2016

STORMWATER UTILITY

STORMWATER UTILITY RATE ANALYSIS

DATE: 01-21-2016

STORMWATER UTILITY – DEVELOPMENT & INFRASTRUCTURE SERVICES

TOWN OF ORO VALLEY | 11000 N La Canada Drive, Oro Valley, AZ 85737

Stormwater Utility Mission

To provide safe and efficient management of the Stormwater Utility, promote and protect life and safety, water quality, and the Town's working and natural environments before, during, and after the occurrence of storm events in accordance with all Town codes, standards and policies.

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PART I. Executive Summary

In Oro Valley the Stormwater program was initiated to fulfil the Environmental Protection Agency's minimum requirement to regulate first flush pollutants which may enter our waterways. The Town's Municipal Separate Storm Sewer Systems (MS4) permitted activities are part of this program and as discussed further will describe Stormwater Quality. Additionally the town has responsibilities regarding flood protection and floodplain management for our community that require maintenance and additional monitoring of aging Stormwater conveyance infrastructure hence known as Stormwater Quantity. This may require debris and sediment removal, vegetation management, facilities maintenance and possibly new facility construction for safety concerns.

The Stormwater Utility is responsible for Stormwater Quality and Stormwater Quantity. The functions and duties of the Oro Valley Stormwater Utility Commission "Commission" include reviewing and developing recommendations for Stormwater revenue requirements, Stormwater rates and fee structures. Controlling the quantity of Stormwater drainage runoff and aiding in water quality management has become essential in keeping our water safe for all of its many uses.

The Stormwater Utility has been in place since 2004 and associated fees since 2007. Since the initial rate was established no formal review of the program and associated rates has taken place. It is the intention of the Commission to annually evaluate the rates and analyze them to assure the recommendations meet Town policies and ensure the financial stability of the program and associated projects.

This Stormwater Rate Analysis Report contains detailed information on the Stormwater Utility fund. The Stormwater Utility (Utility) is an enterprise of the Town and generates revenue from rates, fees and charges and does not receive revenue from taxes or payments from the General Fund. The management of the monthly utility fees include personnel, operations and maintenance of the Small Municipal Separate Storm Sewer Systems (MS4) Program. The Utility pays the General Fund for services received including finance, human resources, information technology, legal, insurance and rental of office space. The Utility also pays the Water Department for billing and receiving of the monthly utility fee. In addition, since the Utility does not have its own maintenance crew, the Utility pays the Highway Fund for associated expenditures including street sweeping, storm cleanup and drainage channel vegetation management. The Utility also hires local contractors to complete Stormwater projects that exceed the work load capabilities of the operations street crew. This past fiscal year contract expenditures totaled just under $100,000 for contract maintenance that included culvert cleaning, erosion control/stabilization and street drainage interceptors

The Stormwater Utility Commission has made a recommendation for a Preferred Financial Scenario (PFS). The PFS has been selected to meet the mandated requirements as outlined under the Stormwater Town Code 15-24-13-H. The Town Council, by resolution, shall establish the annual (fiscal year) monthly base rate for the Stormwater Utility fee. The base rate shall be calculated to ensure adequate revenues to fund the costs of stormwater management and to provide for the operation, maintenance, and capital improvements of the stormwater system in the Town.

Under the Preferred Financial Scenario, the Operating Fund will have an approximate ending cash balance of just over $200K at the end of the five-year projection period. A cash balance of 15% (based on revenue projection) is required by Town Code. This amount preserves a balance of 17% to 25% depending on the fiscal year and the associated capital expenditure requirements. The Preferred Financial Scenario includes cash funding to preserve $50K per year for culvert and wash cleaning as well as increased expenditures on internal small projects by $80,000 per year or $400,000 over the five-year period. The Preferred Financial Scenario proposes no other new debt for capital expenditures.

This is the first year since establishment of the rate in 2007 that the rate has been reviewed. The Stormwater Rate Analysis is prepared based on the most up-to-date information available for a five-year projection period. It is important to note that there was a five-year moratorium on fee adjustments from 2007 until 2012.

Operational needs and capital improvement requirements change annually and are carefully evaluated when they are included in the analysis. The Stormwater Utility Commission over the last 18 months reviewed several scenarios, however, based on the necessary funding amounts required to meet mandated outcomes, maintenance requirements, and have a five-year sustainable rate the proposed $4.50 fee per ERU was recommended. Table 1 reflects the proposed rate changes to the Stormwater Utility fee.

Table 1

Stormwater Preferred Funding Scenario

Monthly Stormwater Utility Fee/Unit	FY 2015/16 Current	FY 2016/17 Change ERU
Residential Rate	**$2.90**	**$4.50**
Commercial Rate	**$2.90**	**$4.50**
ERU = Square Feet	**5,000**	**4,000**
# of Units:		
Residential	17,460	17,749
Commercial	5,068	6,335
Total Units:	22,528	24,084
Revenue:		
Gross Revenues	$ 783,974	**$ 1,300,536**
Funding from Outside Sources	$ 3,250	$ 3,250
Grant Funds (one time)	$ 35,000	
	$ 822,224	**$ 1,303,786**
Additional Revenue		**$ 516,562**

Purpose of Fee

- Program Development – project definition
- Program Proposal – project design and costing
    - Budget development

    - CIP development
- Construction Management
    - New projects
    - Maintenance Oversight
- Increased Inspections due to State and Federal reporting regulations
    - Newly identified washes
    - Additional residential requirements
- Management of existing assets
    - Review of status of infrastructure stability
    - Service and maintenance work order schedules
    - Annual review

PART II. Program Information and Background

Why Must We Manage Stormwater?

The Town of Oro Valley administers, operates, and maintains a Stormwater Utility meant to:

- Preserve valuable natural resources
- Protect people and property
- Reduce nuisance flooding
- Improve water quality

The U.S. EPA has estimated that about 30 percent of known pollution to our nation's waters is attributable to stormwater runoff. In 1987, Congress directed U.S. EPA to develop a regulatory program to address the stormwater problem. The U.S. EPA issued regulations in 1990 authorizing the creation of a NPDES permitting system for stormwater discharges from a select group of industrial activities. The National Pollutant Discharge Elimination System (NPDES) is the administrative mechanism chosen for the stormwater permitting program. In Arizona, this program is called Arizona Pollutant Discharge Elimination System (AZPDES). An AZPDES permit is required for any point source discharge of pollutants to the Waters of the United States. Because stormwater runoff can transport pollutants to either a municipal separate storm sewer system or to the Waters of the United States, permits are required for those discharges.

ADEQ has prepared a draft 2016 Small Municipal Separate Storm Sewer System General Permit (Small MS4 GP) that is intended to succeed the 2002 Small MS4 GP (Permit No. AZG2002-002) which is currently administratively continued. The review and subsequent adoption of this general permit is scheduled to occur in early 2016. The draft general permit 2016 builds on the requirements of the previous general permit and is designed to control pollutants to the Maximum Extent Practicable (MEP). The new draft requires updates in the SWMP consistent with the specific permit requirements, implementing the program and evaluating the BMP's as an iterative process to ensure BMP effectiveness. The new draft permit will contain more specific tasks and details than the current 2002 general program and therefore require additional management and program compliance to control pollutants.

Stormwater Infrastructure

Table 2

Assets Listing	2007	2015	Change	Growth
Miles of FEMA designated floodplains/levees	18	18	0	
Miles of underground storm pipe	4.5	6.5	2.0	44%
Miles of public drainage easements	5	5	0	0%
Street catch basins/inlets	400	560	160	40%
Culverts	180	209	29	16%
Detention basins	40	127	87	218%
First flush devices	50	66	16	32%
Outfalls	150	261	111	74%
Lineal miles of mapped washes	NA	195	NA	

as of August 2015

The Arizona Department of Environmental Quality (ADEQ) conducted an audit of Oro Valley's Municipal Separate Storm Sewer System (MS4) program to assess compliance with the Town's MS4 permit and Stormwater Management Plan (SWMP) on February 26-27, 2014.

The audit included document reviews, interviews with Town program managers, and field verification inspections. During the audit, ADEQ noted areas of potential noncompliance with the permit. According to the Arizona Administrative Code (AAC.) RI8-9-A905(A)(3)(a) and 40 Code of Federal Regulations (CFR) 122.41(h), the Town is required to submit information to ADEQ regarding compliance with the Permit and the Town's Stormwater Management Plan. This plan was submitted and accepted September 30, 2015.

The Preferred Financial Scenario rate increase to $4.50 per month with a reduction in the Equivalent Residential Unit (ERU) to 4,000 square feet will allow the Stormwater Utility to meet:

- MS4 compliance and review minimums as addressed in the Stormwater Management Plan submittal (Stormwater Quality)
  - Redesign program to meet new 2016 General Permit Requirements as outlined by ADEQ
- Infrastructure Project Identification 20% to 30% level (Stormwater Quantity)
  - costing
  - design
  - build under $80K projects
- Work order development (Stormwater Quality and Quantity)
  - Prioritization of inspection and maintenance scheduling
  - increased inspections
  - increased Public Education
- Stormwater Utility Program Sustainability
  - 5 years

Note: Program sustainability only accounts for funds to preserve activities defined above. Additional County or other external funds must become available to pay for larger capital projects which will be identified. In the absence of County or other external funds, the rate structure will need to be revised again within one or two years or so that large capital projects identified by the new staff can be completed and funded by the Stormwater Utility.

Background

Oro Valley is located in northern Pima County approximately six miles north of the Tucson city limits. The valley itself was formed by the Canada Del Oro Creek that begins in the Santa Catalina Mountains. The town sits at an elevation of 2,620 feet, covers over 34 square miles and has a current population of just over 41,000. Oro Valley was incorporated in April, 1974.

The Town initially became covered by the NPDES General Permit For Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in 2004. This permit, often simply called a "Stormwater Permit," is required by the US Environmental Protection Agency and is implemented in Arizona by the Arizona Department of Environmental Quality (ADEQ). Neither the US EPA nor the State of Arizona provides any funding to Oro Valley for the operation of the Stormwater Program.

