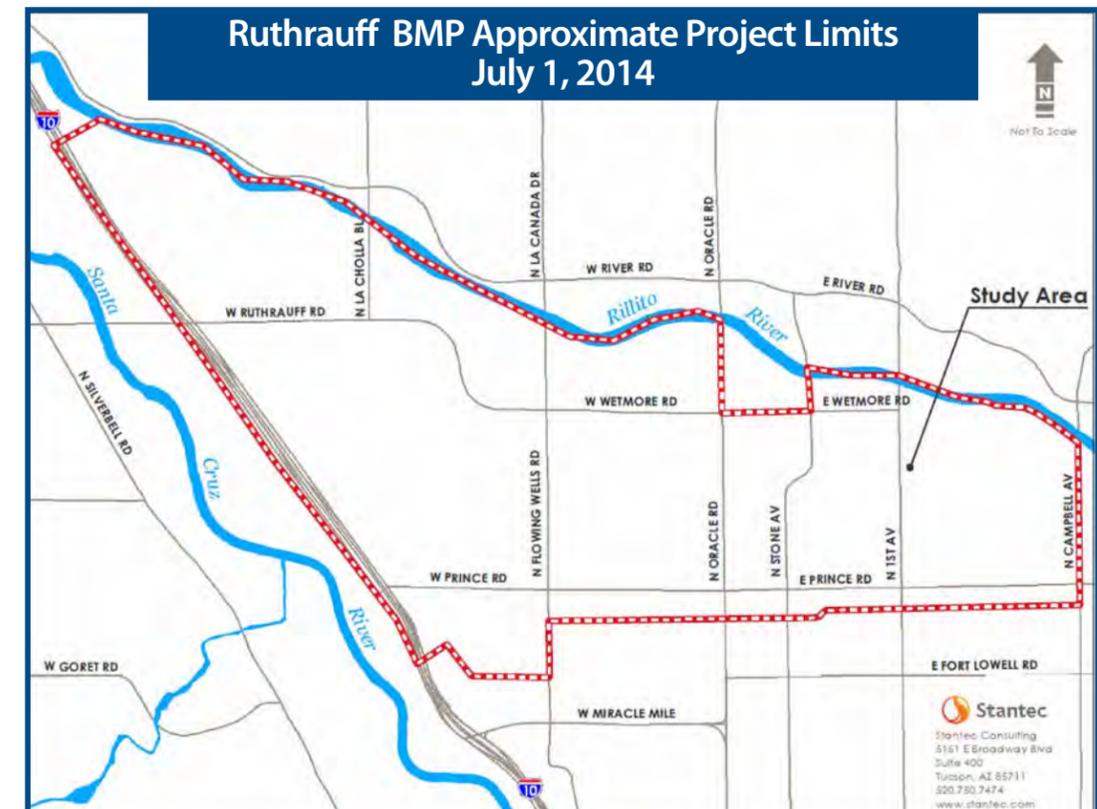
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This project will develop a Ruthrauff Basin Management Plan that will identify flood hazard areas and drainage problems, and cost-effective solutions to alleviate or manage flooding in the project area.

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:

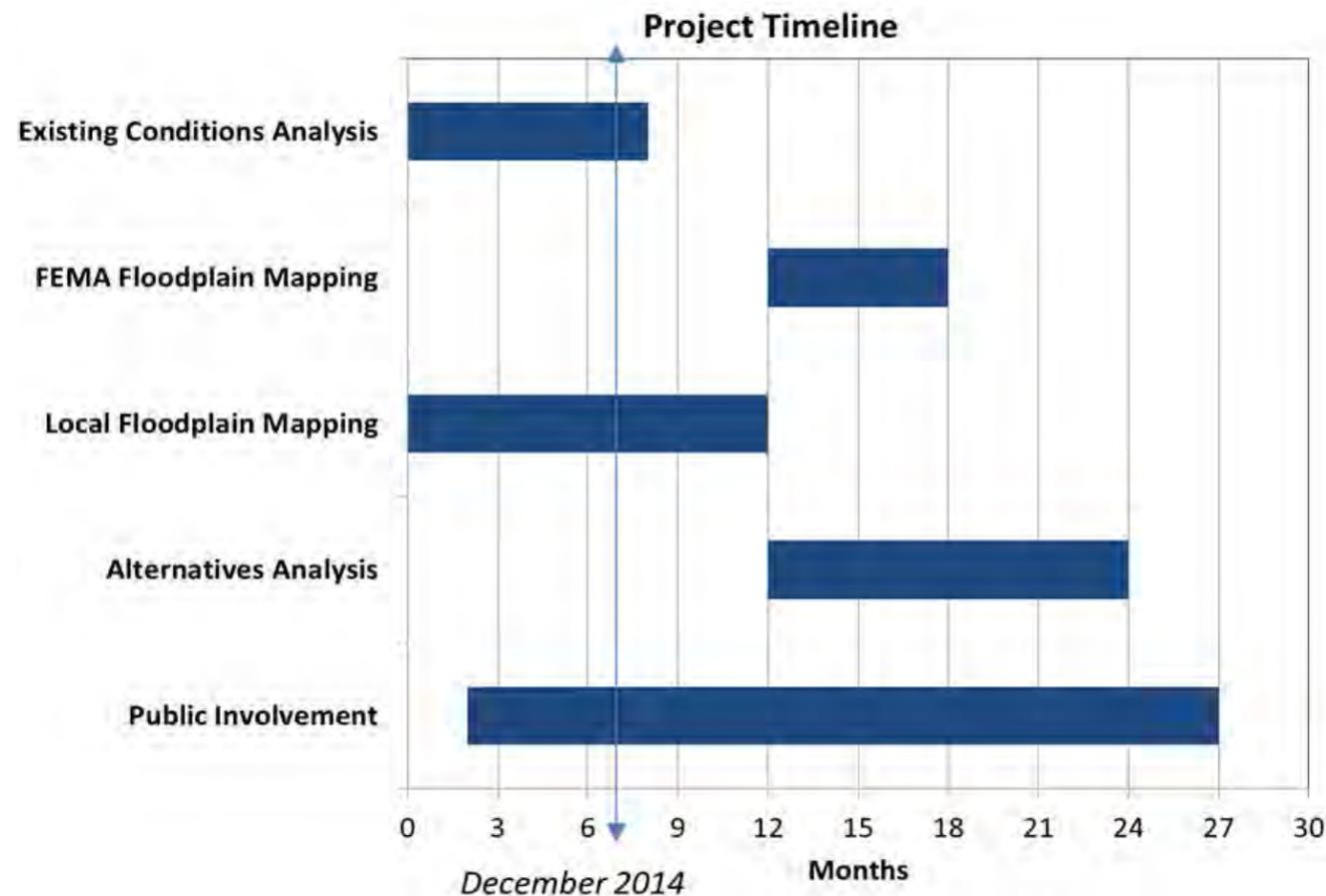
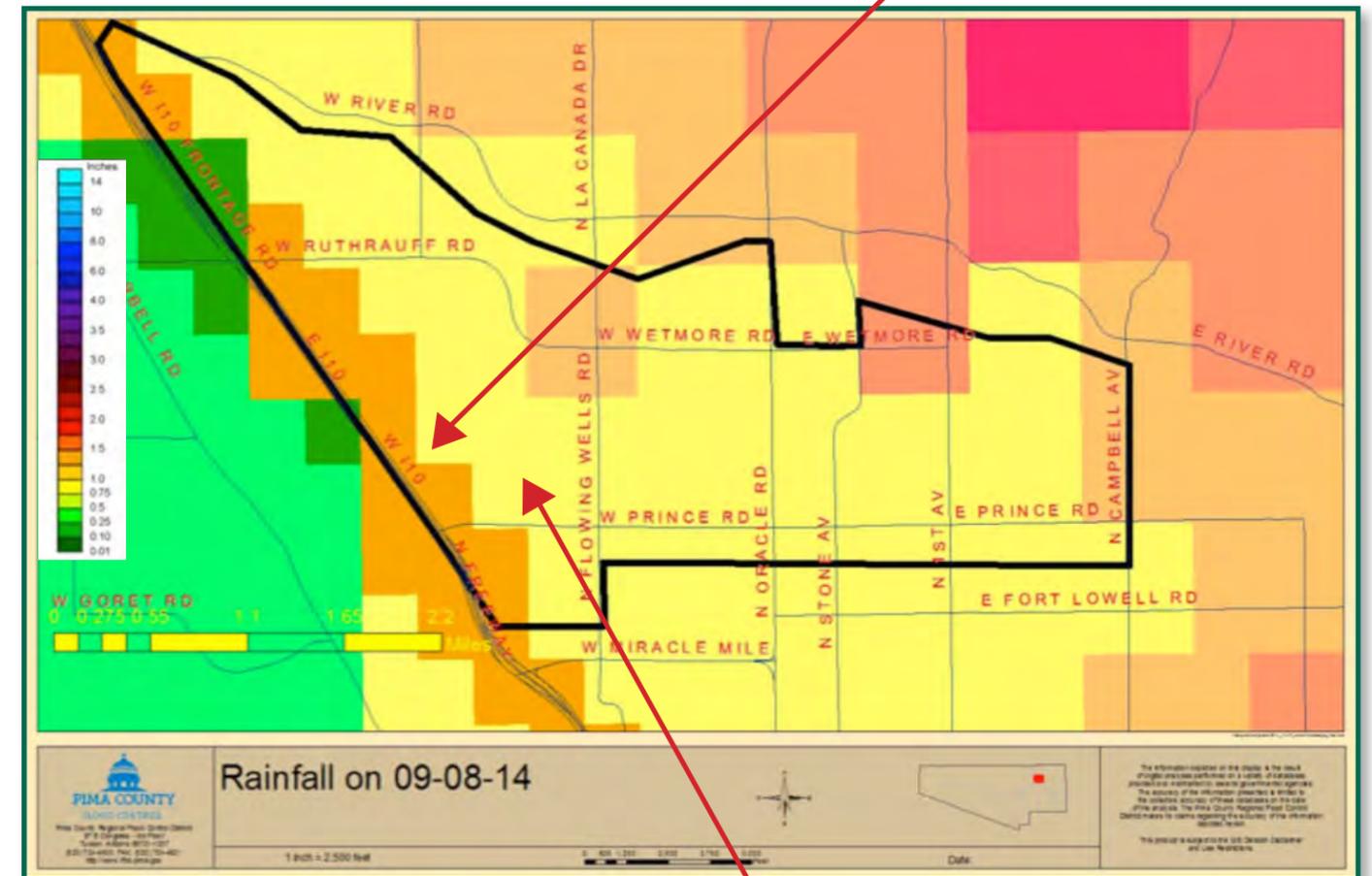
Because much of this area experiences sheet flooding, it is an ideal area for mapping using a grid-based approach, which is a relatively new technology. The grid-based maps show how water flows more accurately than the approach used in the current floodplain maps.

