# Reedy Creek Improvement District 2013 Reclaimed Water Quality Report

Reedy Creek Improvement District (RCID or District) has been reclaiming and reusing water for over two decades. Reuse of treated wastewater for non-potable (non-drinking) purposes has been a water conservation initiative at RCID that has reduced the consumption of potable water and furthered the conservation of our natural resources. Today, reclaimed water meets about 25% of the overall water resource needs of the District through a wide variety of uses, including:

- Landscape irrigation (over 1520 acres)
- Vehicle and bus washing (over 320 buses and 1000 vehicles)
- Street and sidewalk cleaning
- Cooling tower makeup
- Fire suppression and fire prevention
- Dust control and construction
- Process water (at wastewater treatment plant)
- Toilet flushing (at selected locations)

Of the approximately 1,940 acres of irrigated area within the District, about 78% is irrigated with reclaimed water. In the future, the District and its customers will continue to pursue conversion of the balance to reclaimed water, whenever feasible. All new development and most re-development within RCID is required to connect to and use reclaimed water for irrigation and other non-potable needs. Doing so helps to ensure sustainability of the drinking water supply, the Upper Floridan Aquifer, by reducing demands on this finite source of high quality water.

Reclaimed water is a product of the wastewater treatment process. At RCID, wastewater is treated to an advanced level via biological means, filtered and disinfected. It typically meets all of the primary and secondary drinking water standards as set by the U.S. Environmental Protection Agency, and is visually indistinguishable from tap water. A comparison of the latest analysis of the reclaimed water to the drinking water standards is provided in the accompanying table. While the reclaimed water typically meets the drinking water standards, it is not and should not be used for consumption, cooking, bathing or body contact, in pools or spas, or to wash edible crops. These restrictions in use are due to the slightly higher risk of disease transmission or ingestion of contaminant(s) with reclaimed water than with potable water.

Nutrients in reclaimed water will vary widely with the source and level of treatment provided. Nutrients (principally nitrogen and phosphorus) are essential to all life forms, but excessive nutrients can lead to imbalances in aquatic flora and fauna, spawning algae blooms and nuisance species if levels exceed certain thresholds for extended periods. At RCID, most of the nutrients in the reclaimed water are removed in the treatment process (typically more than 95%) and those forms that remain are not normally readily available to plants and aquatic organisms. RCID's product water averaged 1.19 mg/l (or 1.19 part per million) of total nitrogen and 0.09 mg/l of total phosphorus in 2013. These values represent excellent removal and are near the limits of achievable technology. Users of reclaimed water should be aware of the presence of these constituents and account for their value when determining fertilization rates and when operating irrigation systems in close proximity to surface waters.

Reclaimed water is delivered to RCID customers through a distribution system of underground pipes, very similar in size and extent to that of the potable water distribution system. The pressure of the water in both systems is nearly identical. The pipes of the reuse distribution system are color coded purple, by pigmentation, paint, or striping and tape. Purple pipes, hydrants, valves, valve boxes and fittings identify the reclaimed water system throughout RCID. The purple designation is a State of Florida requirement and is an important measure to guard against cross connections with other piping systems, and other unintended uses.

Another aspect of the RCID reuse system is the use of rapid infiltration basins, or RIBs, for groundwater recharge. During wet weather periods or when demands on the reuse distribution system are low, the RIBs are utilized for disposition of the product water which serve to recharge the local aquifers.

The RIBs consist of 85 one-acre basins, situated on a ridge of sandy soils with high percolation characteristics. Water applied to the RIBs percolates through the sandy soils (between 30 and 70 feet thick) and replenishes the surficial and Upper Floridan aquifers. This practice helps to ensure sustainability of the water supplies by returning a portion of the product water to its source. During the course of a typical year, about 50% of the product water will be applied to the RIBs and 50% to the reuse distribution system.

The RCID RIBs are located in the northwest corner of the District and the site is bisected by the Western Beltway (Florida State road 429). The RCID RIBs are visible to passing motorists from both sides of the beltway between Seidel Road and Western Way.

