Flood Control District
of Maricopa County

Letter of Intent (LOI)

Fiscal Year 2009 Capital Improvement Project
Prioritization Procedure

City/Agency Proposing Partnership: City of Scottsdale

1. Project Name: Granite Reef Wash Watershed Flood Mitigation

A. Project Description & Limits: Flood Control via interception of 100-year flows within an urbanized area near Thomas and Pima Roads; Conveyance via large flood control conduit along Pima Road from Thomas Road to the Salt River.

B. Estimated Project Cost: $28,500,000.00

2. Proposed Lead City/Agency For (check appropriate column):

	District	City/Agency	Other	N/A
A. Study	☐	☒	☐	☐
B. Design	☐	☒	☐	☐
C. R/W Acquisition	☐	☒	☐	☐
D. Construction	☐	☒	☐	☐
E. Construction Management	☐	☒	☐	☐
F. Operations & Maintenance	☐	☒	☐	☐

3. Proposed Cost Share:

	District	City/Agency	Other	Total
A. Percentage - %	83%	17%	0%	100%
B. Funding - $	$23,534,400	$4,965,600	$0	$28,500,000

4. Availability of City/Agency Funding ($):

FY 2008/2009	FY 2009/2010	FY 2010/2011	FY 2011/2012	FY 2012/2013	Later Fiscal Years
$4,580,600	$385,000				

5. City/Agency Adoption of ADMS/ADMP/WCMP: Design alt is based on FCDMC study & evaluation

☒ Yes ☐ Not yet, but willing to ☐ Not associated with Study or Plan

6. Agency Signature (City Engineer, Public Works Director, or Agency Manager):

C. Ashley Couch — Signature — 7/19/07 — Date

C. Ashley Couch — Print Name — Stormwater Management Director — Title

7. Remarks/Comments (use additional sheet if necessary):

Benefits of this project include:

~Removal of over 1000 structures from the 100-year floodplain within south Scottsdale along the historical Granite Reef Wash corridor...

2801 West Durango Street, Phoenix, Arizona 85009, 602-506-1501, Fax: 602-506-4601

A265.906

Flood Control District
of Maricopa County

Letter of Intent (LOI)

Fiscal Year 2009 Capital Improvement Project
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C. R/W Acquisition	☐	☒	☐	☐
D. Construction	☐	☒	☐	☐
E. Construction Management	☐	☒	☐	☐
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A265.906

LOI (Letter of Intent)
FY 2008 CIP Prioritization Procedure

City/Agency Proposing Partnership: City of Scottsdale

Remarks/Comments: (additional sheet)

Benefits of this project include:

~Removal of over 1000 structures from the current 100-year floodplain (FCDMC, 2002) within south Scottsdale along the historical Granite Reef Wash corridor.

~Flood mitigation for the Salt River Pima-Maricopa Indian Community (SRPMIC) lands south of Indian School Road between the Pima Freeway and Pima Road and through Section 12 lands south of McKellips Road to the Salt River.

~Drainage protection for ADOT frontage roads and potential extra capacity for the existing ADOT drainage channel.

~Drainage protection within MCDOT ROW on McKellips Road.

This project, as currently conceived, would be a joint effort between the City of Scottsdale, FCDMC, SRPMIC, ADOT and MCDOT and would protect tribal lands, Scottsdale residents and business owners, MCDOT ROW and ADOT ROW while fulfilling the mission of the FCDMC.

Please consider highly prioritizing and funding this much overdue and needed project to provide flood protection for a diverse cross-section of County residents within the Granite Reef Watershed.

Sincerely,

C. Ashley Couch

C. Ashley Couch, P.E.
Stormwater Management Director
City of Scottsdale

Proposal for:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FY2009
Capital Improvement Project Prioritization

GRANITE REEF WASH WATERSHED FLOOD MITIGATION

July 20, 2007

City of Scottsdale

Stormwater Management
7447 E. Indian School Rd., Suite 205
Scottsdale, AZ 85251

GRANITE REEF WASH WATERSHED FLOOD MITIGATION

PROJECT OVERVIEW & DETAILS

Project Name and Brief Description (0 points)

Granite Reef Wash Watershed Flood Mitigation:

