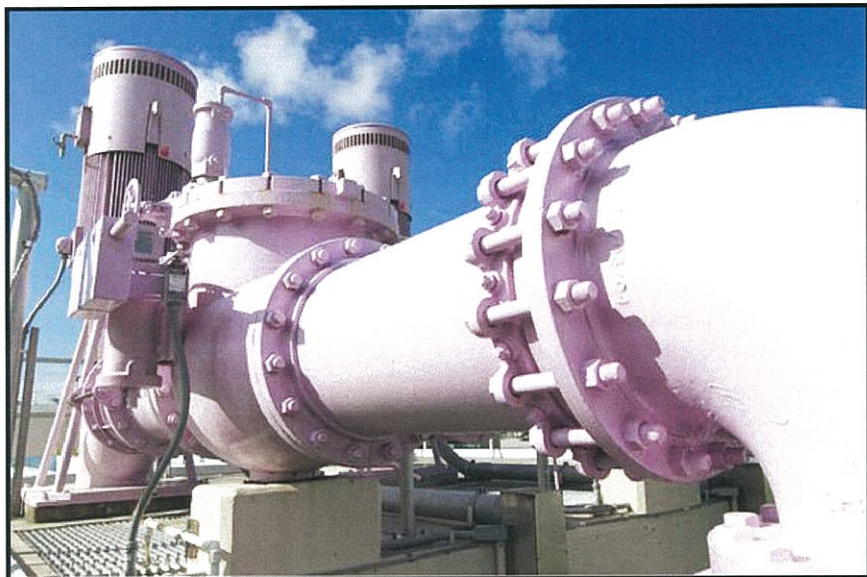


# Water Reuse Implementation





**I**n 2010, representatives from a number of Oklahoma municipalities expressed interest in using reclaimed water as a way to help conserve water due to the extreme droughts that Oklahoma has been experiencing.



## Water Reuse Implementation

These representatives met with the Oklahoma Department of Environmental Quality (DEQ) and a working group was formed with members from DEQ, various municipalities, technical experts from engineering firms, and the public. A review of other states' water reuse regulations and implementation methods along with input from our working group and technical experts helped DEQ create water reuse regulations that fit the State of Oklahoma.

The Oklahoma Department of Environmental Quality (DEQ) promulgated water reuse regulations at OAC 252:656-27 Wastewater Reuse (Construction Standards) and OAC 252:627 Water Reuse (Operations Standards), and both became effective July 1, 2012. These regulations are located online at [www.deq.state.ok.us/mainlinks/deqrules.htm](http://www.deq.state.ok.us/mainlinks/deqrules.htm). DEQ will continue to review these regulations to ensure that new science and engineering technologies are considered.

Wastewater to be reclaimed and reused was divided into four categories with each category having specific treatment, reuses, testing frequencies, limits, and monthly reporting requirements, as shown in Table 1, found on pages 6 and 7.

# Permits Required

A water reuse system requires two different permits from DEQ. A "Permit to Construct" is needed by the supplier to construct, modify or operate a water reuse system pursuant to OAC 252:656 and a "Permit to Supply Reclaimed Water" is needed by the supplier to provide reclaimed water to the user pursuant to OAC 252:627. The user may also need a "Permit to Construct" to construct the system that will utilize the reclaimed water.

## Permitting Process

*(Refer to Water Reuse Permitting Process Flowchart, Figure 1, page 8).*

### 1 Engineering Report

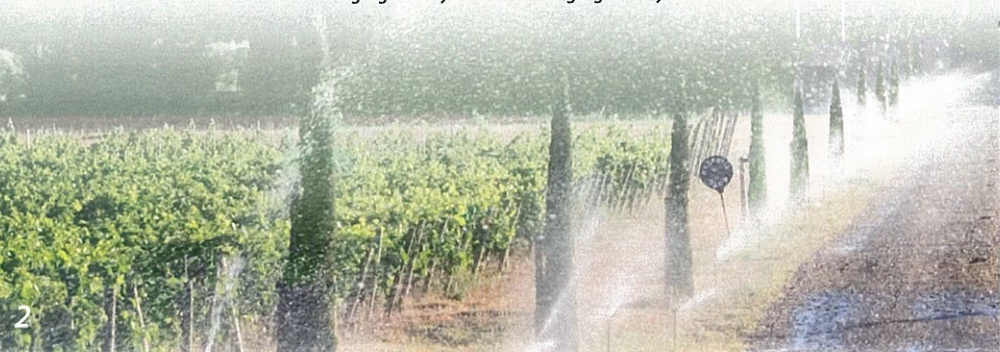
The first step is for the supplier to submit an engineering report, detailing their plans to create a water reuse system, to the Municipal Wastewater Enforcement Section, Water Quality Division (WQD), DEQ, for review and approval. Engineering reports are to meet requirements at OAC 252:656-3-4(b).