Service rates for reclaimed water are typically about 80% of those for potable water, and include a similar volumetric charge and a readiness-to-serve charge. The rate is intended to provide an economic incentive for customers to use reclaimed water in lieu of potable water, as well as to conserve the resource and to discourage wasteful practices. Some of the benefits of using reclaimed water are:

- Conservation of the drinking water supply
- Drought resistant and not subject to water use restrictions
- Promotes sustainability and conservation of natural resources
- Delays the development of expensive alternative water supplies
- Reduces potential adverse impacts to wetlands and surface waters

RCID appreciates this opportunity to educate its customers about reclaimed water and its role in water conservation. For additional information, please contact Ted McKim at 407-824-4846 or ted.mckim@disney.com.

# Reedy Creek Improvement District
# 2013 Reclaimed Water Quality Analysis Results

**(Samples Collected on April 15-16, 2013)**

| Parameter Name | Units* | Conc. | Results | Drinking Water Standards |
|---|---|---|---|---|
| Inorganics | | | | |
| Antimony | mg/l | <0.0010 | BDL** | 0.006 |
| Arsenic | mg/l | <0.0015 | BDL | 0.01 |
| Barium | mg/l | 0.0015 | 0.0015 | 2 |
| Beryllium | mg/l | < 0.00012 | BDL | 0.004 |
| Cadmium | mg/l | <0.00009 | BDL | 0.005 |
| Chromium | mg/l | 0.001 | 0.001 | 0.01 |
| Cyanide | mg/l | 0.062 | 0.062 | 0.2 |
| Flouride | mg/l | 0.02 | 0.020 | 4 |
| Lead | mg/l | <0.0004 | BDL | 0.015 |
| Mercury | mg/l | <0.00005 | BDL | 0.002 |
| Nickel | mg/l | 0.001 | 0.001 | 0.1 |
| Nitrate as N | mg/l | 0.158 | 0.158 | 10 |
| Nitrite as N | mg/l | < 0.005 | BDL | 1 |
| Nitrate plus Nitrite | mg/l | 0.158 | 0.158 | 10 |
| Selenium | mg/l | <0.0005 | BDL | 0.05 |
| Silver | mg/l | < 0.00005 | BDL | 0.05 |
| Sodium | mg/l | 74.6 | 74.6 | 160 |
| Thallium | mg/l | < 0.0003 | BDL | 0.002 |
| Volatile Organics | | | | |
| Para (1,4)-dichlorobenzene | ug/l | <0.18 | BDL | 75 |
| Vinyl chloride | ug/l | <0.33 | BDL | 1 |
| 1,1 -dichloroethylene | ug/l | <0.32 | BDL | 7 |
| 1,2-dichloroethane | ug/l | <0.17 | BDL | 3 |
| 1,1,1-trichloroethane | ug/l | <0.27 | BDL | 200 |
| 1,1,2 - trichloroethane | ug/l | <0.22 | BDL | 5 |
| 1,2 -dichloropropane | ug/l | <0.45 | BDL | 5 |
| 1,2,4-trichlorobenzene | ug/l | <0.18 | BDL | 70 |
| Cis-1,2-dichloroethene | ug/l | <0.37 | BDL | 70 |
| Dichloromethane (methylene chloride) | ug/l | <0.36 | BDL | 5 |
| Ethylbenzene | ug/l | < 0.12 | BDL | 700 |
| Monochlorobenzene | ug/l | <0.27 | BDL | 100 |
| 1,2-dichlorobenzene | ug/l | < 0.17 | BDL | 600 |
| Styrene | ug/l | <0.28 | BDL | 100 |
| Tetrachloroethylene | ug/l | <0.30 | BDL | 3 |
| Toluene | ug/l | <0.23 | BDL | 1000 |
| 1,2-trans-dichloroethylene | ug/l | <0.24 | BDL | 100 |
| Trichloroethylene | ug/l | <0.37 | BDL | 3 |
| Xylenes | ug/l | <0.27 | BDL | 10,000 |
| Carbon tetrachloride | ug/l | <0.22 | BDL | 3 |
| Benzene | ug/l | <0.18 | BDL | 1 |
| Trihalomethanes | | | | |
| Total Trihalomethanes (TTHM) | ug/l | 48 | 48.0 | 80 |