The goal of this project is to reduce the existing 100-year floodplain in the Granite Reef Wash corridor for locations south of Thomas Road in the City of Scottsdale. The City of Scottsdale is further studying alternatives presented in the 2002 FCDMC study, Granite Reef Wash Drainage Master Plan. To date, the City has evaluated three new detention basin alternatives (HEC-1 analysis), one update to Alternative 2, from the District's 2002 study – 'Floodprone Property Acquisition' (property values have been updated from 2002 to 2007 values) and one further alternative ('Pima Road conduit') which is the focus of this proposal. The watershed begins on the Salt River Pima-Maricopa Indian Community (SRPMIC), enters Scottsdale near Pima and Thomas Roads, and reenters the Indian Community ¼ mile north of McKellips Road. The benefiting area is nearly entirely urbanized and bounded approximately by Earll Drive (N), Pima Freeway (E), Salt River (S), and Granite Reef Road (W), consisting of approximately 2¼ square miles. Please see the "Existing Conditions" 11x17 exhibit for the Granite Reef Wash Watershed location and floodplain limits. The project would consist of interception facilities and large conveyance conduits to significantly reduce peak discharges in Granite Reef Wash. Preliminary engineering analysis has been performed to determine the effectiveness of the alternatives including a Pima Road conduit alternative. This project has the potential to benefit the City of Scottsdale, SRPMIC, ADOT, MCDOT and the FCDMC. The City is currently working to obtain consensus, cooperation, funding and access from all benefiting agencies.

1. Agency Priority (5 points)

Earll Drive at 86th Street:
Minor storms cause significant flooding within the watershed.

For new proposals, this project is the City's No. 1 priority. The project area and watershed were studied thoroughly by the FCDMC in 1997 and in 2002. The 1997 study produced a flood plain delineation and LOMR. The 2002 study further refined the hydrology based on watershed changes and investigated flood mitigation alternatives. The 100-year peak discharges were significantly higher for the 2002 study (2,350 cfs vs 1,417 cfs at McKellips Road). As discussed in more detail in Section 3, the Granite Reef Wash floodplain determined in 2002 may be significantly wider than what was delineated and submitted to FEMA under the 1997 study. Structures not currently in the FEMA floodplain may actually be at risk.

Therefore, the City's goal is to: 1) alleviate the current mapped flood zone risk, and 2) mitigate the flooding risk to structures currently not accurately represented in the flood zone. The City's No. 1 priority has been to partner closely with the District by basing further viable flood mitigation alternatives on the District's 2002 Granite Reef Wash Drainage Master Plan study. Minor hydrologic changes (to add detail) to the District's study are currently under review by the District for approval.

Pima Frontage Road at Earll Drive: Existing interception structures have insufficient capacity to handle flows.

2. Master Plan Element (8 points)

The Granite Reef Wash Watershed has been the focus of intense independent study by the Flood Control District. The Granite Reef Wash Watershed is unique in that the historical wash corridor has been completely urbanized. Besides regular flooding during frequent storms, a combination of inverted crown streets, slotted drain, stormdrain and narrow earthen channel serve as the only reminder that the area used to be a major wash. During regular, frequent storms, flooded streets reveal that local street drainage facilities are not adequate.

The following Master Plan Studies have been conducted on the Granite Reef Wash Watershed:

- Granite Reef Wash Drainage Study and Preliminary Design Project, City of Scottsdale, 2007 (current project)
- Granite Reef Wash Drainage Master Plan, 2002, FCD 2000C038
- Granite Reef Wash Flood Mitigation CAR, 1999, FCD
- Granite Reef Wash Floodplain Delineation Study, 1997, FCD 95-29
- Granite Reef Wash Drainage Study, 1995, City of Scottsdale

Please see attached "FCDMC Library Search" exhibit for further studies related to this project.

The City's *Storm Water Master Plan and Management Program* (January 2005), developed for the entire city, lists the Granite Reef Watershed as number one on the list of recommended improvements.

3. Hydrologic/Hydraulic Significance (10 points)

The existing watershed is bounded by the Arizona Canal on the north, the Pima Freeway on the east, the Salt River on the south and Indian Bend Wash watershed boundary on the west (approximately Granite Reef Road). The watershed is characterized by mostly mixed residential and some commercial/industrial development. Lands between Pima Road and the Pima Freeway are SRPMIC owned

and under rapid development. These lands are mostly undeveloped at the south end, while the north end contains office buildings, the Pavilions shopping center, Wal-Mart, Scottsdale Community College and convenience stores and gas stations.

McDowell Rd at Granite Reef Wash: Existing structures have 'adapted' to being in the proximity of the historical wash.