- **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

John Wise, PE, Project Manager for Stantec 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

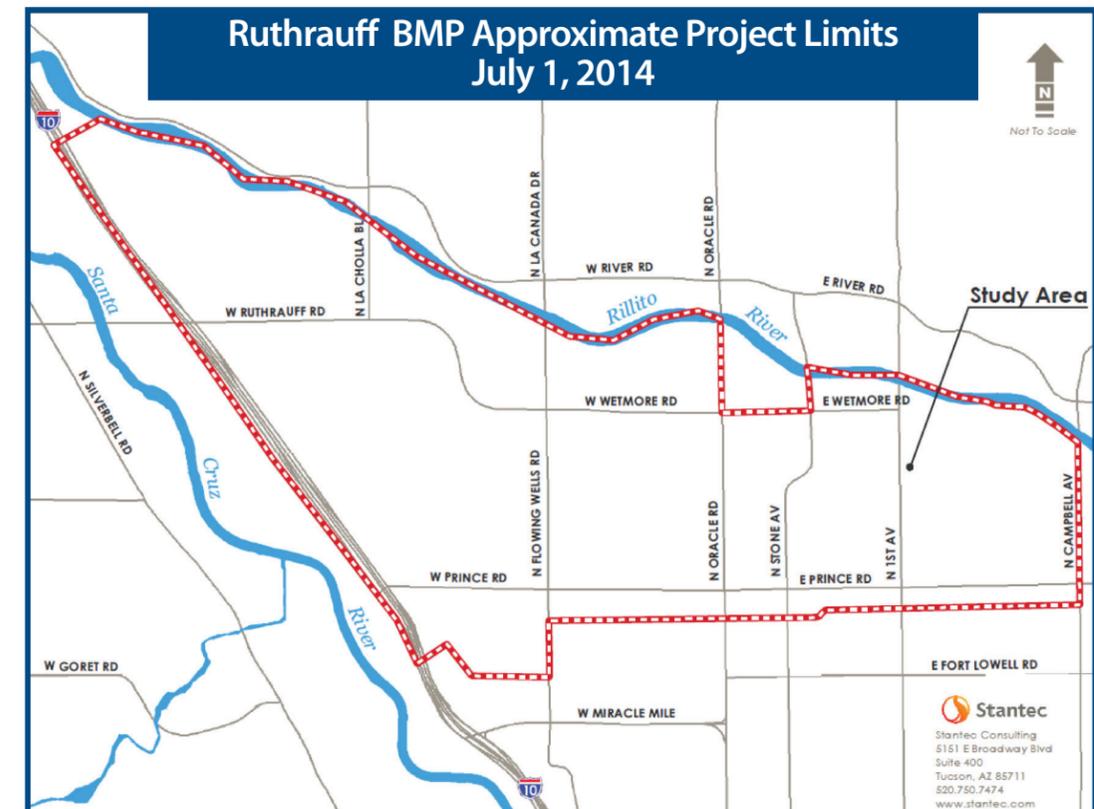
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as a result of the minimal topographic relief and inadequate drainage structures. Historically, flood flows have ponded on the east side of the Union Pacific Railroad embankment.

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

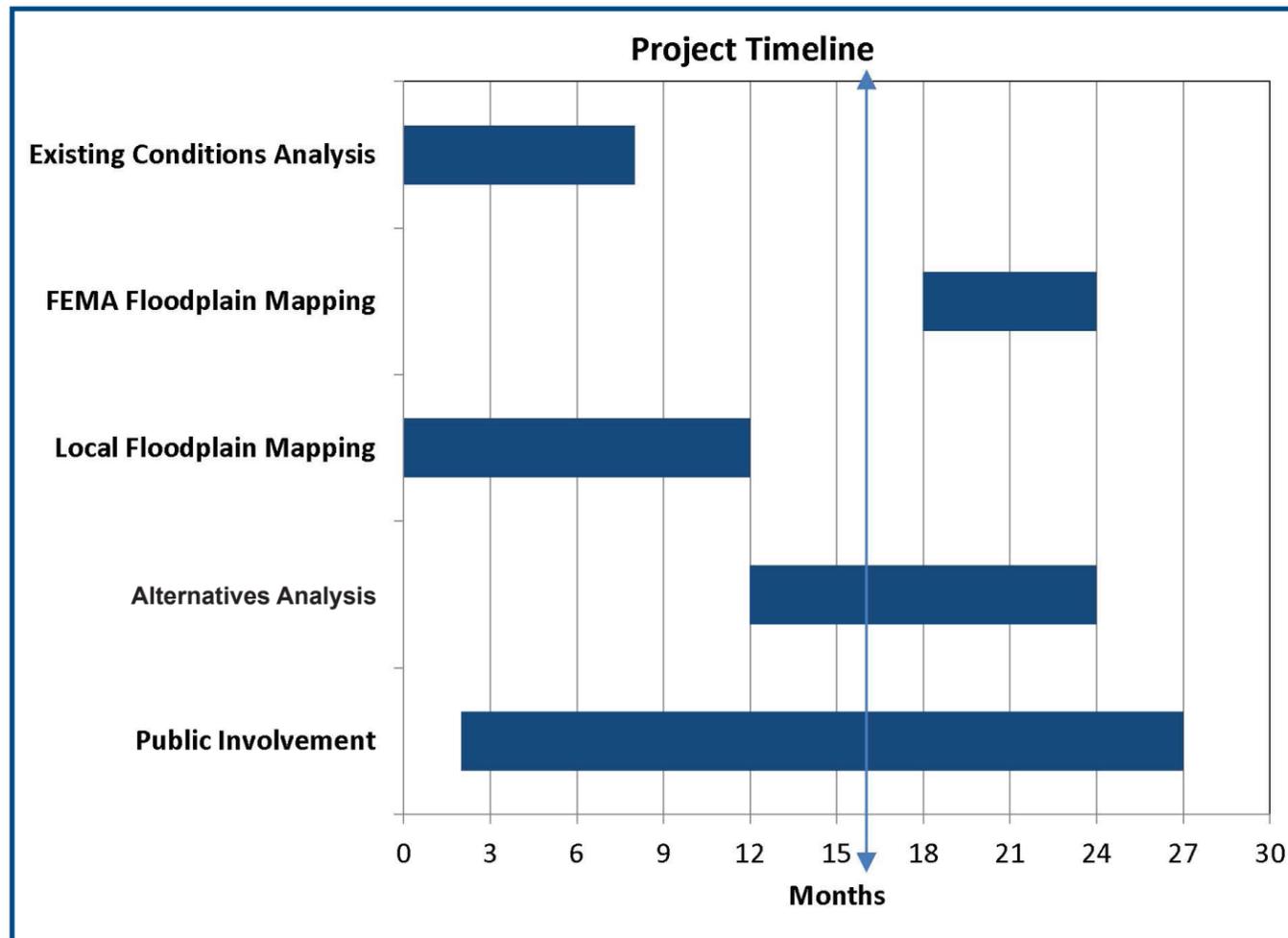
A two-dimensional flood mapping of the floodplains on the Ruthrauff basin confirmed that shallow flooding would be widespread throughout the basin in a 100-year flood. In such an event, nearly 1/3 of the basin would experience some ponded water. Most of the ponded water would be 0.2 to 0.5 foot deep. 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
Public Safety	30%	Identify Maintenance Needs	Provide Usable Floodplain Maps and Data	Design Drainage for All Weather Access
Implementation	23%	Optimize Stakeholders' Support	Minimize Complexity of Regulatory Compliance	Optimize Multiple Funding Sources
Environmental Sustainability	20%	Maximize use of renewable water and minimize use of potable water resources	Promote systems with adaptability and resilience	Mitigate the urban heat island effect
Economic Vitality	17%	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
Community	10%	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