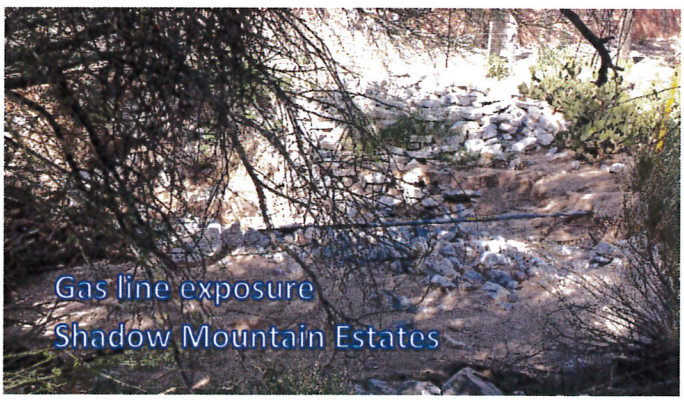
Most cities and counties with a population greater than 10,000 and/or located in an "urbanized area" as defined by the US Census must follow this permit, which regulates discharges of stormwater runoff to Waters of the United States.

Stormwater Purpose

The Stormwater Utility program is responsible for meeting all quality and quantity issues including the Town's Stormwater Management Plan, Floodplain and Erosion Hazard Management, and supporting all other Town programs that are impacted by storm events. This program also coordinates with Federal, State and local government agencies related to the Town's Stormwater program.

Typical Stormwater Utility Activities Include:

- Implementation of all MS4, ADEQ and EPA requirements
- Drainage Channel and Street Shoulder Vegetation Maintenance (Quantity)*
- Storm System Inspections and maintenance/cleaning (Quantity)of culverts, basins, grade control structures, storm sewer inlets/outlets and drainage channels
- Storm Cleanup
  - Street Sweeping (Quality) - Stormwater determination* vs Normal street surface deterioration
  - Low water crossings (Quantity/Quantity)depositing sand, rock, boulders and vegetation debris removal in roads during larger events of monsoons
- Storm generated Debris Removal* in washes (Quantity)
- Road Safety (Quantity) due to storm activity at low water crossings and shouldering due to erosion*
- Public Education and Outreach(Quality)
- Technical Support for other divisions within the Town(Quality/Quantity)



- Minor Construction and Repair Projects (Quantity)– Post storm event structural damage that endangers the public or may realize more extensive damage if not repaired immediately*
- In-House Hydrologic and Hydraulic Studies and Designs(Quantity)
- Floodplain Permit Review (Quantity/Quality)
- Stormwater Pollution Prevention Plan (SWPPP) Plan Review (Quantity)
- Development Review (Quantity/Quality)Preparing and Revising/Updating Town Ordinances and Manuals (Quality/Quantity)

The Stormwater Utility fee also reimburses the Highway Fund for utilization of the streets crews for some of the activities listed above and marked with an (*). The allocated expenditures are determined by task and scope and are assigned to the Stormwater Utility funds and are not considered routine street maintenance.

Municipal Separate Storm Sewer System (MS4) - Stormwater Quality

The permit provides requirements in each of the following six Minimum Control Measures (MCM):

1. Public Education and Outreach
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management in New Development and Re-Development
6. Pollution Prevention/Good Housekeeping for Municipal Operations

More information about each of these six main categories is provided below.

Public Education and Outreach & Public Involvement/Participation

These two related topics focus on educating and involving the public in all areas of stormwater management. Several factors associated with the program costs:

- The size of community and our target audience in order to increase Stormwater awareness
- The ability to tie into other municipal/3rd Party education programs versus developing our own
- Types of education and outreach media used
- The method of distribution through available volunteer activities/programs
- The methods of measuring success and reporting to ADEQ.

Illicit Discharge Detection and Elimination

Our Stormwater Permit requires and is dependent upon identifying and eliminating "illicit discharges." Town Code Article 15-24-14 defines the Town's Stormwater Quality Management System and Discharge Control Ordinance, passed in 2008. It defines "illicit discharges," prohibits them, and provides for enforcement options to eliminate them.

Program costs associated with eliminating "illicit discharges" are generated from the age and extent of infrastructure, the mapping status and inventory of entire drainage system. At present, services are based upon a complaint-based system versus a more costly proactive detection. Current revenue covers staffing, contractor management, equipment to detect discharges, and identify the source and cost of the actual repairs. It also includes Software cost for database management, reporting and program evaluation.

Construction Site Stormwater Runoff Control

The next requirement of the Stormwater Permit is the control of runoff from construction sites. Discharge of sediment or other waste (concrete truck washout, litter, etc.) from construction sites is prohibited by the Town.

A permit is required for any land disturbance of any size inside the Town with a few exceptions. Permit information and an application form may be picked up at the Town

located at 10000 N La Cañada Drive or may be downloaded from this website page. Please call one of the contacts at the top of the page for more information. In addition, any land disturbance totaling more than one acre requires a permit from the Arizona Department of Environmental Quality (ADEQ).

Program costs associated with this program element are dependent on the number of active construction sites, the number of development projects in the pipeline, the average number of inspections per site, and the current compliance record along with the efficiency of enforcement.

Post-Construction Stormwater Management in New Development and Re-Development

Our Stormwater Permit requires treatment of stormwater runoff from areas of new development and re-development. The cost factors associated with this part of the program are dependent upon the number of development projects requiring municipal review and inspection, the age and type of existing stormwater best management practices, future enhancement of the review process to look for and encourage a site design, land use planning for low impact development, and possible code updates to allow/foster green infrastructure.

Pollution Prevention/Good Housekeeping For Municipal Operations

The final of the six stormwater permit requirements involves the Town's own operations. The Town must evaluate all sources of potential pollution such as streets and roads, municipal parking lots, maintenance shops, outdoor storage areas, construction activities, parks maintenance and landscaping, and salt storage. Procedures to eliminate or reduce the potential for pollution must be developed, and employees must be trained on these procedures at least annually. Cost factors associated with this requirement include the number of Town facilities requiring pollution prevention plans, street sweeping and catch basin cleanout equipment and labor, and employee education and training.

Storm Mitigation

Clean up cost FY 2015 $34,000

Part III: Stormwater Utility Rate Proposal

Current Funding

Neither the State of Arizona nor the federal government provides funding for the Town's Stormwater Program. In 2007, the Town established a Stormwater Utility fee to provide funding for implementing the requirements of the Stormwater Permit and for small cleaning projects/larger project research and draft plans that could be submitted for county project consideration.

Pima County Regional Flood Control District (PCFCD) under the State of Arizona enabling legislation (Title 48 of ARS), is designated as a special taxing district and given the authority to levy secondary property tax on parcels within the Town of Oro Valley. The Town of Oro Valley and PCFCD have a very good relationship and over the past 10 years have been successful in the delivery of both large and small Stormwater projects. However, this funding is variable and not always available. In addition, the Flood Control District levy only provides funding for quantity issues and quality issues are solely the responsibility of the Town.

When the Stormwater Utility was first established, funding for projects was secured through the budgeting process and overseen by Town consultants. The FEMA Lomas Del Oro project in FY 09/10 was the last big project to be overseen by the Town. Since this time the PCFCD requests project submittals and then prioritizes them to determine which projects will move forward. This year Pima County Flood Control District has provided significant support in the area of wash maintenance. However, benefits from our partnership with PCFCD range from limited small clean up to large project and include capacity for drainage study. While a dedicated funding estimate is not available, the Town will continue to request assistance. From January through July of 2015, PCFCD contracted to have four lineal miles of debris and sediment removed, clearing existing blockages to improve channel flow and subsequently enabling mosquito abatement in areas throughout the east side of Town. Fortunately structural damage has been minimal and no major structural damage has occurred.

Pima County Regional Flood Control District and other sources
Annual Contribution to Oro Valley

Funding	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
Direct	$ 3,507	$ 28,567	$ -	$ -	$ -	$ -
Projects	$ 471,000	$ -	$ 304,663	$ 290,000	$ 1,062,561	$ 731,862
Sediment Removal	$ -	$ -	$ -	$ -	$ 101,750	$ 118,600
Other Sources	$ 1,329,000	$ -	$ -	$ -	$ -	$ -

Projects

Linda Vista Gabions	
Poinsetta Dr	
Lomas Del Oro	
La Canada Underpass to date	
CDO River Park	
CDO River Park Pedestrian Bridge	
I10 and La Canada Underpass improvements	In progress
Oracle Road Underpass improvements	In progress

The PCFCD has already informed Stormwater staff that next year's funding will be limited. In addition, some items once available for funding such as low water crossings are no longer eligible for funding even though they remain a safety concern for the Town. The number of town projects is growing as more washes are identified and evaluated. Attachment E lists all known drainage and Stormwater issues regardless of size and scope that have been identified at this time. The Stormwater Utility intends to utilize part of the increased funding to develop not only a project list, but develop the designated project to a design level that will include costing scenarios for those projects under the Stormwater Utility purview. This process will allow the Town sound budgeting practices to evaluate capital improvements and identify projects to submit for potential funding from the Pima County Flood Control District. The new asset manager/engineer will be responsible for defining these projects including separating out unit costs for services/deliverables.

Current Rate

Single-family residences currently pay $2.90 per month, charged to their water bill or separately by the Town. Commercial facilities and non-profits are also charged $2.90 per "Equivalent Residential Unit" (ERU) of impervious area (driveways, patios, roofs, or other areas where stormwater does not infiltrate into the ground). At present an ERU is equal to 5,000 square feet per Town Code 15-24-13-G. The Preferred Financial Scenario includes a five year projection of the fund and evaluates the impact of future costs and revenue sources that will be required to meet those costs.

In order to cover various alternatives staff conducted an impervious area sample distribution study this year to best determine the basic ERU value. The result of the study indicates that the Town's average rounded ERU value is 3,700 square feet. The report is provided under Attachment F. Because the data used in the study may not include all impermeable surfaces, e.g. some driveways, the Commission recommends an ERU value of 4,000 square as more representative. Therefore the recommendation along with the rate adjustment is to reduce the ERU value to 4,000 sq. ft. This new ERU change will require the Town Code to be modified to reflect this new value. Along with the rate change the revised Town Code will be submitted to Town Council for consideration and approval.

National Average

There are currently 1511 Stormwater Utilities throughout the United States (Campbell, 2011). Western Kentucky University annually updates and provides access to their very extensive Stormwater Utility database as summarized in Appendix F. This survey provides us the opportunity to compare the Town's current rate structure with others nationally. However, the Western Kentucky University data survey results does not contain information about the scope of activities of responding Utilities. The Oro Valley Stormwater Utility is performing quality and quantity work whereas many survey responders may perform only quality work, so direct comparison may not be representative.