Granite Reef Wash starts at the intersection of Pima Road and Thomas Road and extends south-southwest to the Salt River. The upstream watershed has been cut off by the construction of the Loop 101 freeway. The historic wash corridor from Thomas Road to McKellips Road has been urbanized and replaced by a combination of channels, roadway sections, and storm drains that do not have the capacity to convey a 5-year storm event. South of McKellips Road, the wash discharges onto SRPMIC land and finally to the Salt River. The ditch across the SRPMIC land has been altered such that it does not have the capacity to convey the flow from a major storm.

Based on the 2002 FCDMC study, under existing conditions along Granite Reef Wash the 100-year peak discharge ranges from approximately 2,000 cfs at McDowell Road to 2,350 cfs at McKellips Road. Flow depths in the wash corridor, which is comprised primarily of paved street, range widely from approximately 2-10 feet, and velocities range from approximately 3-12 fps.

The wash follows local streets and adjacent homes experience drainage problems whenever rainfall is intense enough to generate runoff. The lower wash corridor becomes very flat and constricted as it approaches McKellips Road, which limits the existing outfall conveyance capacity substantially.

a. *Location:* The entire project study area (Osborn Road to McKellips Road) is mostly within the floodplain. The proposed alternative would be east of and outside the floodplain but would serve to convey intercepted flows and local flows generated from within the watershed in a large conduit within the Pima Road right-of-way.
b. *Peak discharges* are summarized as follows:
    i. The hydrologic studies that have been performed on the watershed have resulted in very different flow results. This is due to physical changes to the watershed over time (construction of the Arizona Canal and the Pima Freeway).
    ii. The various studies and resulting flows near the outfall of the watershed (McKellips Road) are listed below:
        1. FEMA (1984) 1,417 cfs
        2. Simons, Li & Associates (1995) 4,160 cfs
        3. KVL Consultants (1995) 5,205 cfs

4. FCDMC (1997) (1984 flowrates used) 1,417 cfs
5. FCDMC (2002) 2,350 cfs

iii. The current flood plain, as shown in the "Existing Conditions" exhibit, was delineated under the 1997 study using the 1984 FEMA flow of 1,417 cfs.

iv. However, the FCDMC 2002 model results indicate that the 100-year floodplain boundary as currently mapped may not accurately represent all the structures within the flood zone but may be wider than previously anticipated and thereby encompassing many more structures.

Granite Reef Wash at 84th Place: Storm flows back up in the portion of the wash that is unlined channel due to insufficient stormdrain capacity.

c. *Depth, Velocity and Duration:* Specific examples of modeled depths and velocities of flow along the historical wash corridor are as follows: South of Thomas in 87th Street, the estimated depths and velocities for a 100-year event are:

i. 4.5 feet deep at 8 fps

South of McDowell in 84th Place, the estimate depths and velocities for a 100-year event are:

ii. 3.5 feet deep at 8 fps

iii. In August of 2006, a significant storm passed over Scottsdale. Large flows were realized in Indian Bend Wash and also in the Granite Reef Watershed. Significant flooding and damage to property at the south end of the watershed occurred.

d. *Contributing watershed characteristics:*

i. Size = 6 square miles

ii. Slope = 0.003 '/ft southerly

iii. Land use = mixed residential; commercial; light industrial; undeveloped

e. *Existing outfall characteristics*: Existing outfall is the Salt River (adequate capacity)

4. Level of Protection (10 points)

Anticipated level of protection for this project is the 100-year recurrence. The existing level of protection provided by existing infrastructure is estimated to be less than the 5-year recurrence. The paramount level of protection provided by this project would be realized by means of flood control interception structures and large conveyance conduit within Pima Road (please see "Proposed Improvements" 11x17 exhibit). This project would not only alleviate flooding problems but would also address the accuracy concerns of the current floodplain delineation.

5. Area Protected (25 points)

Benefits to City of Scottsdale:

The benefiting area of approximately 1300 acres (2 square miles) includes two industrial operations, Microsemi and General Dynamics, nine commercial properties, numerous single-family homes and multi-family homes (including 4-unit condominiums) – a total of 1054 structures have been identified as being within the floodplain delineated by the District in 2002. All the single-family homes in the floodplain, with the exception of three homes to the far southeast, were approved by the County from 1958-1960. These approvals included the paving of 87th Street from Thomas Road south to almost McDowell Road, along the natural Granite Reef Wash. The approximately 105 multi-family buildings in the Summerfield development near Granite Reef and Roosevelt Roads were approved by Scottsdale in 1971-1972, before the floodplain had been delineated. If this project were funded, a reduction in the 100-year floodplain and elimination of required floodplain insurance for 1000+ homes would equate to over $1 million dollars per year saved to residents. (please see "Agency/Community Benefits" 11x17 exhibit).