John Wise, PE, Project Manager for Stantec 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

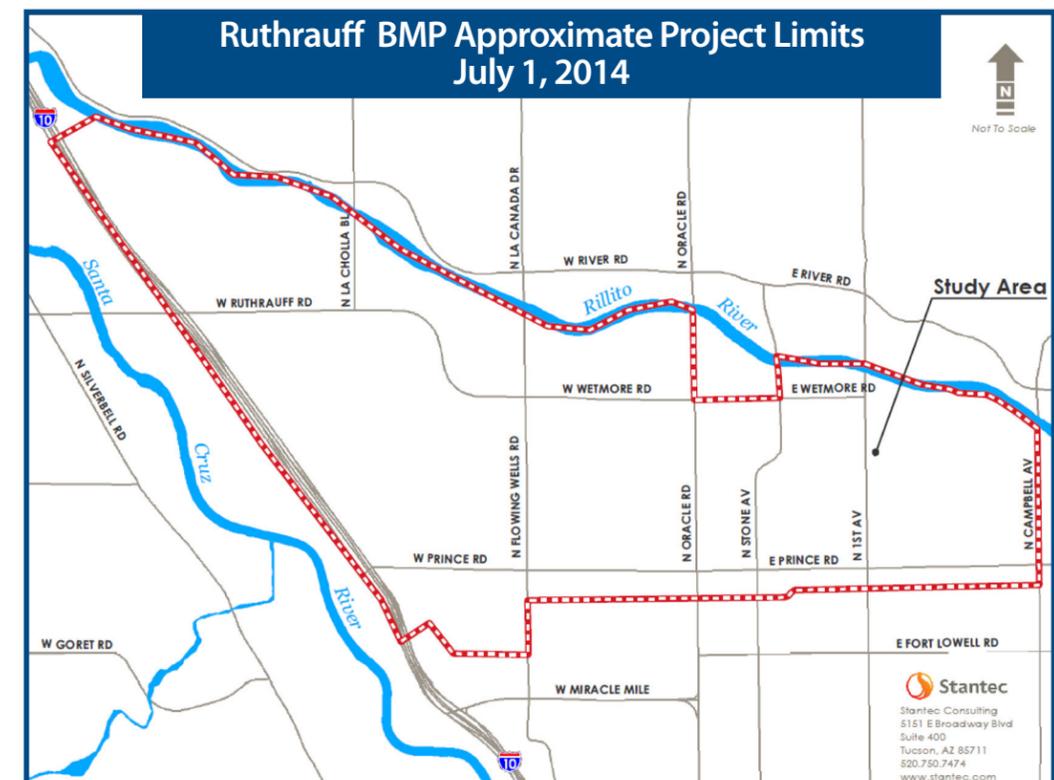
The Pima County Regional Flood Control District is undertaking this project in partnership with the City of Tucson. The project area includes several small watersheds that drain north to the Rillito River as well as the Ruthrauff Wash, which drains into the Santa Cruz River. The area is subject to frequent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