The average national rate, as of the 2014 study, was $4.01 per month. The rates range from "no fee" to $35.00 dollars per month to accommodate various programs with 10.6% of the national rates being $2.50 to $2.99, over 34.5% of the utilities have rates averaging $3.00 to $6.00 per month. In addition, for towns comparable in population to Oro Valley, approximately

256, the average monthly rate was cited as $4.26. The other noted comparison was the equivalent residential unit (ERU) value of impervious surface. Only 11.5% of the utilities had an ERU between 4,000 and 5,000 square feet. Over 22.8% classified an ERU as between 2,500 to 3,250 square feet. Many of the utilities, over 51.2% had an unspecified ERU.

Required Program Highlights

The additional funding proposed will not only provide for the sustainability of the core program, but also for increased utility infrastructure assets and associated maintenance requirements as well as fund the development of small specific community infrastructure projects.

ADEQ has prepared a draft 2015 Small Municipal Separate Storm Sewer System General Permit (Small MS4 GP) intended to succeed the 2002 Small MS4 GP (Permit No. AZG2002-002). This draft is scheduled to be adopted in early 2016, significantly changing and adding definition to the Minimum Control Measures (MCM) required by each MS4. Adoption of the new rate will provide funding for necessary staffing to ensure continued compliance.

Revenue Forecast and Requirements

Appendix A is a five year forecast for the Stormwater Utility should no rate increase occur. As depicted in the chart, the utility has a structural deficit. The FY 2016-17 recommended budget from staff would not meet the required reserve fund as outlined in the Town Code 15-24-10. A chart of the Stormwater Utility Fund is depicted in Appendix B.

The revenue forecast was based on analysis of the Stormwater Utility's monthly billing data from FY 2015-16 and a projection of growth in the number of housing units expected to be developed over the next five years. The revenue projects a flat fee not dependent on any type of usage but is only coordinated with the total number of ERU's calculated within the Town. The growth projected in residential units is determined by the Development and Infrastructure permitting staff based on trend analysis.

Appendix C provides the detailed information for moving forward with the Preferred Funding Scenario. A rate adjustment of $1.60 from $2.90 to $4.50 would provide for a stable and compliant Stormwater program. The increase is adopted through Mayor and Council resolution which was last reviewed November 7, 2007.

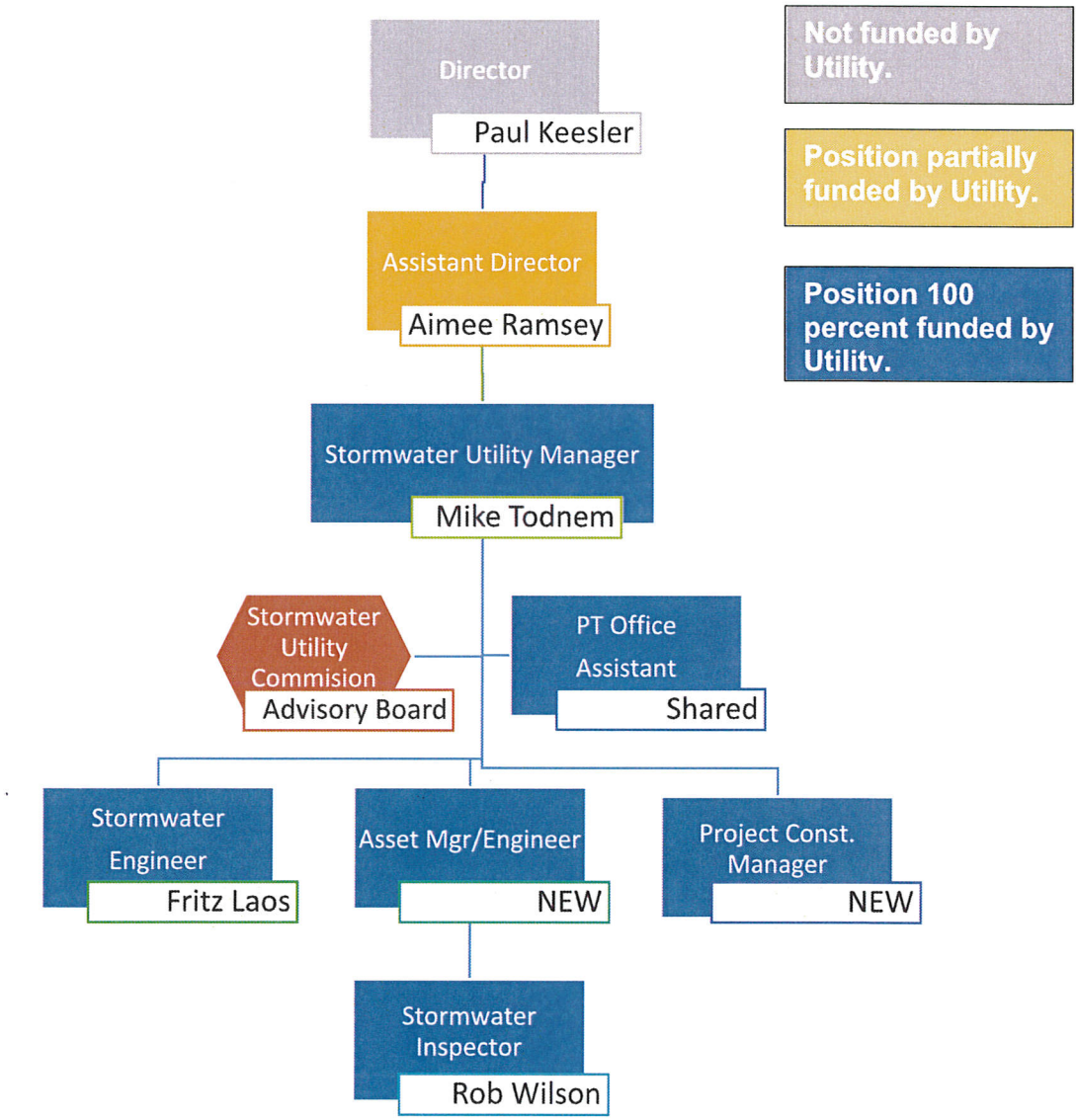
Over the past 8 years the Stormwater Management Program has developed. The opportunity presented to the Town with the initial fee structure allowed staff to develop principles and best practices to meet the requirements defined under the ADEQ MS4 program. The division produced its first annual report in 2008 and recently completed its first EPA/ADEQ Town wide audit. The program requirements to accomplish the utilities mission have been better defined and quantified revealing funding shortfalls. With the aftermath of the audit, potential future audits, and structural deficit, the rate increase is a necessity.

The future expenditures stay relatively stable and grow to meet the projected personnel costs, increase to support the Program Development, Design, Construction Management &

Maintenance program projects as outlined (see note on page 7 regarding program sustainability). In addition, the expenditures include a 3.5 percent annual merit increases. These projected increases are consistent with the General Fund's financial planning. The projected operations and maintenance (O&M) costs include inflationary increases in some areas that average 1.7 percent annually. The inflation factors were provided by the Arizona Department of Revenue.

Organization Chart

Proposed Stormwater Utility Division Structure



Maintaining our washes

Before

After

Rooney Wash

Appendices

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Appendix A – Stormwater Fund Status Quo 5 Year Forecast

Stormwater Fund 5 Year Forecast — Revised: 1/22/2016

Assumes $2.90 fee/ERU

	FY 2015/16 Budgeted		FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21
			Draft Projected				
# of Units:							
Residential	15,764		16,107	16,496	16,827	17,053	17,203
NEW: projected Residential	343		389	331	226	150	150
Commercial	3,852		4,063	4,063	4,063	4,063	4,063
NEW: projected Commercial	211		-	-	-	-	-
Metro Water - Residential	1,353		1,353	1,353	1,353	1,353	1,353
Metro Water - Commercial	1,005		1,005	1,005	1,005	1,005	1,005
Total Units:	22,528		22,917	23,248	23,474	23,624	23,774
Carry forward Fund Balance	**$ 299,844**		**$ 192,953**	**$ 93,695**	**$ (13,187)**	**$ (85,369)**	**$ (172,723)**
Revenue:							
Monthly Stormwater Utility Fee/Unit	$ 2.90		$ 2.90	$ 2.90	$ 2.90	$ 2.90	$ 2.90
Gross Revenues	$ 783,974		$ 797,512	$ 809,030	$ 816,895	$ 822,115	$ 827,335
Funding from Outside Sources	3,250		3,331	3,415	3,500	3,587	3,677
Grant Funds	35,000						
	$ 822,224		**$ 800,843**	**$ 812,445**	**$ 820,395**	**$ 825,703**	**$ 831,012**
Expenses:							*3.5%*
Personnel							
3.80 Current Staff							
Total Personnel:	$ 346,620		$ 345,568	$ 357,663	$ 370,181	$ 383,137	$ 396,547
Contracts/Services							
Outside Professional Services*	116,795	a	117,963	119,143	120,334	121,537	122,753
Low Impact Development	35,000						
Other	50,000		50,000	50,000	50,000	50,000	50,000
Stormwater Maintenance	134,000	b	138,690	143,544	148,568	153,768	159,150
Vehicle Repair & Maintenance	19,800	a	19,998	20,198	20,400	20,604	20,810
Equipment Repair & Maintenance	32,000	a	32,320	32,643	32,970	33,299	33,632
Rentals	250	a	253	255	258	260	263
Telecommunications	1,400	a	1,414	1,428	1,442	1,457	1,471
Postage	250	a	253	255	258	260	263
Printing & Binding	1,000	a	1,010	1,020	1,030	1,041	1,051
Travel & Training	5,000	a	5,050	5,101	5,152	5,203	5,255
Membership	7,500	a	7,575	7,651	7,727	7,805	7,883
Office Supplies	2,000	a	2,020	2,040	2,061	2,081	2,102
Gasoline	24,500	a	24,745	24,992	25,242	25,495	25,750
Uniforms	750	a	758	765	773	780	788
Bad Debt Expense	750	a	758	765	773	780	788
Field Supplies	9,000	a	9,090	9,181	9,273	9,365	9,459
Safety	500	a	505	510	515	520	526
Software Maintenance & Licensing	1,500	a	1,515	1,530	1,545	1,561	1,577
SW Projects	50,000		50,000	50,000	50,000	50,000	50,000
Depreciation	135,000		135,000	135,000	135,000	135,000	135,000
Total Contracts/Services:	$ 626,995		$ 598,915	$ 606,021	$ 613,320	$ 620,818	$ 628,520
Capital Outlay/Projects							
Minor Assets	2,500	a	2,525	2,550	2,576	2,602	2,628
Misc - Mos. Trapping	3,407		3,500	3,500	3,500	3,500	3,500
Vehicle/Equipment Reserve	38,000		38,000	38,000	38,000	38,000	38,000
New Vehicles			-	-	-	-	-
Capital Interest	305		305	305	-	-	-
Equipment	46,288		46,288	46,288	-	-	-
Total Capital Outlay	$ 90,500		$ 90,618	$ 90,643	$ 44,076	$ 44,102	$ 44,128
Total Expenses:	**$ 1,064,115**		**$ 1,035,101**	**$ 1,054,327**	**$ 1,027,577**	**$ 1,048,057**	**$ 1,069,195**
Ending Balance/Contingency Reserve	**$ 192,953**		**$ 93,695**	**$ (13,187)**	**$ (85,369)**	**$ (172,723)**	**$ (275,905)**
	24.6%		*11.7%*	*-1.6%*	*-10.5%*	*-21.0%*	*-33.3%*
Vehicles			-	-	-	-	-
Equipment			-	-	-	-	50,000
Vehicle/Equipment Reserve - Replacement	$ 90,806		**$ 128,806**	**$ 166,806**	**$ 204,806**	**$ 242,806**	**$ 230,806**