Granite Reef Wash at McKellips Rd: Insufficient capacity of box culvert causes ponding along McKellips Road.

Benefits to the SRPMIC would include:

a. Drainage protection for undeveloped lands adjacent to the Pima Freeway from Indian School Road to McKellips Road could be provided by allowing immediate access to the new flood control facilities ("Pima Road Conduit").
b. Reduction in flooding potential and floodplain limits encompassing the mobile home development north of McKellips Road and the cultivated farmland south of McKellips Road which lie in the lower reaches of Granite Reef Wash watershed (please see "Existing Conditions" and Proposed Improvements" 11x17 Exhibits).
c. Reduction in channelization costs for conveying flows through Section 12 (please see "Agency/Community Benefits" exhibit).

Benefits to ADOT:

Benefits to ADOT include emergency vehicle access at frontage roads during storms and freeway shutdown, elimination of ponded water at frontage roads and traffic interchanges during smaller flows allowing continuous all-weather vehicle access to the Loop 101 Pima Freeway.

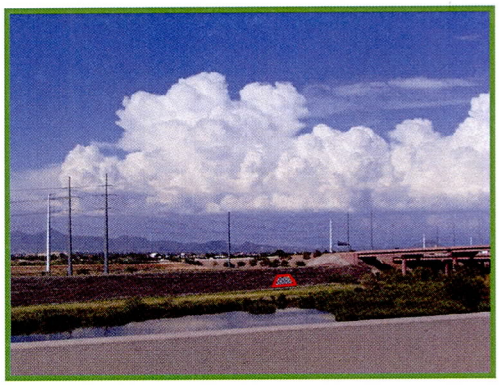
Benefits to MCDOT:

The project would also provide greater protection to motorists using Pima Road (4,600 vehicles/day), Thomas Road (29,300 vehicles/day), McDowell Road (31,200 vehicles/day), McKellips Road (14,500 vehicles/day), and Granite Reef Road (4,700 vehicles/day). McKellips Road ROW is MCDOT owned and there have been serious

accidents due to cars hydroplaning on ponded water at McKellips Road and the Granite Reef Wash outfall.

A summary of Project Benefits includes (please see "Agency/Community Benefits" 11x17 exhibit):

- Removal of over 1000+ structures from the current 100-year floodplain (as delineated under the FCD 2002 study) within south Scottsdale and in SRPMIC along the historical Granite Reef Wash corridor.
- Avoid redelineating and adding residents/businesses to the floodplain.
- Flood mitigation for the SRPMIC lands adjacent to the Pima Freeway and south of Indian School Road and through Section 12 lands south of McKellips Road between the Pima Freeway and McClintock Drive.
- Drainage protection for ADOT frontage roads and potential extra capacity for the existing ADOT drainage channel.
- Drainage protection within MCDOT ROW on McKellips Road.



Proposed Outfall at Salt River: 'Pima Road Conduit' outfall through existing CSA bank protection would be similar to the outfall of the Pima Freeway ADOT Drainage Channel.

This project would be a joint effort between the City of Scottsdale, FCDMC, SRPMIC, ADOT and MCDOT and would protect tribal lands, Scottsdale residents and business owners, MCDOT ROW and ADOT ROW while fulfilling the mission of the FCDMC.

6. Environmental Quality (8 points)

Water Quality Benefits – This area is highly urbanized and currently has no known treatment of stormwater flows. Possible implementation of BMP's for this project, such as environmental basins constructed at primary interception locations, would enable efficient capture and removal of first-flush pollutants before stormwater discharges into the Salt River. The Granite Reef Wash flood control system (Pima Road Conduit) could serve to help in removing pollutants from stormwater for most of the 6 square miles of watershed. Also, future construction of detention basins in the Granite Reef Wash watershed by the City to supplement stormwater interception by this project would also provide water quality benefits to the community.

7. Area-Wide Benefits (10 points)

Project improvements consist primarily of at-grade and sub-surface, large-size interception structures and conduits.

Area-wide benefits summary includes:

a. Accurately mapped Granite Reef Wash floodplain based on reduced/mitigated 100-year flows.
b. Residences removed from the 100-year floodplain leading to reduced need for or elimination of flood insurance.
c. Protection of life and property.
d. Protection of roadways and added traffic safety during frequent storms.
e. Reduction in first-flush pollutant loadings providing significant water quality benefits for the entire watershed.
f. Reduction in pollutants outfalling into the Salt River.