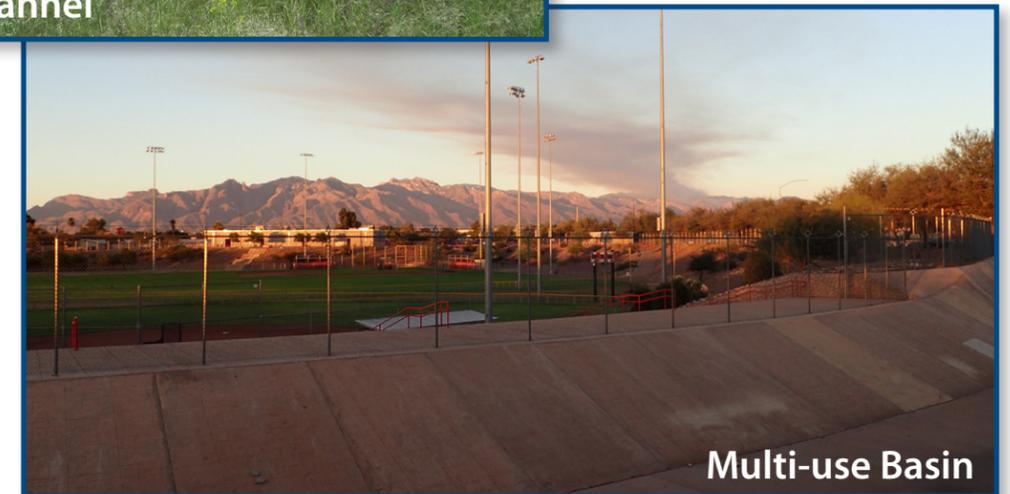
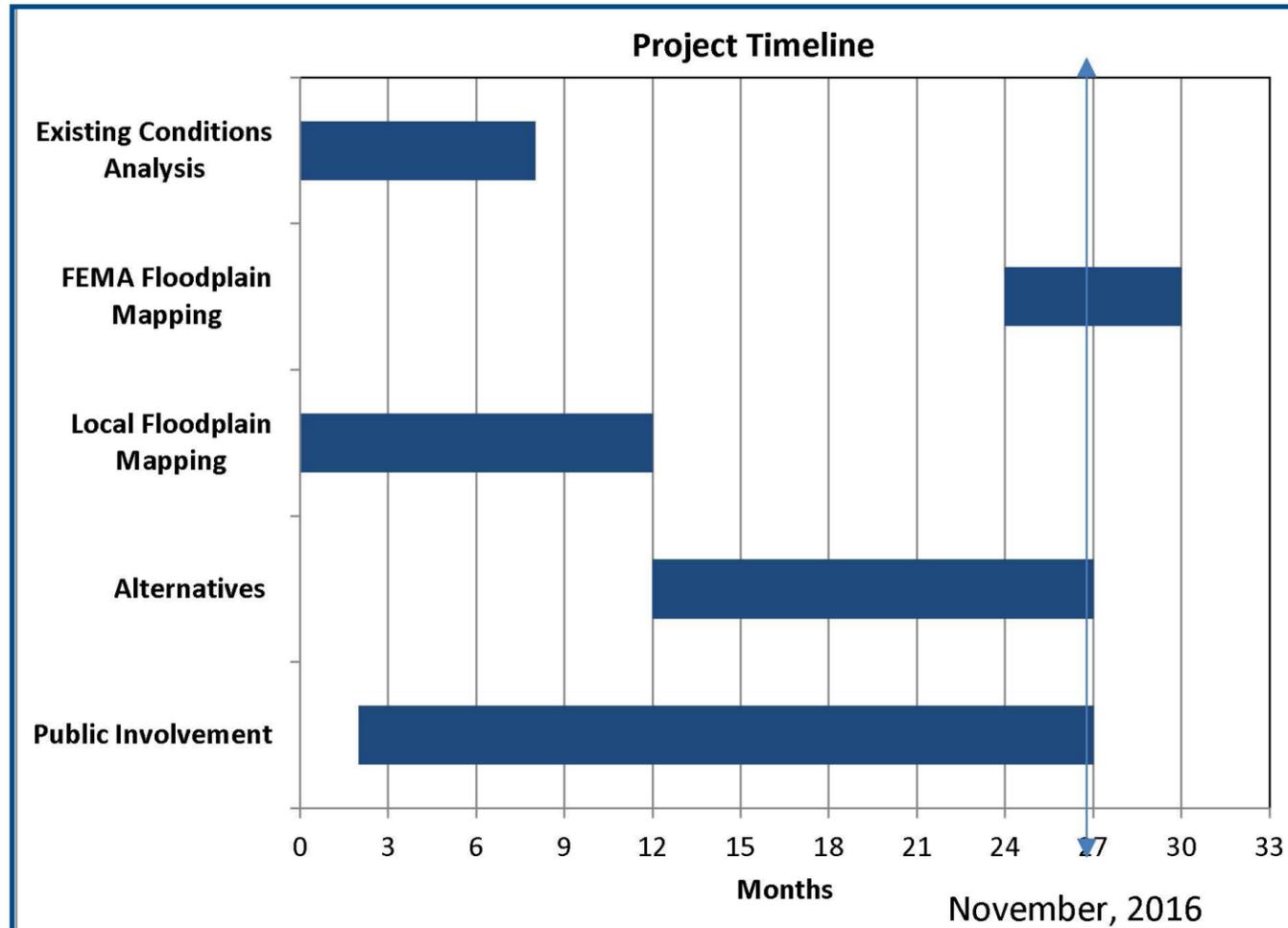
An Alternatives Working Group of 15 stakeholders met in February, 2016 and evaluated nine problem drainage areas on the basin and identified 46 different possible drainage solutions and seven area-wide alternatives for further evaluation by the Ruthrauff Basin Management Plan team.

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.