⇨ Assumes Growth in Benefits & Wages **3.5%** [b]

⇨ Internal drainage projects remain the same

⇨ Cost Escalation **1.0%** [a]

Notes:

> **continue to charge out operations support to Hwy Fund per current method**

> ending revenue amounts are estimates subject to further revisions, and may not tie to cash balance in fund due to timing of revenues and expenditures

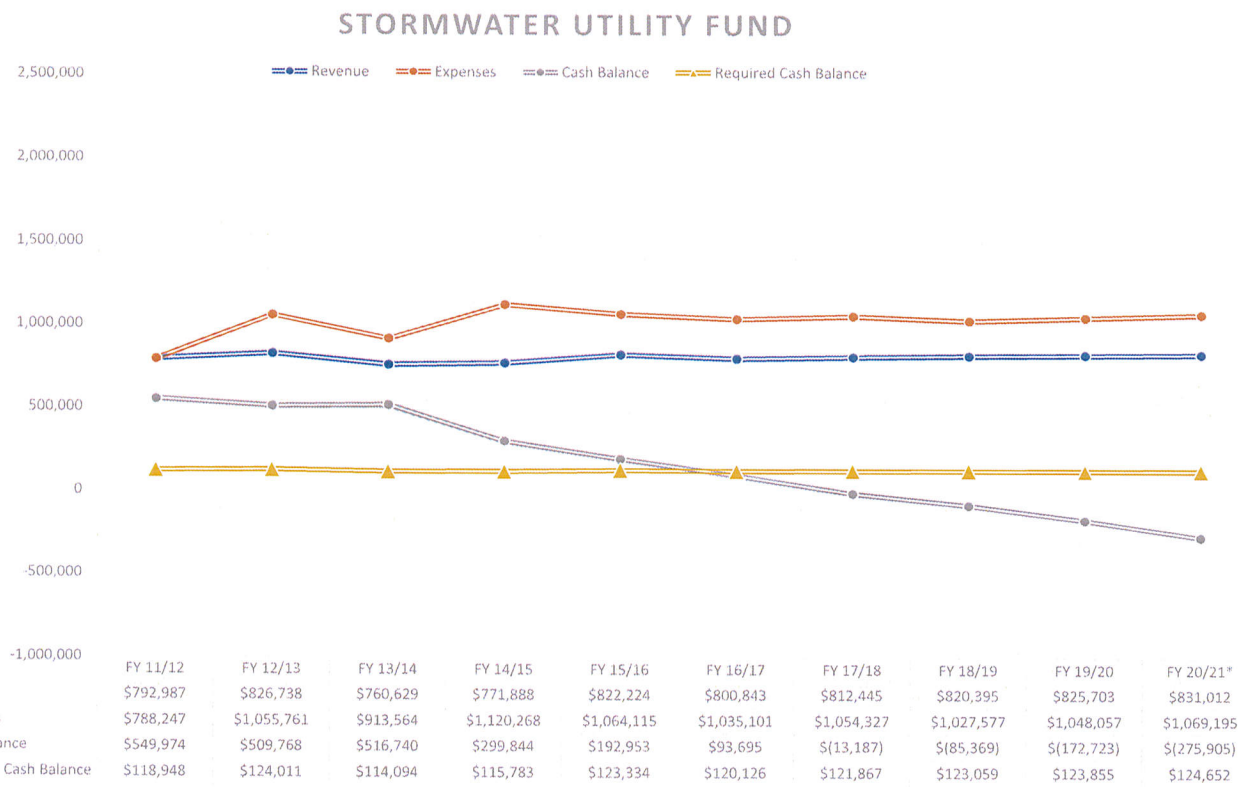
Appendix B – Stormwater Utility Status Quo Funding Charts

Town of Oro Valley

Stormwater Utility Division

CHART 1 - Status Quo Funding Chart

Fiscal Year	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21*
Revenue	$ 792,987	$ 826,738	$ 760,629	$ 771,888	$ 822,224	$ 800,843	$ 812,445	$ 820,395	$ 825,703	$ 831,012
Expenses	$ 788,247	$ 1,055,761	$ 913,564	$ 1,120,268	$ 1,064,115	$ 1,035,101	$ 1,054,327	$ 1,027,577	$ 1,048,057	$ 1,069,195
Cash Balance	$ 549,974	$ 509,768	$ 516,740	$ 299,844	$ 192,953	$ 93,695	$ (13,187)	$ (85,369)	$ (172,723)	$ (275,905)
Required Cash Balance	$ 118,948	$ 124,011	$ 114,094	$ 115,783	$ 123,334	$ 120,126	$ 121,867	$ 123,059	$ 123,855	$ 124,652



	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21*
Revenue	$792,987	$826,738	$760,629	$771,888	$822,224	$800,843	$812,445	$820,395	$825,703	$831,012
Expenses	$788,247	$1,055,761	$913,564	$1,120,268	$1,064,115	$1,035,101	$1,054,327	$1,027,577	$1,048,057	$1,069,195
Cash Balance	$549,974	$509,768	$516,740	$299,844	$192,953	$93,695	$(13,187)	$(85,369)	$(172,723)	$(275,905)
Required Cash Balance	$118,948	$124,011	$114,094	$115,783	$123,334	$120,126	$121,867	$123,059	$123,855	$124,652

**FY 2020/21 begin use of vehicle reserve for vehicle and equipment purchases.*

Appendix C – Stormwater Fund Preferred Scenario – 5 Year Forecast

Stormwater Preferred Funding Option - 5-year projection

Revised: 1/11/2016

Monthly Stormwater Utility Fee/Unit	FY 2015/16 Current	FY 2016/17 Change ERU	Notes
Residential Rate	**$2.90**	**$4.50**	$1.60 increase
Commercial Rate	**$2.90**	**$4.50**	$1.60 increase
ERU = Square Feet	**5,000**	**4,000**	*Commercial may apply for credit
# of Units:			Change in ERU requires the Town Code to be modified
Residential	17,460	17,749	Change in rate is accomplished through a resolution
Commercial	5,068	6,335	
Total Units:	22,528	24,084	
Carryforward Fund Balance	**$ 299,844**	**$ 192,953**	
Revenue:			- Corrects structural deficient
Gross Revenues	$ 783,974	**$ 1,300,536**	- Increases maintenance abilities
Funding from Outside Sources	$ 3,250	$ 3,250	Provides staffing to
Grant Funds (one time)	35,000		- Increases reporting / ADEQ BMP's
	$ 822,224	**$ 1,303,786**	- Develop a CIP program with projects
Additional Revenue		**$ 516,562**	- Manage and Inspect additional assets
Expenses:			*Return at a later date > if there is support for project implementation*
Personnel			
3.8 Current Staff	$ 346,620	$ 358,752	
New - Proposed			
1.0 Asset Mgr./Engineer	-	69,089	
1.0 Stormwater Prj.-Const. Mgr	-	83,982	
5.8 Total Stormwater Staff	-	153,071	
Total Personnel:	**$ 346,620**	**$ 511,822**	
Contracts/Services			**Tasks - Outcomes**
Outside Professional Services*	116,795	118,000	• Project Identification
ONE TIME GRANT	35,000	-	- costing
Design/Consultants	50,000	10,000	- design
Stormwater Maintenance - OPS	134,000	139,000	- build/maint under 80K
Increase Maintenance (Services)		80,000	• Work order development
Vehicle Repair & Maintenance	19,800	21,000	- prioritization / maintenance scheduling
Equipment Repair & Maintenance	32,000	32,000	- increased inspections
Rentals	250	500	- increased Public Education
Telecommunications	1,400	2,800	• New Program Compliance
Postage	250	250	• Personnel/Operations cost
Printing & Binding	1,000	1,000	increase for deliverables
Travel & Training	5,000	10,000	• Program Sustainability
Membership	7,500	7,500	- 5 years
Office Supplies	2,000	6,000	
Gasoline	24,500	27,000	
Uniforms	750	1,500	
Bad Debt Expense	750	750	
Field Supplies	9,000	18,000	
Safety	500	1,000	
Software Maintenance & Licensing	1,500	1,500	
SW Projects	50,000	50,000	
Depreciation	135,000	135,000	
Total Contracts/Services:	**$ 626,995**	**$ 662,800**	
Capital Outlay/Projects			
Minor Assets	2,500	3,500	
Misc - Mos. Trapping	3,407	3,500	
Vehicle/Equipment Reserve	38,000	38,000	
New Vehicles	-	35,000	
Capital Interest	305	305	
Equipment	46,288	46,288	
Total Capital Outlay	**$ 90,500**	**$ 126,593**	
Total Expenses:	**$ 1,064,115**	**$ 1,301,215**	
Ending Balance/Contingency Reserve	**$ 192,953**	**$ 330,524**	
	24.6%	*25.4%*	

Note: Program sustainability only accounts for funds to preserve activities defined above. Additional County or other external funds must become available to pay for larger capital projects which will be identified. In the absence of County or other external funds, the rate structure will need to be revised again within one or two years or so that large capital projects identified by the new staff can be completed and funded by the Stormwater Utility.