Quality of Life - Within the existing floodplain, several thousand residents currently live with inadequate drainage facilities, while also having to pay typically $1,600 to $1,800/year or more per residence for flood insurance. These private costs could be eliminated or reduced by the project. Also, nearly 84,000 vehicles/day pass through the key roadways that are affected by Granite Reef Wash. Motorist safety could be enhanced through construction of the project. Additionally, the health, safety, and welfare of the local residents will be enhanced. The risk of flooding will be decreased, which in turn will reduce the risk of damage to valuable and irreplaceable items and potential loss of life.

PROJECT FUNDING

8. Total Project Cost (6 points)

An engineering analysis has been performed to evaluate several alternatives and to identify a preferred alternative. A cost estimate for the preferred alternative (Pima Road Conduit) has been prepared and total project cost has been estimated (please see attached "Phasing and Cost" estimate for the preferred alternative). The preferred alternative will also be evaluated using the FEMA Benefit Cost Analysis Toolkit to do a benefit/cost analysis of the alternative. Cost estimate includes: Design, Land Acquisition, Construction, Environmental Permitting/Mitigation and Aesthetic/Public Acceptance. Time for completion of each phase is listed in the estimate.

9. Level of Local Participation (8 points)

It is anticipated that improvements adequate to remove all structures from the 100-year flood plain in the Granite Reef Wash will cost $28.5 million as described in this submittal. The City of Scottsdale has budgeted ($4.966 million) for stormwater improvements in the Granite Reef Wash. The City of Scottsdale is requesting 83%

matching funds ($23.534 million) from the Flood Control District of Maricopa County for stormwater improvements in Granite Reef Wash. However, if 83% funding is not available, the City will pursue funding opportunities with both ADOT, MCDOT and SRPMIC and would be willing to reduce project scope so that cost sharing between the City and District can reach 60% / 40%. It is anticipated that SRPMIC will provide ROW access from ¼ mile north of McKellips Road to the Salt River or to ADOT ROW at McKellips Road in order to construct the Pima Road Conduit.

10. Operation & Maintenance Costs (5 points)

The project is envisioned to consist of interception structures, interceptor storm drain and mainline conduit – all of sizeable proportions. The interception structures would be designed for easy access and interceptor and mainline stormdrain would have regular access via manholes and at both inlets and outlets for regular maintenance. The City anticipates regular cleanup of debris from interception structures after storm events, regular yearly maintenance to remove any graffiti and annual repair of access barriers, interception grates, manhole rims/lids and outlet flap-gates. Significant sediment or debris buildup within the conduit is not anticipated (self-cleaning). Estimated yearly maintenance cost of system:

a. Storm debris cleanup - $5,000
b. Graffiti cleanup - $7,500
c. Annual repair of access barrier, interception grates, manhole rims/lids, flapgates - $12,500/year

Total Yearly Maintenance Costs: $25,000 (estimated $18,750 City / $6,250 District)

11. Operation and Maintenance Responsibility (5 points)

The City would like to develop a joint maintenance manual/schedule and responsible party designations for future maintenance. This may include FCDMC maintenance personnel being responsible for system components outside of the City limits. The City would be responsible for all repair and maintenance within City limits. There is an existing ALERT Gage at McDowell Road and Granite Reef Wash (#4725). Another ALERT Gage could be outfitted for the Pima Road Conduit to monitor flow levels for the watershed. In general, the City will be responsible for future maintenance and replacement of all features constructed within public right of way or city-owned parcels.

OSBORN RD

EARLL DR

THOMAS RD

McDOWELL RD

McKELLIPS RD

Pima Freeway - Loop 101

FCDMC BENEFITS

- 1000+ structures removed from the 100-Year floodplain. (2002).

- Protection of life and property.

- For 2002 delineated floodplain estimated savings in flood insurance costs: **$1.04 million per year** (based on 67% increase in property values from FCDMC 2002 study and county assessor property values for 2007)

ADOT BENEFITS

- Elimination of ponded stormwater at on/off ramps.

- Maintain emergency vehicle access during storm events.

- Maintain alternate route access during freeway closures.

SRPMIC BENEFITS

- Flood protection for developable lands between the Pima Freeway and Pima Road.