**RUTHRAUFF
BASIN MANAGEMENT PLAN**

VOLUME I OF II

DRAINAGE IMPROVEMENT PLAN

Exhibits

Ruthrauff Basin Management Plan: Problem Areas with Public Agency Parcels

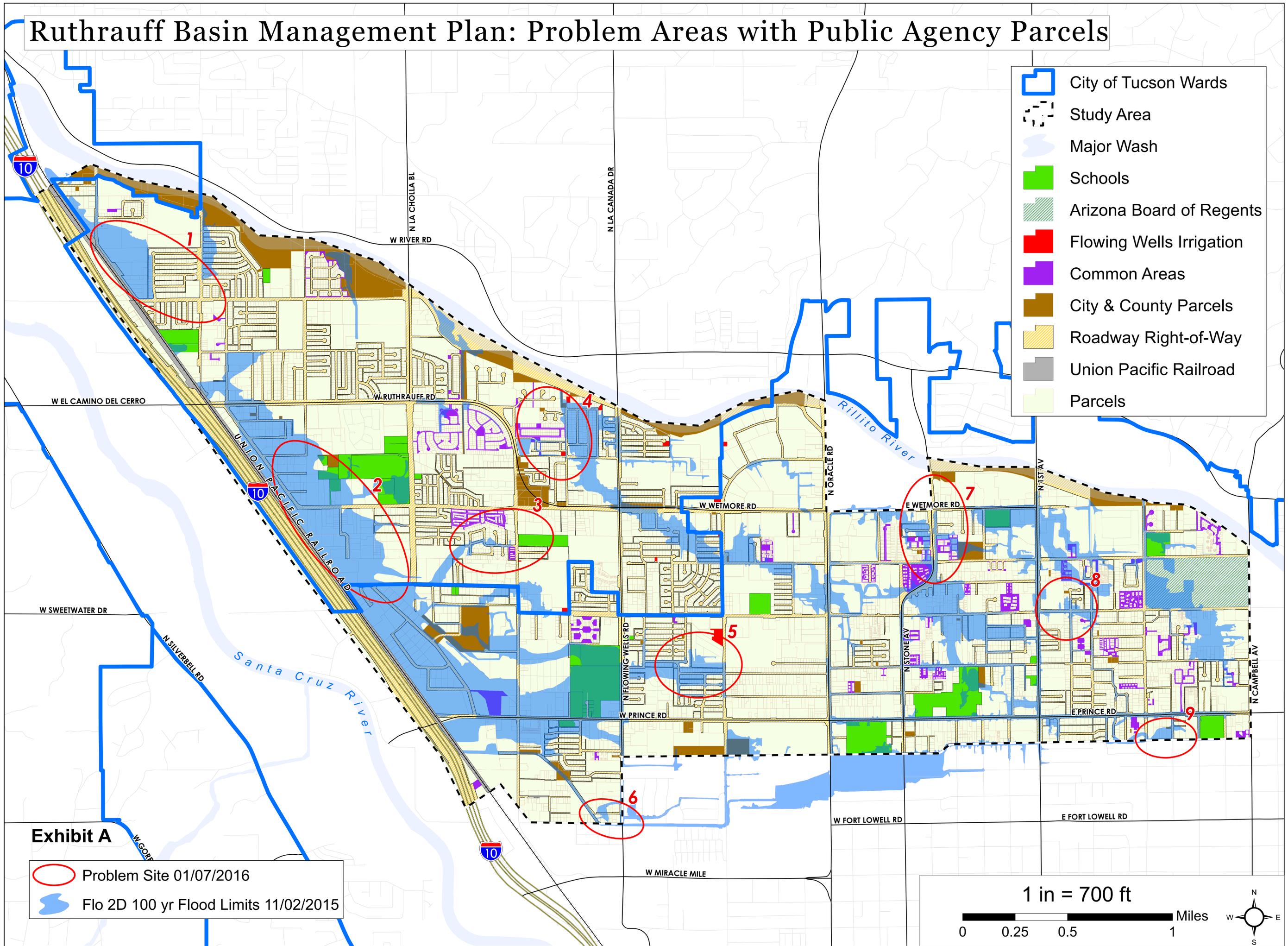


Exhibit A

- 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

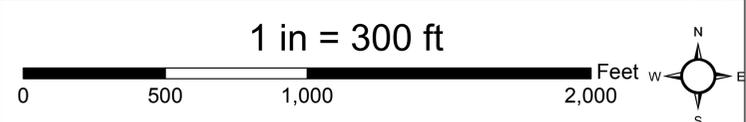
Alternative 1

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

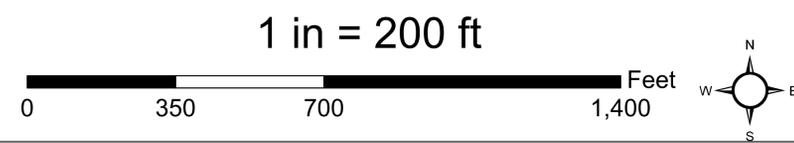
Earthen Channel
 Length = 1,280 ft
 $Q_{cap} = 45$ cfs
 Tri Shape: 4:1 SS
 2 ft depth