Five Year Projection	Year 1 FY 16/17	Year 2 FY 17/18	Year 3 FY 18/19	Year 4 FY 19/20	Year 5 FY 20/21
Balance	$ 192,953	$ 330,524	$ 321,659	$ 328,160	$ 316,742
Revenue	**$ 1,303,786**	$ 1,325,867	$ 1,342,006	$ 1,353,831.73	$ 1,365,678
Personnel	$ 511,822	$ 529,736	$ 548,277	$ 567,466	$ 587,328
O&M	$ 523,800	$ 529,038	$ 534,328	$ 539,672	$ 545,068
Ops Main	$ 139,000	$ 143,865	$ 148,900	$ 154,112	$ 159,506
Capital	$ 126,593	$ 132,093	$ 104,000	$ 104,000	$ 119,000
Expenditure	$ 1,301,215	$ 1,334,732	$ 1,335,505	$ 1,365,250	$ 1,410,902
YE Cash Balance	$ 330,524	$ 321,659	$ 328,160	$ 316,742	$ 271,518
Reserve Balance Percent	*25.4%*	*24.3%*	*24.5%*	*23.4%*	***19.9%***
Purchases	$ -	$ -	$ -	$ -	$ 50,000
YE Vehicle/Equipment Cash Balance	**$ 128,806**	**$ 170,306**	**$ 215,306**	**$ 260,306**	**$ 255,306**
Vehicles/Equipment	Truck	Truck			Sweeper *Use Begins

> Accounts for depreciation

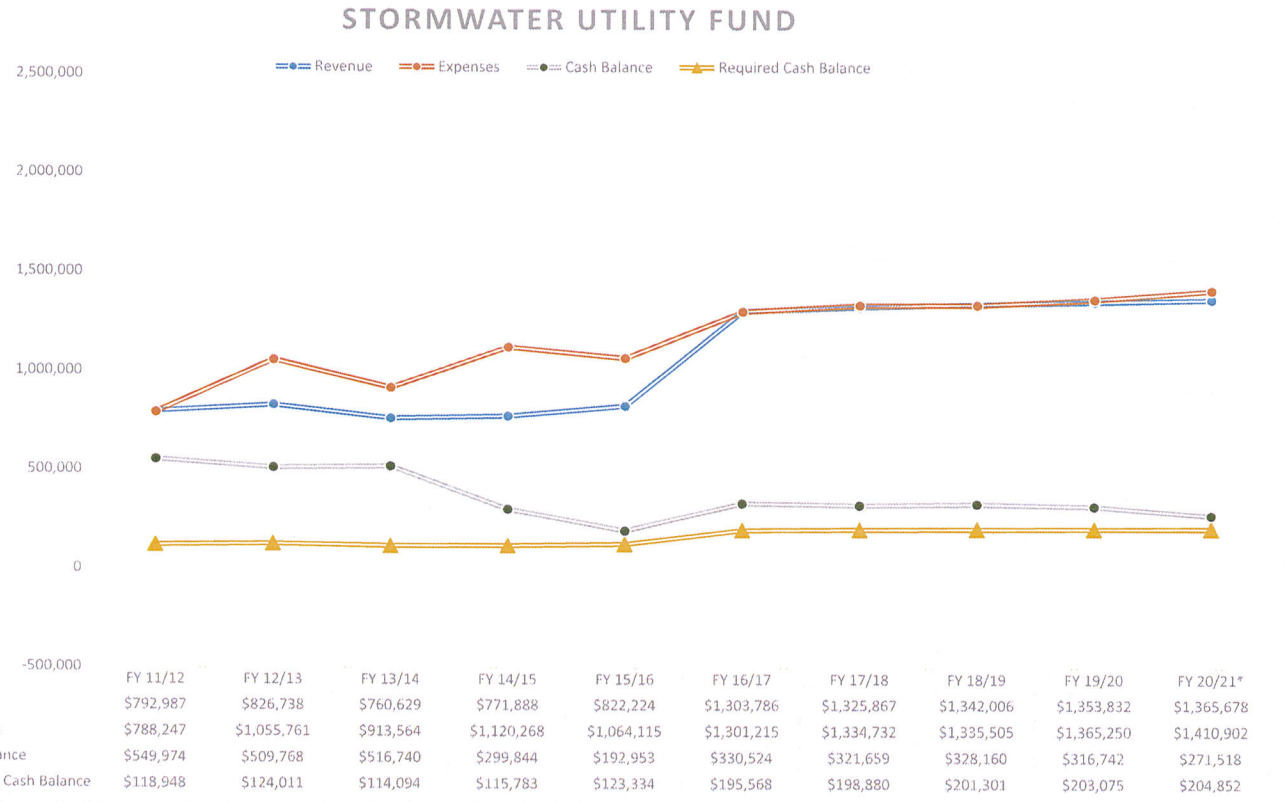
Appendix D – Stormwater Utility Preferred Scenario Funding Chart

Town of Oro Valley

Stormwater Utility Division

CHART 2 - Proposed Rate Adjustment Funding Chart

Fiscal Year	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21*
Revenue	$ 792,987	$ 826,738	$ 760,629	$ 771,888	$ 822,224	$ 1,303,786	$ 1,325,867	$ 1,342,006	$ 1,353,832	$ 1,365,678
Expenses	$ 788,247	$ 1,055,761	$ 913,564	$ 1,120,268	$ 1,064,115	$ 1,301,215	$ 1,334,732	$ 1,335,505	$ 1,365,250	$ 1,410,902
Cash Balance	$ 549,974	$ 509,768	$ 516,740	$ 299,844	$ 192,953	$ 330,524	$ 321,659	$ 328,160	$ 316,742	$ 271,518
Required Cash Balance	$ 118,948	$ 124,011	$ 114,094	$ 115,783	$ 123,334	$ 195,568	$ 198,880	$ 201,301	$ 203,075	$ 204,852



	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21*
Revenue	$792,987	$826,738	$760,629	$771,888	$822,224	$1,303,786	$1,325,867	$1,342,006	$1,353,832	$1,365,678
Expenses	$788,247	$1,055,761	$913,564	$1,120,268	$1,064,115	$1,301,215	$1,334,732	$1,335,505	$1,365,250	$1,410,902
Cash Balance	$549,974	$509,768	$516,740	$299,844	$192,953	$330,524	$321,659	$328,160	$316,742	$271,518
Required Cash Balance	$118,948	$124,011	$114,094	$115,783	$123,334	$195,568	$198,880	$201,301	$203,075	$204,852

**FY 2020/21 begin use of vehicle reserve for vehicle and equipment purchases. New rate adjustment accounts for depreciation.*

Appendix E – Stormwater Listing

The list of issues on the following pages is a compilation of drainage and Stormwater deficiencies that need to be evaluated, designed, programed or facilitated. Some of these issues have been on a list since 2001 while other deficiencies have been added as new washes and new assets have been identified and inventoried. This list is fluid and as additional issues are brought to our attention concerns, complaints or evaluation requests are made from the community the list is modified.

Issues have been categorized as;

- Restoration
- Maintenance
- Study
- Design/Construction

At this time none of these issues have not been assessed nor is there funding for any type of evaluation or mitigation. The ability to evaluate these issues will provide Once evaluated, the Town of Oro Valley will have a platform for requesting funding or competing for funding from outside sources to address some of these issues. THIS LIST IS NOT PRIORITIZED IN ANY ORDER NOR DOES IT INDICATE THAT THE TOWN IS RESPONSIBLE FOR EVALUATING OR MITIGATING THE ISSUES. PRIVATE WASHES DO NOT FALL UNDER THE STORMWATER UTILITY PURVIEW.

Intentional Blank

Town of Oro Valley
Stormwater Projects

The following Stormwater Maintenance Projects are categorized by:

(S) · Maintenance Recurring - Sediment Removal & Cleaning (maybe storm related)
(V) · Vegetation Removal.
Recently Completed
(DC) · Drainage Design and Repair - Construction
(M) · Management Studies
(PR) • Private

No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
DC-1	401 E Strada Patania	Tangerine Hills		Install flared end and reconnect end of culvert, rip rap	Drainage Designs and Repairs - Construction	One Time - CIP	1	**FY 2015**	$ 7,500	Pima County
S-1	Canyon Shadow Wash	Canada Hills Parcel K	OV	Remove sediment in ROW north of Lambert - excessive sediment due to September 8, 2015 storm.	Sediment Removal - Maintenance	Recurring - OP	2	annual	$ 5,000	Oro Valley - unfunded
DC-2	Canyon Shadow Wash (Lambert to CDO)	Rancho Feliz (442-647)	OV	Soil cement wash bottom deteriorating at multiple locations with large erosion: also Repair concrete inlet wing wall on north side of Lambert	Drainage Designs and Repairs - Construction	Recurring +4 yrs	2	**FY 2014**	$ 10,000	1st Year completed - inspection in 2018
V-1	Canada Hills Parcel K	Canada Hills Parcel K	OV	Remove vegetation/debris in Canyon Shadows wash, ROW north of Lambert	Vegetation Removal - Maintenance	Recurring - OP	2	annual	$ 2,000	Oro Valley - unfunded
M-1	**Carmack Wash Basin**	**Pima County is performing the study**	OV	This basin that is comprised of numerous tributaries that have a 100 year flow of over 3,000 cfs as they leave the town boundaries. These tributaries are causing erosion, sedimentation, and flooding problems at numerous areas throughout the subdivisions they traverse	**Management Study**	One Time - CIP	1	In Progress	$ 100,000	Pima County should be completing this study
S-2	Carmack Wash			Remove debris in ditches Linda Vista from Oracle to Box culverts excessive sediment.	Sediment Removal - Maintenance	Recurring - OP	2	annual	$ 7,000	Oro Valley - unfunded
DC-3	Carmack Wash			Design drainage flow for Linda Vista, Oracle to Box culverts, new design to have concrete bottom for cleaning and sides armored for erosion control	Drainage Designs and Repairs - Construction	One Time - CIP	1	FY	$ 30,000	Oro Valley - unfunded
DC-4	Highlands Wash		PRI	Design repair from Con Arches to CDO, need 404 and easements to control erosion - Demo approx 1/2 of existing outlet south of Lambert Lane and build to correct outlet flow	Drainage Designs and Repairs - Construction	One Time - CIP	1	FY	$ 600,000	Private - unfunded
DC-5	Unknown Wash		PRI	Concrete wash repair behind Fry's off of La Canada	Drainage Designs and Repairs - Construction	One Time - CIP	2	FY	$ 80,000	Private - unfunded
S-3	Highlands Wash		PRI	Remove debris in channel upstream and down stream and clean con arches excessive sediment due to September 8, 2015 storm.	Sediment Removal - Maintenance	Recurring - OP	2		$ 30,000	Private - unfunded
DC-6	Lambert Lane		OV	Install short extension and flared Ends to all 4 culverts under Lambert Lane, East of La Cholla, place rip rap	Drainage Designs and Repairs - Construction	One Time - CIP	1	**FY 2015**	$ 25,000	Oro Valley - unfunded
DC-7	Lambert Lane (Casas)		OV	An unnamed wash crosses Lambert road at a dip crossing that causes significant flooding and sediment buildup at less than a 2 year storm event. In addition road edge erosion is affecting the structural integrity of the road. A box culvert project would alleviate this problem and provide all weather crossing.	Drainage Designs and Repairs - Construction	One Time - CIP	1		$ 600,000	Oro Valley - unfunded. PCFCD possible