- 25 acres of developable land released from 100-Year, 2 hr on-site retention requirements estimated return on investment based on 60-Year lease, and 10% CAP rate. = **$130 million ($2.2 million per year average)**

(Land Values From: Dillion Reed, UBS, 5-16-07)

MCDOT BENEFITS

- McKellips Road mitigation of ponded water.

- Traffic safety (No hydroplaning).

- Increased functionality of existing box culvert.

- Emergency vehicle access during 100-Year storm.

- Protection of life and property.

- Reduced accident claims.

SRPMIC BENEFIT

- Flood protection of Section 12 lands.

- Reduction in size of channel improvements. Est. Savings: **$2.4 million (RIP-RAP Lined) or $2.1 million (Concrete Channel)**

STORMWATER QUALITY

- Upstream BMP's at interception structures applied to point-source discharge.

- Cleaner receiving waters.

- NPDES Compliance.

Feet
0 500 1,000 1,500 2,000

Interception Structure
Flap-Gated Outfall
Storm Drain
Small Storm Drain

City of Scottsdale
Granite Reef Wash Project

AGENCY/COMMUNITY BENEFITS

Printed On: 07/18/2007

Created By: PSOMAS

Map SCDL-C

OSBORN RD

EARLL DR

THOMAS RD

McDOWELL RD

McKELLIPS RD

Pima Freeway - Loop 101

Interception Structure(s)

Q_{100} = 1600 cfs

Q_{100} = 0 cfs

Revised 100-Year Floodplain

12' x 10' RCBC

Q_{100} = 205 cfs

Q_{100} = 2200 cfs

12' x 12' RCBC

Q_{100} = 520 cfs

Q_{100} = 2300 cfs

Anticipated Revised 100-Year Floodplain

12' x 14' RCBC

Flap-Gated Outfall

Feet

0 500 1,000 1,500 2,000

Interception Structure

Flap-Gated Outfall

Storm Drain

Small Storm Drain

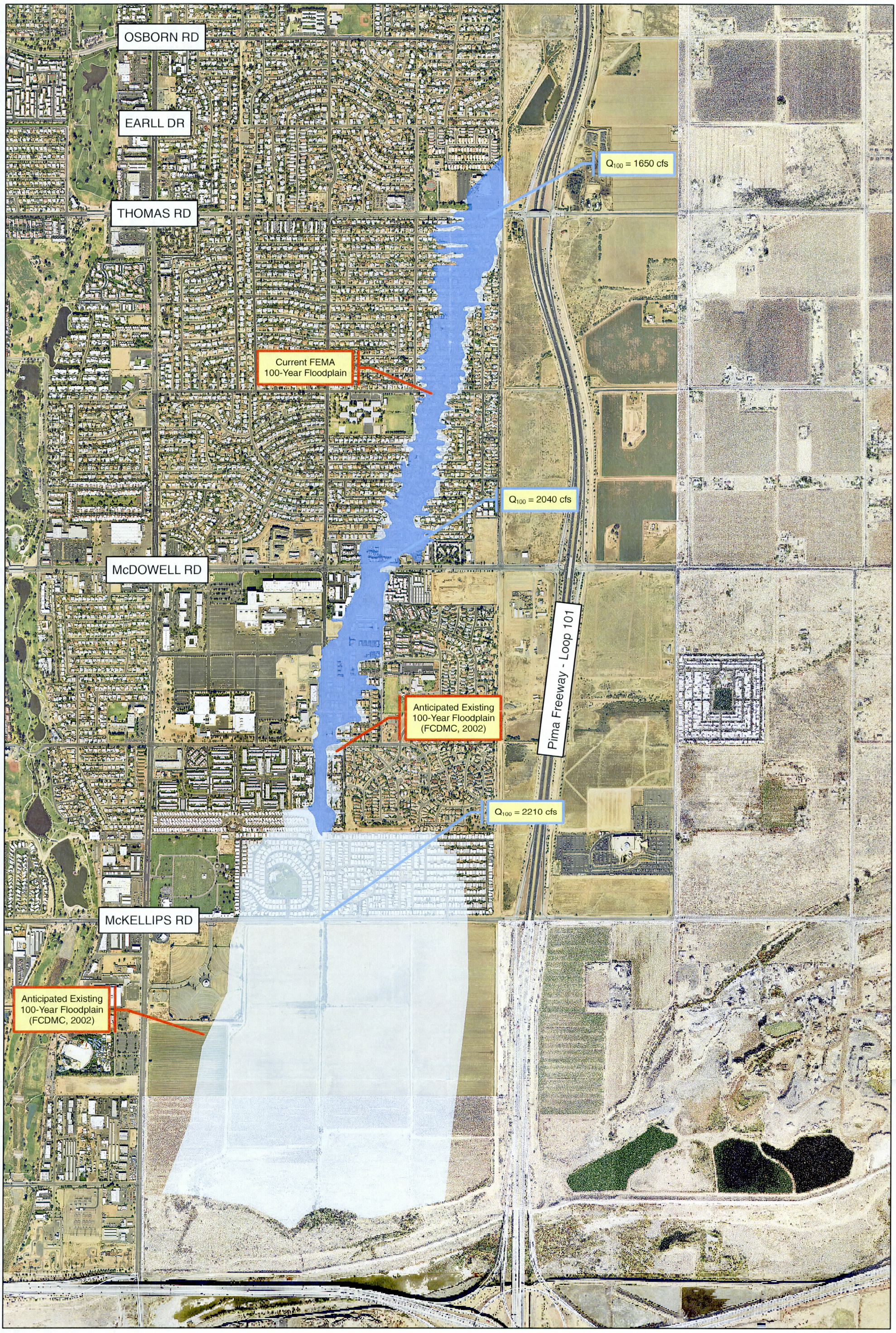
City of Scottsdale
Granite Reef Wash Project

