

## TUCSON-AREA RESOURCE REFERENCES

### Rain & Grey Water Harvesting Systems:

- Watershed Management Group, install w/ Co-op workshops, [co-op@watershedmg.org](mailto:co-op@watershedmg.org), 520-396-3266x3
- Dryland Design, Jeff Rhody, [jeff@drylanddesign.com](mailto:jeff@drylanddesign.com), 520-909-4946
- EcoSense Landscaping, Eli Nielsen, [eli@ecosenseAZ.com](mailto:eli@ecosenseAZ.com), 520-575-7005
- Green Cloud Landscapes, Logan Byers, [lmbyers@gmail.com](mailto:lmbyers@gmail.com), 520-808-1672
- Desert Living, lylea Olson, [desertlivingtucson@gmail.com](mailto:desertlivingtucson@gmail.com), 520-834-6932
- Grow With The Flow Permaculture, Sylvia Lindowitz, [growwiththeflow2020@gmail.com](mailto:growwiththeflow2020@gmail.com), 520-204-7947
- Water Harvesting International, Mark Ragel, underground tanks & pumps, [markaragel@gmail.com](mailto:markaragel@gmail.com), 520-631-4676

### Excavators:

- Big Truck LLC, Brian Aagaard, excavation and materials hauling services, [bigtruckllc@hotmail.com](mailto:bigtruckllc@hotmail.com), 520-304-0606
- Lil' John's Excavating, John Litzel, expert backhoe excavation services, 520-730-9350

### Plumbers/Irrigators:

- Clay Brown Plumbing, skilled affordable greywater connections, 520-331-5656 (not licensed)

### Gutters:

- Gutter Systems of Southern Arizona, Eric Perry, [tucsonseamless@yahoo.com](mailto:tucsonseamless@yahoo.com), 520-622-5255

### Curb-side Cuts & Retro-fits:

- Custom Saw Cuts, Jack, curb cuts & cores, 520-624-2191
- Tucson Concrete Cutting-Coring, cores only, 520-349-309

### Tank/Parts Suppliers:

- Ace Hardware, 22<sup>nd</sup>/Kolb, Bushman tanks, 520-747-1996
- Ewing Irrigation, Snyder tanks, bulkheads, 520-690-9530
- Oasis Water Harvesting, Rick Weisberg, plastic tanks, rain chains, 520-234-7681 (NOT A LICENSED CONTRACTOR)

### Materials:

- Arizona Trucking and Materials, rock etc., 520-299-1007
- Churchman Sand and Gravel, rock etc., 520-325-1611
- Cutting Edge Ceramics, various styles of ollas for water-efficient irrigation, 520-790-8773
- Desert Survivors, native plants and heritage fruit trees, [www.desertsurvivors.org](http://www.desertsurvivors.org), 520-791-9309
- Spadefoot Nursey, native plant nursery, <https://www.spadefootnursery.com>, 520 909-3619
- Fairfax Companies/Tank's Green Stuff, recycled landscape materials – compost, mulch and more, 520-290-2796
- Nighthawk Natives, Bernadette Jilka, high quality native plants, [nighthawknatives@gmail.com](mailto:nighthawknatives@gmail.com), 520-981-7136
- Sprinkler World, plumbing/irrigation parts/landscape tools, 520-888-9414

### Certified Arborists:

- Made in the Shade, Dan Crosby, full tree-service plus free mulch on request, WHC Certified, 520-331-2092
- The Pedaling Arborist, Aleck MacKinnon, 520-338-1231

### Hardscapes/Walls/Welders:

- Alfredo Montoya, custom masonry, patios, tile, flagstone, walls and stucco, [alfmon79@gmail.com](mailto:alfmon79@gmail.com), 520-406-3343
- Beyond Brick, patios, 520-722-3400
- Kevin Blackwell, welder, 520-349-6009

