

# Recharge Systems

## MUNICIPAL AND REMEDIATION RECHARGE



In the past, the need for such high flow rates presented performance challenges in outdated, inefficient recharge designs. The result was often clogging of the soil-gravel pack interface and flow reduction due to air-entrainment of the permeable soils.

### INNOVATIVE RECHARGE TECHNOLOGY

With the new era of recharge well systems installed by Torrent Resources, these problems have been overcome through proper screen-gravel-geotextile selection combined with careful placement of the chosen materials to mitigate interface clogging. In addition, air-entrainment problems have been virtually eliminated by matching required flow rates to the well's unique water supply system.

Experience has shown that the recharge well process is also far more efficient than surface spreading or recharge basins, which requires vast amounts of land, has associated development and maintenance expense, and results in loss of water due to evaporation.

### MUNICIPAL AND REMEDIATION RECHARGE

To meet future water supply demands, many municipalities are incorporating water storage and recovery programs into their water resource master plan. As the leader in the field of storm water and surplus water drainage systems, Torrent Resources' expertise has assisted the engineering and hydrology communities in the design and implementation of high-tech, high-capacity municipal gravity recharge systems to meet such water management goals.

### DEMANDING APPLICATION

Unlike storm water drywells which are only required to operate intermittently as a result of storm flows, municipal recharge systems must operate 24 hours a day, 365 days a year. Consequently, these systems have the capability of putting limitless quantities of surplus or reclaimed water into the ground where it is stored until needed, either during peak demand seasons or in times of drought. Just one of Torrent's gravity recharge wells has the potential to recharge one million gallons per day, or over 1,000 acre-feet of water each year.





## SUCCESSFUL RECHARGE PROGRAMS

Torrent Resources has been instrumental in pilot recharge programs for numerous municipalities including the Cities of Scottsdale, Tempe, Mesa, Chandler and the Town of Gilbert, Arizona. The success of such programs has resulted in its involvement in full-scale municipal recharge projects such as the Scottsdale Water Campus, Chandler Tumbleweed Park, Glendale WRF Aquifer Recharge, Glendale Arrowhead Ranch Effluent Recharge, Phoenix North Gateway Reclamation Recharge, Phoenix Tramonto Recharge, Phoenix Cave Creek WRP Recharge and many other private recharge endeavors. Not only has the company successfully installed systems that have exceeded initial design requirements, it has also played an essential role in developing this innovative concept and converting it into a cost-effective asset to meet the needs of today's water-dependent communities.

## REMEDATION RECHARGE

Torrent is using this same advanced recharge technology in remediation projects where groundwater has been negatively impacted. In these instances, contaminated water is pumped up through recovery wells, treated to remove the contaminants and then directed back into the ground through gravity recharge wells.



Not only does this convert the water back into a viable asset, but a series of recharge wells can also be used to create a barrier against future contaminant migration. Water flowing out of the recharge wells creates a positive pressure to push back against the natural flow of water-containing contaminants. This same process is used in coastal communities where saltwater intrusion wells are utilized to prevent the flow of ocean water into fresh water wells.

As water becomes an increasingly precious and limited commodity, Torrent Resources is committed to remaining at the forefront in the development of innovative, technology-driven solutions.

## INDUSTRY SERVICES

### Site Drainage Systems

- Stormwater Drywells
- French Drains
- Piping
- Drainage Appurtenances
- Pump Systems

### Technical Analysis

- Design Review
- Percolation Testing
- Geologic Database
- ADEQ Drywell Registration

### Recharge Systems

- Municipal/Private Recharge Wells
- Injection Wells & Galleries

### Environmental Applications

- Pattern Drilling/Soil Remediation
- Drainage Rehabilitation
- Drywell Abandonments
- OSHA HAZMAT-Certified

### Drainage Renovation

- Problem Assessment
- Site Redesign/Modification
- System Retrofit

### Drainage Maintenance

- Preventive Maintenance
- Service Contracts
- Drywell Cleaning

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