PROPOSED IMPROVEMENTS

Printed On: 07/18/2007

Created By: PSOMAS

Map: SCDL-1A



City of Scottsdale
Granite Reef Wash Project

EXISTING CONDITIONS

Printed On: 07/18/2007

Created By: PSOMAS

Map: SCDL-1B

FCDMC Library Search

About the District
About Flooding
Programs & Services
In Your Neighborhood
Flood Safety
Procurement
Permitting
Technical Resources
Map Applications
Publications
Software & Downloads
CAD Resources
Library Catalog
Related Links

Technical Resources

last updated: 7/17/20

11 records found in the Library matching **Granite Reef Wash**

1.
Call Number: A265.901
Title: Granite Reef Wash Flood Prevention Project
Author: City of Scottsdale; East Maricopa Natural Resource Conservation District; Hohokam Resource Conservation and Development Project
Date: 1975

2.
Call Number: A265.301
Title: McKellips Road Drainage Structure at Granite Reef Wash, Final Drainage Repor
Author: INCA Eng., Inc. for Maricopa County Dept. of Transportation-MCDOT
Date: 1993

3.
Call Number: A265.302
Title: Granite Reef Wash Drainage Study, Revised June, 1995
Author: Simons, Li and Assoc. Inc. for Maricopa County Dept. of Transportation-MCD
Date: 1995

4.
Call Number: A265.014.001
Title: Granite Reef Wash Flood Delineation Study, Estimation of Manning's N Value, Revised November
Author: Entellus for Flood Control District of Maricopa County-FCD
Date: 1996

5.
Call Number: 603.051
Title: Granite Reef Wash Survey Notes
Author: City of Scottsdale Survey Dept.
Date: 1996

6.
Call Number: A265.014.002S
Title: Granite Reef Wash Floodplain Delineation Study, Technical Data Notebook : Hydraulics (FDS, TDN)
Author: Entellus for Flood Control District of Maricopa County-FCD
Date: 1997

7.
Call Number: A265.303S
Title: Granite Reef Wash Drainage Master Plan Report (DMP)
Author: Entellus for Flood Control District of Maricopa County-FCD and City of Scottsdale
Date: 2002

8.
Call Number: A265.305S

FCDMC Library Search

Title: Technical Data Notebook, Granite Reef Wash Drainage Master Plan, Hydrology (TDN, DMP)
Author: Entellus for Flood Control District of Maricopa County-FCD
Date: 2002

9.
Call Number: A265.304S
Title: Data Collection Notebook, Granite Reef Wash Drainage Master Plan (DMP)
Author: Entellus for Flood Control District of Maricopa County-FCD
Date: 2002

10.
Call Number: CDA265.1
Title: Granite Reef Wash Drainage Master Plan HEC-2 Models (DMP)
Author: Entellus for Flood Control District of Maricopa County-FCD
Date: 2007

11.
Call Number: CDA265.2
Title: Granite Reef Wash Drainage Master Plan (DMP)
Author: Entellus for Flood Control District of Maricopa County-FCD
Date: 2007

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1 records found in the ADMS, FPD, FIS Study Flat Files matching **Granite Reef Wash**

1.
Drawer: 313
Title: Granite Reef Wash Flood Delineation Study (FDS)
Consultant: Entellus
Year of Study: 1997
Year Flown: 1993

No records were found in As-built Structure Flat Files database.