| Parameter Name | Units* | Conc. | Results | Drinking Water Standards |
|---|---|---|---|---|
| Organics | | | | |
| 2,3,7,8- tetrachlorodibenzo-p-dioxin | ug/l | <1.28 E-6 | BDL | 0.00003 |
| 2,4- dichlororphenoxyacetic acid | ug/l | <0.036 | BDL | 100 |
| 2,4,5-TP (Silvex) | ug/l | <0.06 | BDL | 50 |
| Alachlor | ug/l | < 0.034 | BDL | 2 |
| Atrazine | ug/l | < 0.023 | BDL | 3 |
| Benzo(a)pyrene | ug/l | <0.030 | BDL | 2 |
| Carbofuran | ug/l | <0.43 | BDL | 40 |
| Chlordane (tech mix. and metabolites) | ug/l | <0.12 | BDL | 2 |
| Dalapon | ug/l | <0.98 | BDL | 200 |
| Bis(2-ethylhexyl)adipate | ug/l | <0.62 | BDL | 400 |
| Bis (2-ethylhexyl) phthalate | ug/l | 6.7 | 6.7 | 6 |
| Dibromochloropropane (DBCP) | ug/l | <0.0052 | BDL | 0.2 |
| Dinoseb | ug/l | <0.15 | BDL | 7 |
| Diquat | ug/l | <0.4 | BDL | 20 |
| Endothall | ug/l | <6.3 | BDL | 100 |
| Endrin | ug/l | <0.0022 | BDL | 0.02 |
| Ethylene Dibromide (1,2-dibromoethane) | ug/l | <0.0023 | BDL | 0.02 |
| Glyphosate | ug/l | <5.0 | BDL | 700 |
| Heptachlor | ug/l | <0.0062 | BDL | 0.4 |
| Heptachlor Epoxide | ug/l | <0.0017 | BDL | 0.2 |
| Hexachlorobenzene | ug/l | <0.042 | BDL | 1 |
| Hexachlorocyclopentadiene | ug/l | <0.043 | BDL | 50 |
| Lindane | ug/l | <0.0023 | BDL | 2 |
| Methoxychlor | ug/l | <0.0076 | 0.01 | 40 |
| Oxamyl (vydate) | ug/l | <0.35 | BDL | 200 |
| Pentachlorophenol | ug/l | <0.037 | BDL | 1 |
| Picloram | ug/l | <0.075 | BLD | 500 |
| Polychlorinated Biphenyls (PCBs) | ug/l | <0.045 | BDL | 0.5 |
| Simazine | ug/l | <0.036 | BDL | 4 |
| Toxaphene | ug/l | <0.057 | BDL | 3 |
| Radiologicals | | | | |
| Gross Alpha | pCi/L | <1.4 | BDL | 15 |
| Radium 226 and 228 | pCi/L | <0.9 | BDL | 5 |
| Secondary Chemistry | | | | |
| Aluminum, Total Recoverable | mg/l | <0.010 | BDL | 0.2 |
| Chloride | mg/l | 99 | 99 | 250 |
| Copper | mg/l | 0.002 | 0.0020 | 1 |
| Iron | mg/l | 0.17 | 0.17 | 0.3 |
| Manganese | mg/l | <0.0010 | BDL | 0.05 |
| Sulfate | mg/l | 41 | 41.0 | 250 |
| Zinc | mg/l | 0.0353 | 0.0353 | 5 |
| pH (units) | mg/l | 7.9 | 7.9 | 6.5-8.5 |
| Total Dissolved Solids | mg/l | 384 | 384 | 500 |
| Foaming Agents | mg/l | <0.12 | BDL | 0.5 |

*Units:
mg/l are milligrams per liter or parts per million
ug/l are micrograms per liter of parts per billion
pCi/l are picoCuries per liter
**BDL means below the detection limit of the analysis technique employed