Town of Oro Valley
Stormwater Projects

The following Stormwater Maintenance Projects are categorized by:

(S) · Maintenance Recurring - Sediment Removal & Cleaning (maybe storm related)
(V) · Vegetation Removal.
Recently Completed
(DC) · Drainage Design and Repair - Construction
(M) · Management Studies
(PR) • Private

No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
DC-8	Moore Road Box Culverts		OV	Moore road currently has 3 dip crossings that become a hazard annually during the monsoon season and must be closed at a 5 year event. The road is a safety concern during and after every rain event. This project will construct grade control structures and enhance the road structure with ribbon curbs to improve the safety and reduce maintenance during rain events.	Drainage Designs and Repairs - Construction	One Time - CIP			$ 800,000	Oro Valley - unfunded. PCFCD possible
DC-56	Saddle Valley/Logan's Crossing	Saddle Valley/Logan's Crossing	PRI	Clean Culverts at Preakness/ Review Maintenance to Gabion baskets in dipsection adjacent to Water Tank	HOA has drainage issues with in the subdivision which need to be re-engineered by them - Cost TBD	OneTime		annual	$ 4,000	Oro Valley - unfunded
DC-9	Mutterer's Wash	Oro Valley Townhomes	OV	Evaluate and redesign wash to improve water flow while designing walking path along side wash.	Drainage Designs and Repairs - Construction	One Time - CIP			TBD	Oro Valley - unfunded
V-2	Mutterer's Wash	Oro Valley Townhomes	OV	Remove vegetation/debris in wash	Vegetation Removal - Maintenance	Recurring - +4 yrs	1	**FY 2015**	$ 2,800	1st Year completed - inspection in 2018
DC-10	Naranja Park Town Site		OV	Add Rip Rap/Filter Fabric to south slope of Ball fields @ 560'x 70' = 39,200 sq.ft. Find Alternative to Stabilize Slopes	Drainage Designs and Repairs - Construction	One Time - CIP	2			Oro Valley - unfunded
DC-89	**Naranja Park Town Site**		OV	Design and build drainage structures to reduces deterioration of "slope/berm" along Monterra Hills road impacting sidewalks.	Drainage Designs and Repairs - Construction	One Time - CIP	**1**		$ 100,000	Oro Valley - unfunded
DC-11	Naranja Road @ Sawtooth		OV	Shot create repair along hill side east of Sawtooth within ROW	Drainage Designs and Repairs - Construction	One Time - CIP	2		$ 40,000	Oro Valley - unfunded
DC-12	Naranja Drainage Improvements	Ironwood High School	OV	New culverts at existing dip crossing to allow all weather access during hazardous rain events. The all weather crossings will provide access to Ironwood High School which is designated as an emergency management contact location during local emergencies. The improvements include nine 24" RCP, a 6 cell 4'X10' culvert.	Drainage Designs and Repairs - Construction	One Time - CIP			$ 1,700,000	Oro Valley - unfunded. PCFCD possible
DC-13	Northern Avenue Drainage Improvements		OV	Comprehensive Drainage study and Construction of Culverts for all low water crossings on Northern.	Drainage Designs and Repairs - Construction	One Time - CIP	2		$ 2,500,000	Oro Valley - unfunded
M-2	**Peglar Wash Basin**		OV	This project involves studying the Peglar Wash Basin (North of Magee Road between Northern Ave. & Oracle Road) within the Town of Oro Valley that is composed of numerous tributaries that have a 100 year flow of over 1,500 cfs as they leave the town boundaries.	**Management Study**	One Time - CIP	2		$ 75,000	Oro Valley - unfunded
DC-14	Peglar Wash Basin		OV	This project is to implement the recommendations from the Peglar's Wash Basin Mgt Study. This area primarily deals with waters that travel through the Suffolk Hill's portions of the Town.	Drainage Designs and Repairs - Construction	One Time - CIP	2		TBD	Oro Valley - unfunded
V-3	Rooney Wash		OV	Complete yearly landscape work Rooney Wash	Vegetation Removal - Maintenance	Recurring - OP	2	annual	$ 60,000	Oro Valley - unfunded
S-4	Shadow Mountain Estates West	Shadow Mountain Estates West	OV	Remove sediment in drainage easement behind homes excessive sediment due to September 8, 2015 storm.	Sediment Removal - Maintenance	Recurring - OP	2	FY 2015	$ 7,500	Due to storm impact - PC outsoruced work

Town of Oro Valley
Stormwater Projects

The following Stormwater Maintenance Projects are categorized by:

(S) · Maintenance Recurring - Sediment Removal & Cleaning (maybe storm related)
(V) · Vegetation Removal. Recently Completed
(DC) · Drainage Design and Repair - Construction
(M) · Management Studies
(PR) • Private

No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
DC-15	Shadow Mountain Estates West	Shadow Mountain Estates West	OV	Design and repair alley drainage - erosion to area of exposed gas lines	Drainage Designs and Repairs - Construction	One Time - CIP	2		$ 20,000	Oro Valley - unfunded
V-4	Shadow Mountain Estates West	Shadow Mountain Estates West	OV	Shadow Mountain Estates vegetation removal in alley drainage ways	Vegetation Removal - Maintenance	Recurring - OP	2	FY 2015	$ 89,000	Due to storm impact - PC outsoruced work
M-3	**Un-named (Shannon) Basin**		OV	This project requires studying the area from Shannon road to Thornydale Road, from Tangerine Road to Naranja Road that would be used for future Town Development/incorporation. This is roughly 640 acres that is composed of numerous tributaries.	**Management Study**	One Time - CIP	2		$ 100,000	Oro Valley - unfunded. PCFCD possible
S-5	Vista Del Oro Estates	Vista Del Oro Estates		Remove sediment Vista del Oro Estates excessive sediment due to September 8, 2015 storm.	Sediment Removal - Maintenance	Recurring - OP	2		$ 7,500	Oro Valley - unfunded
V-5	Vista Del Oro Estates	Vista Del Oro Estates		Landscape in Vista Del Oro Estates Wash	Vegetation Removal - Maintenance	Recurring - OP	2		$ 5,000	Oro Valley - unfunded
M-4	**Un-named Basin**			This project requires studying the drainage areas that hold future annexation potential for the Town of Oro Valley. The study area would extend (south and west) from existing Town limits to the boundaries of Orange Grove (to the south) & Thornydale (to the west).	**Management Study**	One Time - CIP	1		TBD	Oro Valley - unfunded. PCFCD possible
STORM RELATED SMALL PROJECTS										
C-1	Newport Drive			Concrete drainage channel repair	Channel - Maintenance	Recurring - OP	2		TBD	Oro Valley - unfunded
C-2	Valle Del Oro	Oro Valley Estates		Concrete drainage channel repair	Channel - Maintenance	Recurring - OP	2		TBD	Oro Valley - unfunded
C-3	Atua	Oro Valley Estates		Drop inlet add riprap repair erosion	Channel - Maintenance	Recurring - OP	2		TBD	Oro Valley - unfunded
C-4	Lambert Lane-Rancho Sonora			Reconstruct drop inlet	Channel - Maintenance	Recurring - OP	2		TBD	Oro Valley - unfunded
SR-1	9130 N Shadow Mnt			Berm construction - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
SR-2	10865 N. 1st Ave			Erosion control and stabilization - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
SR-3	901 W. Valle De Oro	Oro Valley Estates		Erosion Control - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
SR-4	321 W. Golf View			Erosion repair, rip rap shoulder - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded

Town of Oro Valley
Stormwater Projects

The following Stormwater Maintenance Projects are categorized by:

(S) · Maintenance Recurring - Sediment Removal & Cleaning (maybe storm related) (DC) · Drainage Design and Repair - Construction (PR) • Private

(V) · Vegetation Removal. Recently Completed (M) · Management Studies

No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
SR-5	180 E Catalina Shadows			Berm construction to protect driveway - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
SR-6	14255 N. Ave			Erosion mail box and ponding driveway - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
SR-7	8980 N. Camino de Anza			Erosion at mail box - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
SR-8	422 W. Hardy			Repair berm - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
SR-9	255 E. Newport			Erosion edge of pavement - evaluate	Storm Related Issue - Maintenance	TBE	2		TBD	Oro Valley - unfunded
STORM RELATED ROAD CLOSURE - SAFETY										
DC-15	Buena Vista north of Spring Valley Dr.			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-16	Buena Vista south of Calle Concordia			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-17	Calle Concordia near Buena Vista			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-18	Calle Loma Linda @ Calle Bonita			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-19	Calle Solano wash area			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-20	CDO south of Riverfront Park			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-21	Hardy Road, wash west of the roundabout.			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-22	Highlands Mobile Park			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-23	La Cholla North of Glover			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-24	La Cholla South of Casas Entrance			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded

Town of Oro Valley
Stormwater Projects

The following Stormwater Maintenance Projects are categorized by:

(S) · Maintenance Recurring - Sediment Removal & Cleaning (maybe storm related)
(V) · Vegetation Removal.
Recently Completed
(DC) · Drainage Design and Repair - Construction
(M) · Management Studies
(PR) • Private

