Fill out Site Assessment—the first three pages—for an Oasis design consultation. This whole checklist serves also as a guide for a DIY system, or to orient others to your project. Full information on these points is in the book The New Create an Oasis with Greywater.

This is a comprehensive list; most installations won’t need all this info. This map is not the terrain. This sheet matters only to the extent it helps things get built well on the ground. If a question is difficult to answer, skip it for now.

For simple, easy greywater systems, performance is lower, but 90% of this list is not necessary. See Create an Oasis for a list of simple systems.) If you are working with other people, this form, along with a site map, can serve to orient them.

Reminder: Careful attention to the context will pay good dividends. Greywater systems are affected by more variables than most systems in natural building, and to a greater degree. A change in one of any number of variables can change the whole design.

Good luck! —The Oasis Design Team

Site Assessment

Goals

General Goals
What are the guiding philosophies and aesthetic? (E.g., fancy gated subdivision, shack in hippie commune)
What perfection standard are you aiming for?
Hygiene standard?

Greywater system goals (check all that apply)
- Irrigate/ Save water (don’t forget conservation before reuse)
- Dispose of water safely
- Improve sanitation
- Reduce pollution
- Save septic
- Save money
- Feel good
- Demonstration (it should still justify itself)
- Other

Landscape goals (check all that apply)
- Beauty
- Food production
- Erosion control
- Slope stabilization
- Fire break
- Privacy screen
- Windbreak
- Outdoor living
- Micro climate modification (e.g., windbreak, increased cooling via evapotranspiration, shade)

Context

Climate
Latitude _____
Elevation _____
Annual rainfall _____
Maximum evapotranspiration (inches or cm/week) _____
Minimum evapotranspiration (inches or cm/week) _____

Typical max duration w/o significant rain _____
Growing season (frost to frost) _______________
Minimum temperatures _____
Duration of snow cover _____
Solar exposure (directions) _____
Hours lost from sunrise _____, sunset _____ due to surrounding geography and trees
Greenhouse possible? _____ (good for cold, wet, low perk sites)

Forces of Nature
Predictable disasters, which may affect the design:
- Flooding
- Torrential rain
- Landslide
- Fire
- Very high wind
- Extreme drought

Slope
Is the area to be irrigated below the greywater source?
Slope % _____ Slope aspect (orientation) _______________
(Note: a Branched Drain system on a 2% slope takes four times the labor to build than one on a 4% slope. If the slope is under 2%, it will be very challenging.)
Are there erosion and/or slope stability (landslide) issues?

Soil Perk and Groundwater
Soil type(s): ________________________________
Soil fertility: ________________________________
Digging ease: ________________________________
Permeability (has there been a perk test?)
minutes/in _____ location_____________
minutes/in _____ location_____________
minutes/in _____ location_____________
(Note location(s) and values of perk test on site map)
Minimum seasonal groundwater depth, seasonal variation: _____ low _____ high groundwater
Where does runoff go?

Distance to nearest year-round surface water_____  Distance to nearest seasonal surface water_____

Water Supply
Prospective and existing water sources:
- Well _____ gpm
Depth of water table in wet _____, dry season _____
Is it imperative that the system meet a particular economic payback timetable, or is doing the ecological thing the overriding concern?

**Availability of Exotic Materials and Skilled Labor**

Where are plumbing parts and plants coming from?

Are biocompatible cleaners available?

Who is going to do the installation?

**Population of Water Users**

Average population _____

Minimum population ________

Peak population _____

Duration and nature of peak ________

Max continuous days unoccupied during dry season _____

Pending changes in users/ use?

To what degree are the users interested in understanding/maintaining the system?

Is the system public? [ ] yes [ ] no

Will there be a person responsible for maintenance?

What are the maintenance goals or constraints?

**Site Plan**

A 1/8” = 1’ scale, 1’ contour map of the site and a 1/16” = 1’ plan of the structures involved would be ideal, but any sort of sketch is a help. This map would ideally show topography, property lines, septic tanks, leach lines, wells, surface waters, buildings, major vegetation, and irrigated areas, existing and planned. Note protection zones for wells or surface waters. Also note location and amounts of runoff (in gal/in. of rain, for example). Aerial photos are useful for locating vegetation.

If you’re sharing this information with people involved in the project off-site, take snapshots showing general feeling of the site and any special features, indicating the location and the direction of each shot with a letter and arrow on the site map.

Make copies of the map and sketch the possible ways to connect the greywater sources with irrigation/treatment areas (next steps below).

**System Elevations**

Check the critical elevation relationships between features such as buildings, foundations, walkways, greywater sources, septic or sewer inlet, and irrigated areas.

For Branched Drain and Green Septic system installations, I strongly suggest making an elevation view drawing. Otherwise, note the elevations on the site map, checking that there is enough slope.
**Greywater Sources**

Fill out table, mark on site map with quantities of greywater.