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

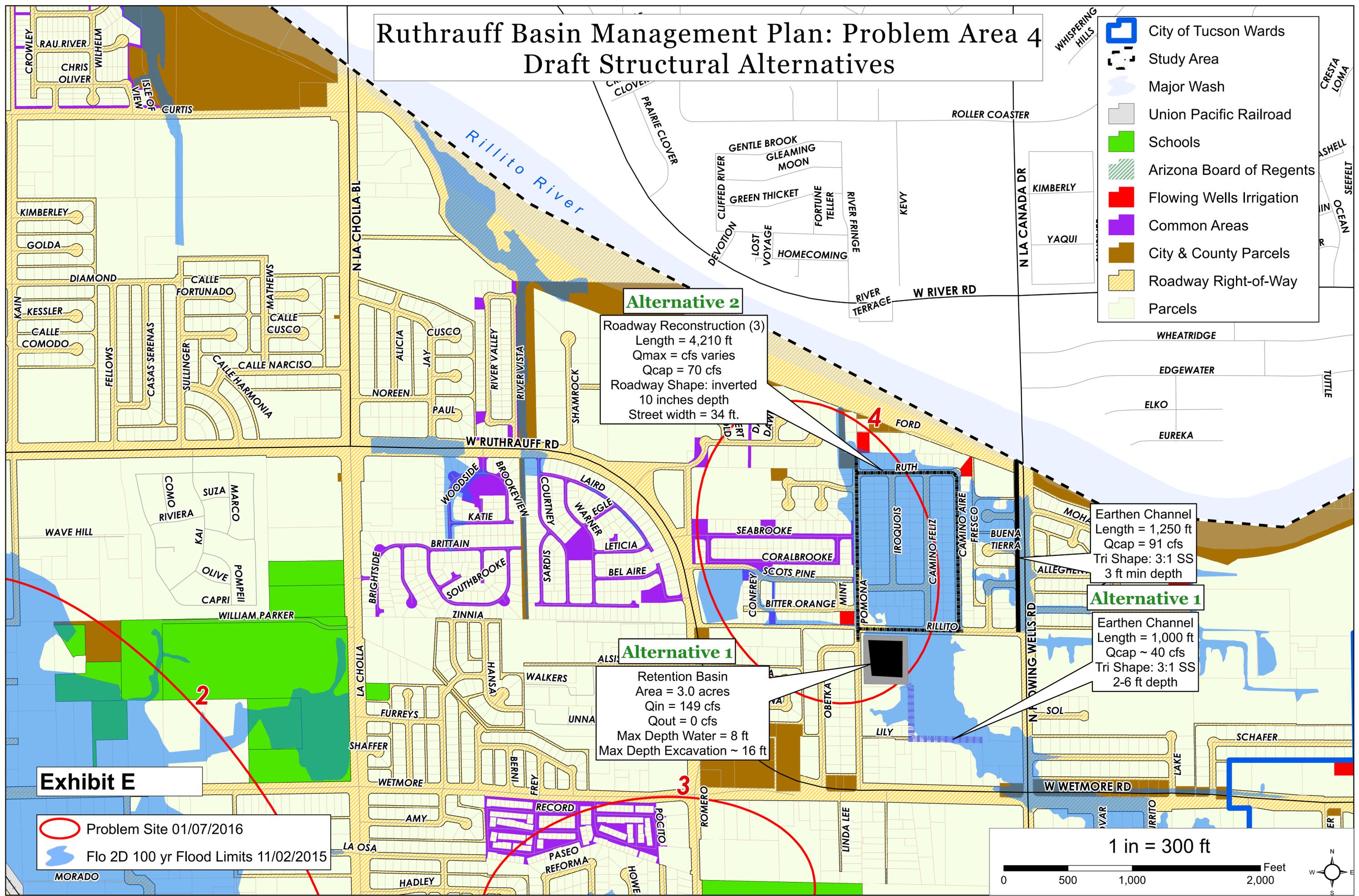
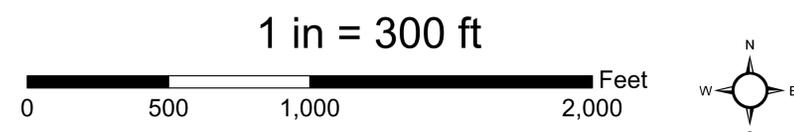