No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
DC-25	La Cholla South of Lambert			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-26	La Cholla South of Naranja			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-27	Lambert east of La Cholla			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-28	Lambert Lane west of La Cholla			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-29	Landoran Ln	Oro Valley Estates		sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-30	Limewood East of Camino Del Plata	Limewood		sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-31	Linda Vista near Egleston	Vista Montana		sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-32	Lomas De Oro at Lambert			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-33	Moore East of La Cholla			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-34	Moore east of La Cholla			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-35	Naranja @ Ironwood Ridge HS			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-36	Naranja East of Shannon			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-37	Naranja West of La Cholla near HS			Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-38	Northern Ave behind Walmart			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-39	Northern Ave north of Cool			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded

Town of Oro Valley
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Recently Completed
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No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
DC-40	Northern Ave south of camino cortaro			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-41	Northern Ave south of Magee			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-42	Overlook south of Calle Concordia			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-43	Pistachio @ culverts			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-44	Pistachio @ Pomegranate			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-45	Rancho Sonora Dr			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-46	Shannon South of Naranja			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-47	Shannon to stop traffic from crossing the wash at the north end.			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-48	Suffolk Dr @ Village			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-49	Tangerine - by Camino Del Plata	Tangerin Rd construction FY 2016		Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP	**ongoing**		In project cost	RTA/PAG funded - Tangerine Rd Project
DC-50	Tangerine - one at town boundary	Tangerin Rd construction FY 2016		Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP	**ongoing**		In project cost	RTA/PAG funded - Tangerine Rd Project
DC-51	Tangerine @ Camino Del Plata	Tangerin Rd construction FY 2016		Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP	**ongoing**		In project cost	RTA/PAG funded - Tangerine Rd Project
DC-52	Tangerine and area between La Cholla and La Canada.	Tangerin Rd construction FY 2016		Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP	**ongoing**		In project cost	RTA/PAG funded - Tangerine Rd Project
DC-53	Tangerine West of La Cholla	Tangerin Rd construction FY 2016		Road Closure - SAFETY sediment removal	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP	**ongoing**		In project cost	RTA/PAG funded - Tangerine Rd Project
DC-54	Valle Del Oro RD			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded

Town of Oro Valley
Stormwater Projects

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No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
DC-55	Valle Del Oro Rd at CC			sediment cleanup > Road Closure - SAFETY	Engineer, design and construct to make road and all weather road and eliminate road closure due to sediment - improving safety	One Time - CIP			TBD	Oro Valley - unfunded
DC-56	La Cholla @ Tangerine	La Cholla		Sediment removal from drop inlet culvert	Add Berm and waddles to slow and control/direct flow into the inlet		1	annual	$ 1,500	Oro Valley - unfunded
DC-58	8151 Northern Ave.	Northern Ave.		Debris removal from outlet	Storm Drain under Northern blocked by Veg/debris/Sediment at outlet		1	annual	$ 500	Oro Valley - unfunded
DC-60	8252 N Northern Ave.	Northern Ave.		Debris removal from inlets	Storm Drain under Northern blocked by Veg/debris/Sediment at inlet		1	annual	$ 1,500	Oro Valley - unfunded
DC-61	Casas Lindas Apts	Northern Ave.		Debris removal from inlet in ROW	Northern blocked by Veg/debris/Sediment at inlet		1	annual	$ 1,500	Oro Valley - unfunded
DC-62	2005 W Glover Rd	Ironwood Ranch		Debris/Veg /Sediment Removal from outlet of box culvert and manage downstream veg			1	annual	$ 2,500	Oro Valley - unfunded
DC-63	Bridge on Monterra Vista Dr.	Monterra Knolls		Debris/Veg /Sediment Removal from outlet of box culvert and manage downstream veg	Possible Detention Project - Engineer/Design		1	annual	$ 3,000	Oro Valley - unfunded
DC-67	Naranja Dr.	Canada Ridge		Box Culvert in ROW west of Eagle Crest Dr. - inlet /outlet need debris/veg removal			1	annual	$ 2,000	Oro Valley - unfunded
DC-69	605 E Windy Peak	Rancho Catalina		Drainage improvements	Discuss Easement behind lots from 625 E Windy Peak Dr - 8530 N Ranch Catalina with possible detention project. Al Coons		1		$ 10,000	Oro Valley - unfunded
DC-71	363 E Sunburst - Paul Parisi	Rancho Catalina		Veg removal and Channelization of wash running across Rancho Catalina Ave between 455 E Windy Vista Pl. and 8405 N Rancho Catalina Dr.			1		$ 7,500	Oro Valley - unfunded
DC-73	Oracle Square @ Hardy	Shadow Mountain Estates		Drainage improvements	Drainage Study - 900 cfs Coming across Oracle thru box culvert into Shadow Mountain Estates		1		$ 10,000	Oro Valley - unfunded
DC-76	Oracle Rd. Drainage N' of Calle Concordia	Vista Mantana		Drainage improvements - channelization of sheetflow onto Egleston contributing to flooding in Vista Mantana Subdivision	Drainage Study/Temporary Solutions		1		$ 30,000	Oro Valley - unfunded
DC-79	Rock Ridge Apts	Pusch View Lane		Drainage channell on S' side of Pusch View Lane Needs Veg cleanup/debris removal	ROW		1	annual	$ 1,500	Oro Valley - unfunded
DC-81	Rivers Edge S'	Rivers Edge (1-89)	PRI	Drainage Channel outlet to CDO needs Veg Mgmt	Private		1		Private	Private - unfunded
DC-83	Rivers Edge N'	Rivers Edge (103-120)		Box Culvert crossing Lambert needs sediment removed			1	annual	$ 4,500	Oro Valley - unfunded

Town of Oro Valley
Stormwater Projects

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Recently Completed
(DC) · Drainage Design and Repair - Construction
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(PR) • Private

No.	Location/Name	Subdivision	Owner	Description of Work		Cost Type	Priority	Year	Estimated Cost	Funding
DC-84	Vista Catalina	Vista Catalina		Channel N' of Vista Catalina/S' of Highlands Mobile Park requires veg/debris/sediment removal			1	TBD	$ 10,000	Oro Valley - unfunded
DC-57	8305 Northern Ave.	Northern Ave.		Debris removal from outlet/Cannot find inlet	Storm Drain under Northern blocked by Veg/debris/Sediment at outlet		2	annual	$ 500	Oro Valley - unfunded
DC-59	8090/8041 Northern Ave.	Northern Ave.		Debris removal from inlets/outlets	Storm Drain under Northern blocked by Veg/debris/Sediment at outlet		2	annual	$ 1,500	Oro Valley - unfunded
DC-65	Ironwood Valley Dr.	Tangerine Heights		Box Culvert - manage erosion cutting from road down sides of box culvert	need to engineer permanent solution		2	annual	$ 500	Oro Valley - unfunded
DC-68	Naranja Dr.	Canada Ridge		Box Culvert in ROW east of Canada Ridge Dr. - outlet need debris/veg removal			2	annual	$ 1,500	Oro Valley - unfunded
DC-70	8620 N Glenhurst Pl.	Sunnyslope		Drainage improvements	Changes in Federal land to the east - altering flows to the west		2		TBD	Oro Valley - unfunded
DC-75	Oracle Rd. Drainage N' of Calle Concordia	OV Aquatic Center		Drainage improvements	Drainage Study		2		$ 3,000	Oro Valley - unfunded
DC-80	Rooney Wash	Oracle Road E' side		Drainage channel on E' side of Oracle Rd. Needs Veg cleanup/debris removal at inlet	ROW /ADOT?		2	annual	$ 1,500	Oro Valley - unfunded
DC-85	10707 N Pomegranite Dr.	Monte Del Oro		Drainage requires refinement			2		$ 1,000	Oro Valley - unfunded
DC-64	Tangerine Road @ Highlands Wash (east of Monterra Knolls)	Monterra Knolls		Debris/Veg /Sediment Removal from Inlet/outlet of box culvert and manage downstream veg			3	annual	$ 5,000	Oro Valley - unfunded
DC-66	Reflection Ridge Dr	Tangerine Heights		ROW erosion at entry from Tangerine and north along W'side ROW	Contact Water to discuss erosion around box		3		$ 500	Oro Valley - unfunded
DC-72	Campo Bello	Campo Bello		Drainage improvements	Drainage Study		3		TBD	Oro Valley - unfunded
DC-74	Oracle Rd. Drainage S' of Calle Concordia	Shadow Mountain Estates		Drainage improvements	Drainage Study		3		$ 1,500	Oro Valley - unfunded
DC-77	Oracle Rd. Drainage N' of El Conquistador Way	Mutterers Wash S'		Drainage from Wolfley/Ajacent Property adding to sediment Problem into Mutterers. Deep Erosion cuts next to spillway on El Conquistador Way (Private Property)	Discuss with property owners need for erosion control		3		TBD	Oro Valley - unfunded
DC-78	Valle Del Oro Town Homes	Mutterers Wash S'		Drainage Channell exiting Valle Del Oro townhomes needs to be cleaned...Veg/Debris/Sedimet	Discuss with property owners need for erosion control		3		Private	Oro Valley - unfunded
DC-82	Rivers Edge N'	Pusch Ridge Vistas II		Hillside at 10831 N Pusch Ridge View Pl. Needs Erosion Control	Pusch Ridge Vistas II HOA		3		Private	Oro Valley - unfunded

Town of Oro Valley
Stormwater Projects

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Recently Completed
(DC) · Drainage Design and Repair - Construction
(M) · Management Studies
(PR) • Private

No.	Location/Name	Subdivision	Owner	Description of Work	Cost Type	Priority	Year	Estimated Cost	Funding
DC-86	1001 E Linda Vista Blvd	Pusch Ridge Estates		Sweep Road in front of house		3		$ 150	Oro Valley - unfunded
DC-87	Rancho Sonora Dr	Rancho Sonora		Trash in Wash up against barracades		3		$ 150	Oro Valley - unfunded
DC-88	Shadows of the Ridge	Shadows of the Ridge		Sediment removal from drop inlet culvert				$ 2,500	Oro Valley - unfunded

Appendix F – Western Kentucky University

Western Kentucky University
Stormwater Utility Survey
2014

What other are doing.
Summary

Cities, Towns, Counties		Average Fee	Lowest Fee	Highest Fee
Total US Stormwater Utilities	1511	$ 4.01	$ -	$ 35.00