For information regarding documents, contact us at:
Flood Control District of Maricopa County
2801 W. Durango St.
Phoenix, AZ 85009
(602) 506-1501
(602) 506-4601 (Fax)
fcdlibrary@mail.maricopa.gov

City of Scottsdale
GRANITE REEF WASH WATERSHED FLOOD MITIGATION

Phasing and Cost

	Phase Length (miles)	Phase Time (months)	Phase Cost ($)
Design Phase	-	9	$1,780,046
Construction Phase I	2.25	11	$15,236,316
Salt River Outfall to McDowell Road/Pima Road			
McDowell/Pima to Coronado Drive/87th Street			
Salt River Outlet Structure			
Coronado Interception Structure			
Utility Relocation			
Construction Phase II			
McDowell/Pima Road to Thomas/Pima Road	1.00	10	$7,018,277
Local and Roadway Drainage Tie-ins			
Utility Relocation			
Construction Phase III			
Thomas/Pima Road to Earll Drive/Pima Frontage	0.52	12	$4,234,189
Earll Drive/Pima Frontage to Earll Drive/86th Street			
Earll/Thomas Interception Structures			
Utility Relocation			
Environmental Permitting Phase	0	-	$100,000
Salt River			
Stormwater Quality BMP's			
Aesthetics/Public Acceptance Phase	0	-	$100,000
Structure Rustication			
Public Awareness/Meetings			
Land Acquisition Phase	0	-	$0
SRPMIC and/or ADOT ROW required			
Grand Total:	**3.77** (miles)	**42** (months)	**$28,468,828** ($)

City of Scottsdale
GRANITE REEF WASH WATERSHED FLOOD MITIGATION

Pima Road Conduit and Interception Structures
Quantities

Start	End	Direction	Section Size	Shape	D/S Fill Height	ADOT Table B-02.10	Use Table	Material	Length (lf)	ADOT Table (cy/lf)	Total Qty (cy)	Unit	Unit Cost ($/per)	Total
Earll/86th	Earll/Pima FR	WE	10'x4'	Box	0	I	I	Concrete	1160	1.102	1278	cy	$425	$543,286
Earll/Pima FR	Thomas/Pima	NS	12'x10'	Box	8	I	I	Concrete	1300	1.988	2584	cy	$425	$1,098,370
Thomas/87th	Thomas/Pima	WE	54"	RCP	8	n/a	na/	Concrete	300			lf	$150	$45,000
Thomas/Pima	McDowell/Pima	NS	12'x10'	Box	17	III	II	Concrete	5280	2.126	11225	cy	$425	$4,770,744
McDowell/Granite Reef Wash	McDowell/Pima	WE	12'x4'	Box	17	III	II	Concrete	2040	1.262	2574	cy	$425	$1,094,154
McDowell/Pima	McKellips/Pima	NS	12'x14'	Box	9	I	II	Concrete	5280	2.678	14140	cy	$425	$6,009,432
McKellips/Pima	Salt River/Pima Align	NS	12'x14'	Box	28	V	III	Concrete	4550	2.678	12185	cy	$425	$5,178,583
											43987	cy	Storm Drain:	$18,739,569
											$18,739,569			

Interception Structures	Qty			
Salt River	**(ea)**	**Unit**	**Unit Cost**	**Total**
CSA Penetration	1	LS	$50,000	$50,000
Outlet Structure	1	LS	$50,000	$50,000
Flap Gate	1	LS	$25,000	$25,000
				$125,000
McDowell/GRW				
RCBC Pipe Penetration	1	LS	$50,000	$50,000
Junction Structure	1	LS	$50,000	$50,000
				$100,000
Thomas/87th				
Transverse Grate/Curb Opening	1	LS	$50,000	**$50,000**
Thomas/Pima				
Curb Openings/Side Weir	1	LS	$75,000	**$75,000**
Earll/86th				
Transverse Grates	2	LS	$50,000	**$100,000**
Earll/Pima Frontage Road				
Transverse Grates	1	LS	$75,000	**$75,000**
			Structures:	**$525,000**

Storm Drain~Structure Total		**$19,264,569**
Mobilization	10%	$1,926,457
	Sub-Total	**$21,191,025**
Design/Engineering (remaining 70%)	12%	$1,780,046
Contingency	25%	$5,297,756
	Grand Total	**$28,268,828**