### Plant Guides/Planning Resources:

- AMWUA Landscape Plants for the AZ Desert: [www.amwua.org/plants/](http://www.amwua.org/plants/)
- LEAF Network Edible Tree Guide: <https://leafnetworkaz.org/Guide>
- Online Materials Coverage Calculator: <https://www.landscapecalculator.com/calculators/mulch>
- Rainwater Harvesting for Drylands (Brad Lancaster), [www.harvestingrainwater.com/plant-lists-resources/](http://www.harvestingrainwater.com/plant-lists-resources/)
- Quivira Coalition <https://quiviracoalition.org/publications/>

### Online Informational Materials:

[watershedmg.org/learn/resource-library](http://watershedmg.org/learn/resource-library) – Green infrastructure, soil stewardship, rain garden care guides, composting toilets, and more....

[www.harvestingrainwater.com](http://www.harvestingrainwater.com) – rain, greywater, energy nexus, and more...

[www.oasisdesign.net](http://www.oasisdesign.net) – greywater and ecological systems

## PROJECT PLAN DEVELOPMENT PROCESS

### Active Rainwater Harvesting Systems:

Collection Area – Roof only

Conveyance – direct water from catchment area via gutters and downspouts to storage tank

Storage – above or underground tank

Filter – downspout leaf diverter, first flush, etc

### Passive Rainwater Harvesting Systems:

Collection Area – Roof, patio, pathways, etc...

Conveyance – direct water from catchment area via gutters, downspouts, channels, or swales to infiltration areas (basins, trenches, etc)

Filter & Storage – soil!

### Step #1. Site Analysis:

- Assess site conditions to determine rainwater harvesting goals.
- Draw site to scale and include dimensions.
- Show direction of water flow with arrows starting at the high points like roof tops.
- Indicate ridges or divisions of roof areas
- Where are the low points or outlets that surface water moves to?
- Draw boundaries around catchment areas.
- Identify areas where irrigation will be needed.
- Label:
  - Surface areas of hardscapes and landscapes
  - Identified rainwater practice(s) and associated potential storage capacity (volume)
  - Site address
  - North arrow
  - Site applicant name

### Step #2. Calculations:

- Rainfall Event: Calculate storage capacity to retain rainfall for A) passive earthworks, 1"-2" (*ensures you will retain effective rainfall on your site for majority of rain events*) or B) active rain tanks, 3"-6" (*help store successive events or seasonal rainfall*).
  - **Formula: Project catchment area (sq.ft) \* 0.6 = storage volume per 1" rain (gallons)**
  - **Then multiply volume obtained by # of inches of rainfall you wish to retain/store.**
- Annual Water Budget: Helps determine overall site water budget
  - Calculate the total amount of rainwater which could be collected from roof & hardscapes each year
  - **Supply Formula: Project catchment area (sq.ft) \* 0.6 \* 11 (inches - annual Tucson rainfall) = annual rainfall supply (gallons)**
  - Calculate total amount of water needed to meet landscaping needs each year. (*refer to handbook for worksheet*)
- Monthly Water Budget: Helps to plan more accurately and with utilizing both greywater and rainwater resources.
  - Calculate monthly supply (rainfall harvest potential)
  - Calculate monthly demand (plant water requirement)
  - Calculate monthly storage/supplemental water

### Step #3. Final Design:

- Use event calculations to determine capacity of earthworks retention capacity
- Use supply and demand calculations to size rainwater tanks
- Determine how to best convey water to desired infiltration areas or rainwater tank storage
  - Rainwater tanks: Locate storage close to plants needing water (e.g. vegetable garden) and higher than the planted area to take advantage of gravity flow. *For optimal tank storage a rule of thumb is to retain the volume of 3-4" of rainfall from collection roof.*
  - Earthworks: Locate infiltration areas to be most beneficial to perennial plant root zones while avoiding underground utilities, protecting structural foundations, and maintaining desired use of site. *For optimal basin capacity a rule of thumb is to retain the volume of 1-2" of rainfall from collection area.*
  - *Always plan for overflow from all water harvesting features (earthworks and tanks)*