### Greywater Sources

- Washing machine
- Shower 1
- Bathtub 1
- Bathroom sink 1
- Toilet water 1
- Shower 2
- Bathtub 2
- Bathroom sink 2
- Toilet water 2
- Kitchen sink
- Utility sink
- R/O water drain
- Outdoor shower

<table>
<thead>
<tr>
<th>Source</th>
<th>Possible to irrigate downhill?</th>
<th>Plumbing accessible?</th>
<th>Gallons per week</th>
<th>Quantity and variability of water, surges, conservation measures, comments</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

- Total gallons destined for reuse

**Note:** dishwater, water softener flush not recommended

**Irrigation Needs/ Landscape**

Native vegetation type(s):

- Land use(s), existing and planned:

- Is the landscape fenced or free of browsing animals? □ yes □ no

**End of site assessment**

**System Design**

**Connect Greywater Sources with Irrigation/Disposal Areas**

Choose a percentage of irrigation need to meet with greywater in different irrigation zones:

- Total greywater ____ / ____ total irrigation need = ____% of irrigation theoretically attainable via greywater

Check loading rate:

- ____ gal/day greywater / ____ ft² irrigated area = ____ gal per ft² (check against acceptable ranges by soil type in Table 2.3, *New Create an Oasis*). Make sure you distribute the water to enough plants and over a wide enough area that you don’t over water.

Now that you know where the greywater is coming from and where it’s going, you can design the hardware...

**Greywater Collection Plumbing**

- Conventional or radical plumbing?
- Lump flows together or split?
- Two or more irrigation zones if necessary
- Pipe size?

**Rainwater/ Runoff Flushing System**

- See *Create an Oasis, Rainwater Harvesting for Drylands*.

**Supplemental Freshwater Irrigation System**

- With zones corresponding to greywater zones.

**Greywater Distribution Plumbing**

- Choose a greywater distribution system. See System Selection Chart, *New Create an Oasis*, p. 52.

**Greywater Receiving Landscape and Plants**

- Choose a greywater receiving system (e.g. mulch basins, subsoil infiltration galleys) and make sure it is adequately sized for expected max surge: ____ gal.
Construction, Use

See Greywater System Checklist by Profession (p. 1); plumber, landscaper, gutter installer, system users.

Maintenance, Evaluation

Check how the system fares over time and with the change of seasons.
Avoid stagnant water—dig a little below the greywater outlets: is the soil anaerobic (black, or with bad smell)? Are there new plant roots?
Are the plants happy?
Are there enough plants to use the greywater?
Is the greywater controlled?
Is the greywater well-distributed for irrigation?

Greywater System Checklist by Profession

Architect/ Engineer

- Site house uphill from area to be irrigated—this is basic, like facing the building south for solar heating.
- Specify floors a foot or two above grade—so the plumbing reaches the yard at grade.
- Make all the plumbing accessible—for example, in a crawl space. If the plumbing must be entombed under a slab, plumb the greywater totally separate from the blackwater. The vents may be combined.

Greywater System Designer/ Owner

- Establish the system goals clearly at the outset
- Establish early whether the greywater is to be joined before being split, or if each fixture set has its own independent outlet—this totally changes the plumbing.
- Gather special order tools, materials and plants early.
- Keep an eye on the others to make sure the system is implemented correctly.

General Contractor

- Keep an eye on the plumber.

Plumber

- Plumb everything as high as possible in elevation and conserve fall along the whole length of the pipes. Don’t forget this in your bid. This will take more time, in some cases more than twice as much time.
- Plumb diversions downstream from traps and vents. Plumbing the greywater lines totally separate until outside the house is also a good way to go.
- Use our Greywater Collection Plumbing and Stub Outs Inspection Checklist² for more specifics.

Landscaper

- Priority use for greywater is shady, cool, fruit-filled outdoor living space right by the house.
- Think far ahead—as long as there is a house, greywater will be coming out of it. Plants will grow and plumbing isn’t easy to change.
- Put water loving plants where there is more greywater.
- Design the irrigation system so that each greywater zone has a corresponding freshwater irrigation zone that can be turned off independently. This is the only way to actualize water savings.
- Use appropriate plants.
- Plant the plants at the same time as the greywater earthworks and distribution plumbing are installed—this leads to best results.

Gutter Installer

- Make rainwater downspouts divertable to irrigated areas for rainwater flushing of accumulated salts, greywater recharge, and flood control. Do not permanently dedicate rainwater to irrigated areas except in the driest climates!
- Design gutters and downspouts for filtration, pressure if necessary.

Inspector

- Ensure that systems are designed and built well, using performance of familiar systems as an indicator of quality of unfamiliar systems.
- Rise above role of policing for cheating on minimum standards, and fulfill potential as advocate/resource for builders who are investing effort to reduce the overall impacts from the built environment.
- Use our Greywater Collection Plumbing and Stub Outs Inspection Checklist² for more specifics.

System Users

- Don’t put toxic chemicals down the drain—or at least divert greywater to the septic/sewer when you do.
- Divert greywater elsewhere if garden soil is too saturated.
- Use backup irrigation when there is no greywater, and turn it off when there is.
- Maintain the system as needed.

References

2. This and other forms may be downloaded free from “Greywater Central”: http://oasisdesign.net/greywater.