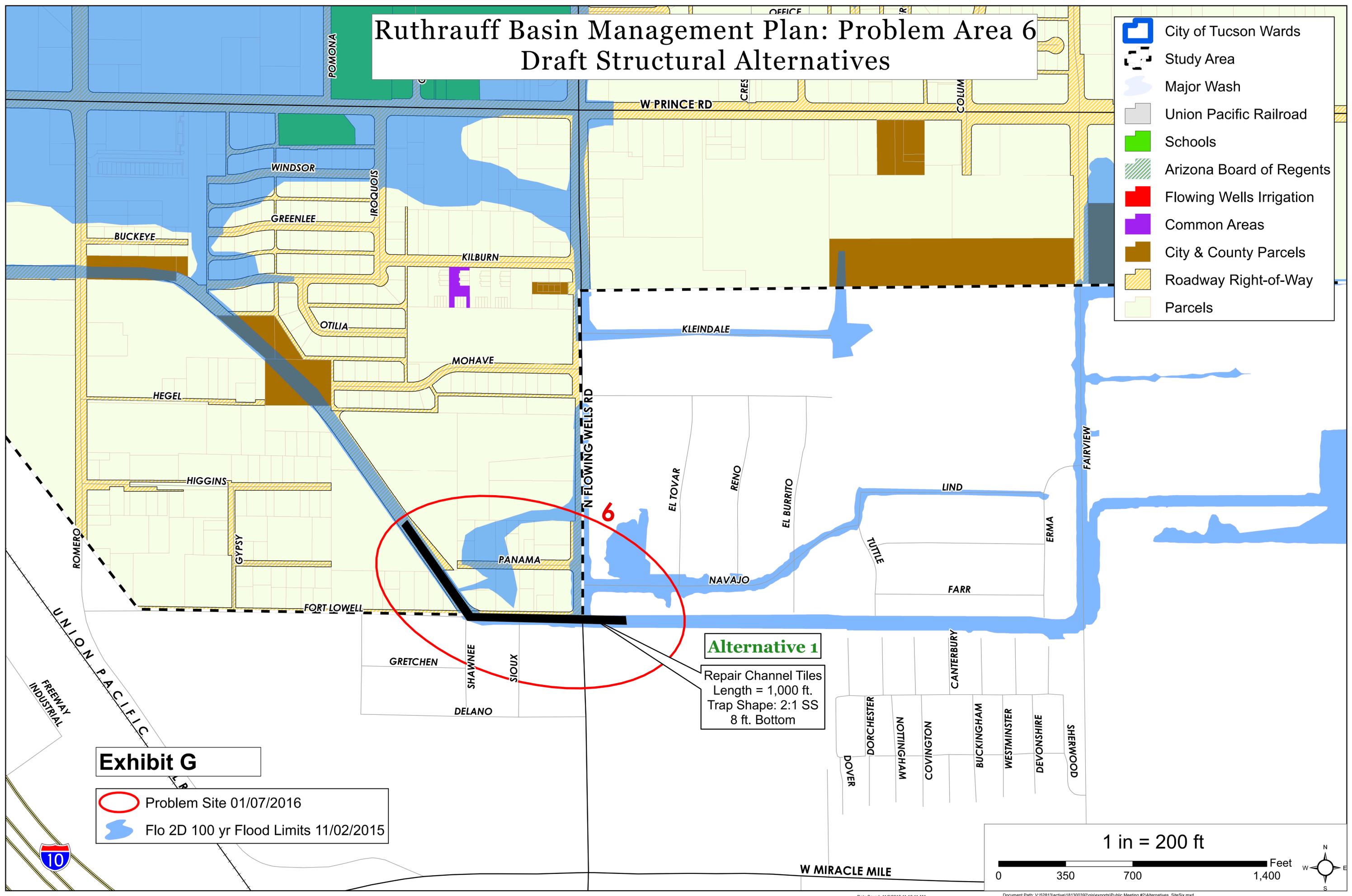
Exhibit E

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



Ruthrauff Basin Management Plan: Problem Area 6 Draft Structural Alternatives

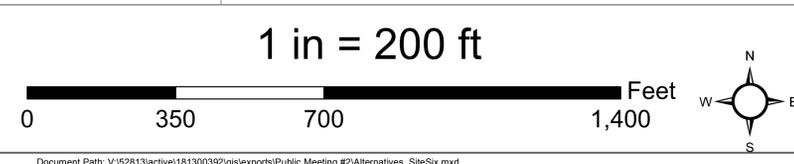
-  City of Tucson Wards
-  Study Area
-  Major Wash
-  Union Pacific Railroad
-  Schools
-  Arizona Board of Regents
-  Flowing Wells Irrigation
-  Common Areas
-  City & County Parcels
-  Roadway Right-of-Way
-  Parcels



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

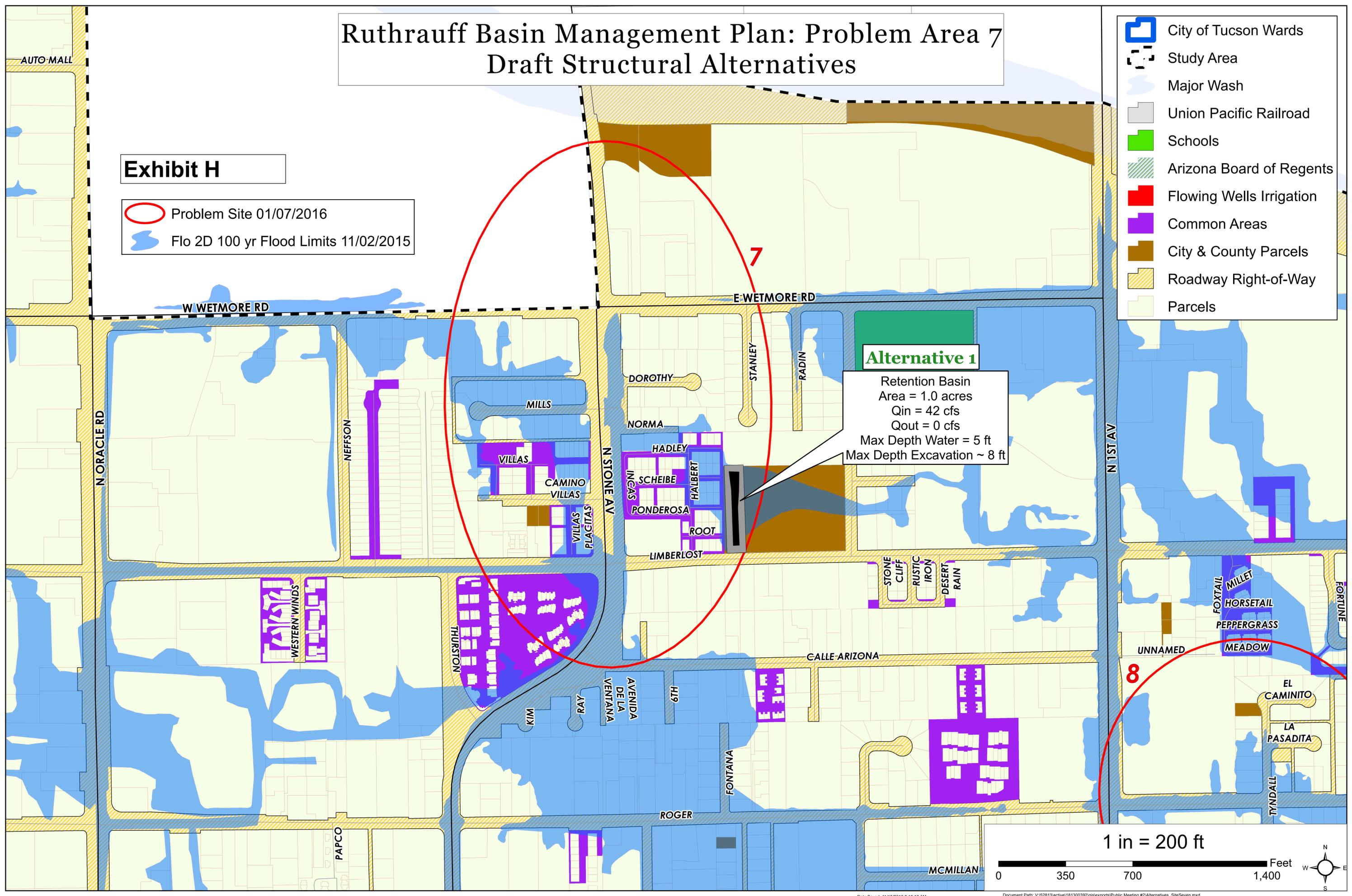


Ruthrauff Basin Management Plan: Problem Area 7 Draft Structural Alternatives

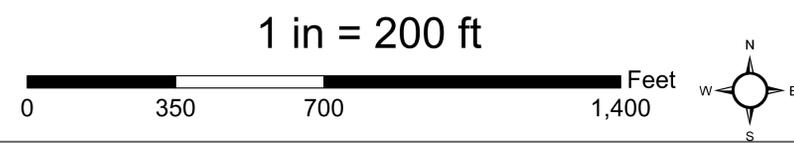
Exhibit H

-  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



8



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