Fee Range	No.			
No Fee	264	17.5%		
.01 to 1.49	96	6.4%		
1.50 to 2.49	137	9.1%		
2.50 to 2.99	160	10.6%	43.5%	
3.00 to 3.49	81	5.4%		
3.50 to 3.99	99	6.6%		
4.00 to 4.99	206	13.6%		
5.00 to 5.99	136	9.0%	34.5%	
6.00 to 6.99	97	6.4%		
7.00 to 7.99	79	5.2%		
8.00 to 8.99	46	3.0%		
9.00 to 9.99	29	1.9%	16.6%	
10.00 to 14.99	61	4.0%		
15.00 to 35.00	20	1.3%	5.4%	
	1511	100.0%	100.0%	

Town of Oro Valley

Possible Rates - Residetial

Rates	FY 15/16		Increase Funds	
$ 2.90	$ 783,974			
$ 3.63	$ 981,320	25.0%		
$ 4.35	$ 1,175,962	50.0%	$	391,988
$ 5.80	$ 1,567,949	100.0%	$	783,975
$ 7.25	$ 1,959,936	150.0%	$	1,175,962

Population				Average	High
≤ 10,000	477	31.6%		$ 3.71	$ 19.43
≤ 25,000	388	25.7%		$ 4.15	$ 14.00
≤ 50,000	256	16.9%		$ 4.26	$ 14.46
≤ 75,000	105	6.9%	81.1%	$ 3.93	$ 11.99
≤ 100,000	67	4.4%		$ 3.71	$ 13.05
≤ 150,000	58	3.8%		$ 3.94	$ 14.26
≤ 250,000	59	3.9%		$ 4.31	$ 14.00
≤ 500,000	52	3.4%	15.6%	$ 4.01	$ 13.78
≤ 1,000,000	34	2.3%		$ 4.34	$ 16.75
> 1,000,000	15	1.0%	3.2%	$ 2.72	$ 13.48
	1511	100.0%	100.0%		

Town of Oro Valley

ERU Classifications			
< 1000	18	1.2%	
< 1250	26	1.7%	
< 2000	64	4.2%	
< 2500	112	7.4%	14.6%
< 2600	69	4.6%	
< 2750	68	4.5%	
< 3000	82	5.4%	
< 3250	125	8.3%	22.8%
< 4000	122	8.1%	
< 5000	52	3.4%	11.5%
5000 ≥ 9000	26	1.7%	
9001 ≥ 25000	10	0.7%	
> 43500	35	2.3%	
Unspecified	702	46.5%	51.2%
	1511	100.0%	100.0%

Town of Oro Valley

Appendix G – Equivalent Residential Unit Study

Development and Infrastructure Services Department
Operations - Stormwater Utility

September 2, 2015

Re: Determining the basic ERU value

This memo describes the steps taken to date in the determination of an Equivalent Residential Unit (ERU) which will be applied to the determination of a revised Stormwater Utility fee structure. The use of available GIS data files in the determination of a revised ERU are discussed. Two GIS data files were used in the process, the first of which is a residential structure footprints file. The footprints file is a GIS data layer with file name [sde.SDE.Residentialfootprint] (footprints) which is located in the Town GIS repository. This file was generated by the Pima Association of Governments (PAG) using existing aerial photograph raster data. The footprint data is in the form of polygons which show the approximate footprint of nearly all the residential and some commercial structures in the Town. Any missing residential data would mostly be structures that did not exist at the time the data was prepared. The footprint data is intended to loosely represent the impervious areas within residential parcels. While the data contains essentially a complete set of all the residential structures, the actual impervious areas of each parcel are larger than what is indicated by the areas measured for the footprints file since the footprints file does not always include pavement areas, outside concrete areas etc... within each residential parcel. The data does, however, provide a consistent and complete source of information to use for our purposes. The second GIS data file used in this process represents the zoning in the Town with file name [sde.SDE.Zoning]. This data is also in the form of polygons with each polygon representing the specific zoning within its area.

Statistics for each zoning category were extracted by first overlaying the footprints file with the zoning file therefore isolating footprint sizes for each zoning district. The critical statistics were: 1) number of footprints within a particular zoning district and 2) the mean size of the footprints in that district. Footprint data for twelve zoning categories were observed (see Table 1). Please see the attached (Figure 1) for a distribution of Oro Valley zoning overlaid on the residential footprints within the Town.

Table 1. Oro Valley Zoning Districts with Selected Statistics

Zoning Category	Description	Count	Mean Footprint Size (sq-ft)
PAD	Planned Area Development	10,977	2752
R-4	Townhouse Residential	2,048	2461
R-6	Multi-Family Residential	198	1949
R1-300	Single Family Residential 0.15 RAC	99	5292
R1-144	Single Family Residential 0.30 RAC	416	3826
R1-43	Single Family Residential 1.00 RAC	449	3808
R1-36	Single Family Residential 1.20 RAC	1,563	3494
R1-20	Single Family Residential 2.00 RAC	350	4400
R1-7	Single Family Residential 5.00 RAC	645	3183
SDH-6	Site Delivered Housing District	281	1861
T-P	Technology Park	84	2181
C-1	Commercial	31	26,103

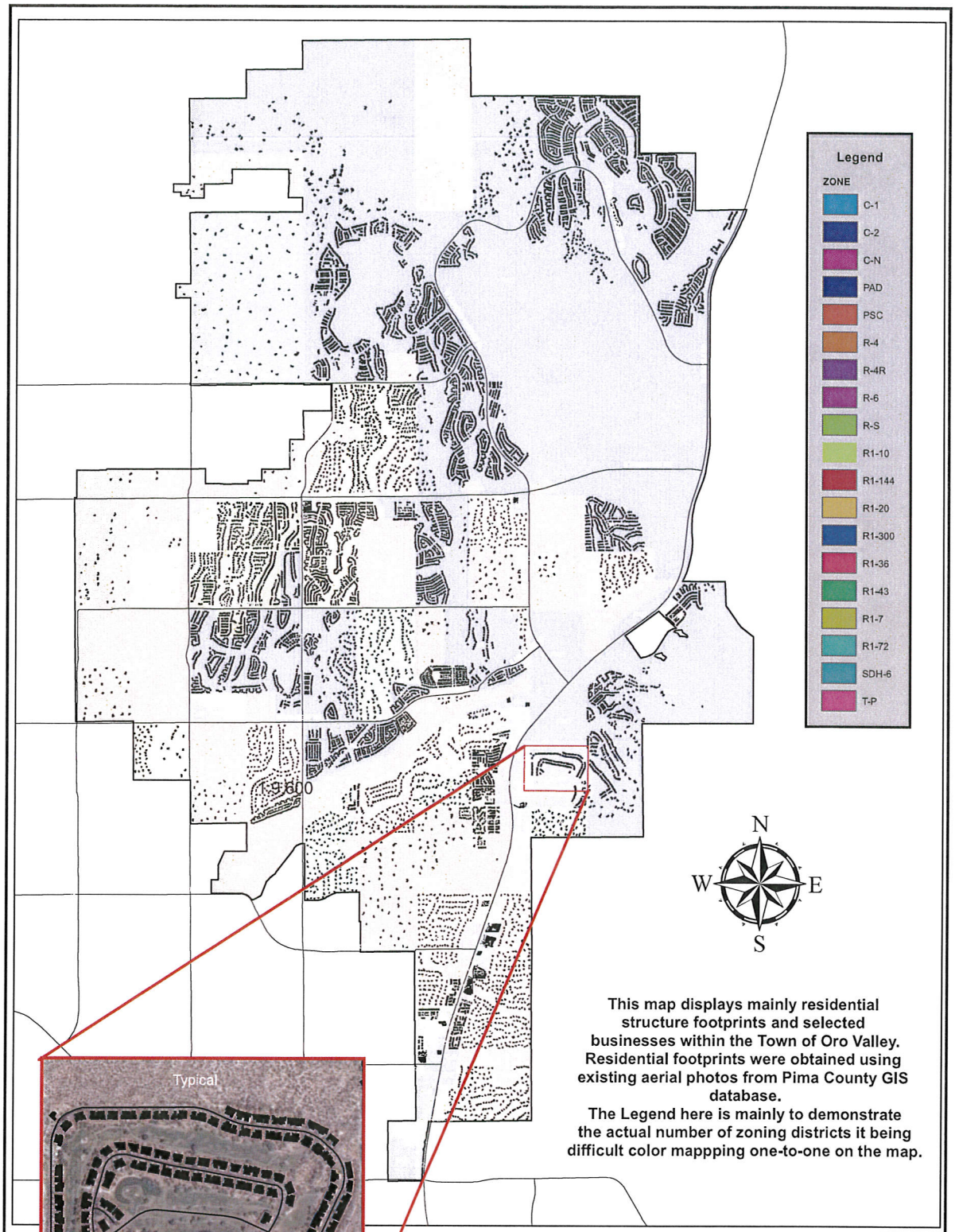
Note: The above data does not represent a complete list of all zoning districts and the Count values may be slightly higher for the districts that are shown. This calculation is a "first pass" intended to get a reasonable approximation of the statistics.

From the data identified in Table 1 all statistics for single family residential were used in the determination of an ERU value. Single family residential was used since it comprised the majority of the overall residential structures within the Town and it is typically used in the available literature when using ERU as a method of calculating stormwater fees. The ERU was calculated as the Count weighted average of the mean footprint sizes. The formula for calculating the ERU was as follows:

$$\frac{(\text{Mean Footprint Size}_{R1\text{-}300} \times \text{Count}_{R1\text{-}300}) + (\text{Mean Footprint Size}_{R1\text{-}144} \times \text{Count}_{R1\text{-}144}) + \ldots}{(\text{Count}_{R1\text{-}300} + \text{Count}_{R1\text{-}144} + \ldots)}$$

The result for this calculation is 3701.218 indicating a rounded ERU value of 3700. The current ERU for the Town is 5000. This method provides a consistent and measurable way to calculate the basic ERU.

Prepared by:
Fritz F. Laos, EIT, CFM
Civil Engineer
Town of Oro Valley Stormwater Utility



This map displays mainly residential structure footprints and selected businesses within the Town of Oro Valley. Residential footprints were obtained using existing aerial photos from Pima County GIS database.
The Legend here is mainly to demonstrate the actual number of zoning districts it being difficult color mappping one-to-one on the map.

Figure 1
Residential Structure Footprints overlaid on Oro Valey Zoning Districts

Town of Oro Valley
Caring for our heritage, our community, our future.

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By: FFL
Date: 09/01/15

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Bibliography

Campbell, C. Warren (2011). Western Kentucky University 2011 Stormwater Utility Survey, Western Kentucky University, Bowling Green, 51 pp.