### 2 Permit to Construct (Supplier)

The second step is for the supplier to submit a completed "Application for Permit to Construct" form to the Construction Permitting Section, WQD, DEQ. The supplier shall include the application fee, an "Engineering Report Form for Reclaimed Water Treatment, Pumping, Storage, and Distribution", and plans and specifications. The plans and specifications are to meet requirements at OAC 252:656 Water Pollution Control Facility Construction Standards. Prior to issuing a "Permit to Construct," a 30-day Public Notice may be required if determined to be a Tier 2 permit pursuant to OAC 252:004 Rules of Practice and Procedure.

### 3 Permit to Supply Reclaimed Water

The third step is for the supplier to submit a completed "Application for Permit to Supply Reclaimed Water" to DEQ six months prior to the estimated start date that reclaimed water will be supplied to the user. There are two types of "Permits to Supply Reclaimed Water": a non-discharging facility and a discharging facility.



## Non-discharging Facility

The non-discharging facility would be a facility such as a total retention lagoon. This "Application for Permit to Supply Reclaimed Water" would be processed through the Construction Permitting Section, WQD, DEQ. The supplier shall include the application fee (to be determined), a copy of the "Permit to Construct," and the "Supplier/User Agreement Template." Prior to issuing a "Permit to Supply," a 30-day Public Notice may be required if determined to be a Tier 2 permit pursuant to OAC 252:004 Rules of Practice and Procedure. It is a five-year permit. Annual fees and inspections of the facility will be required.

## Discharging Facility

The discharging facility would be a facility with an Oklahoma Pollution Discharge Elimination System (OPDES) permit to discharge into the waters of the state. This "Application for Permit to Supply Reclaimed Water" would be processed through the Municipal Permits Section, WQD, DEQ. The supplier shall include the application fee (to be determined), a copy of the "Permit to Construct," and the "Supplier/User Agreement Template." The "Permit to Supply" would be added to the OPDES permit when the OPDES permit is renewed. The "Permit to Supply" and the OPDES permit are both five-year permits. A 30-day Public Notice may be required if determined to be a Tier 2 permit pursuant to OAC 252:004 Rules of Practice and Procedure. Annual fees and inspections of the facility will be required.

### 4

## Supplier/User Agreement

A binding user agreement between the supplier and each user of the reclaimed water is required pursuant to OAC 252:627. A template of the agreement shall be submitted with the supplier's "Application for a Permit to Supply Reclaimed Water." A copy of the finalized and signed agreement for each user of the reclaimed water shall be submitted to DEQ. It shall be the responsibility of the supplier to notify DEQ of new and inactive users.

### 5

## Permit to Construct (User)

The final step is for the user to submit a completed "Application for Permit to Construct" form to DEQ. The user shall include the application fee, an "Engineering Report Form for Reclaimed Water Treatment, Pumping, Storage, and Distribution," plans and specifications, and a copy of the "Supplier/User Agreement" (signed). The plans and specifications are to meet requirements at OAC 252:656 Water Pollution Control Facility Construction Standards. Prior to issuing a "Permit to Construct," a 30-day Public Notice may be required if determined to be a Tier 2 permit pursuant to OAC 252:004 Rules of Practice and Procedure.



## Purple Pipe

All reclaimed water piping, valves, outlets and appurtenances in distribution systems shall be colored purple (Pantone 522) and shall be embossed or integrally stamped with a warning that includes the following: (1) the word "CAUTION"; (2) specifies the category number of the reclaimed water; and (3) the words "DO NOT DRINK"; (e.g.: "CAUTION: CATEGORY #3 RECLAIMED WATER—DO NOT DRINK.") For all pipes, the warning shall be located on opposite sides of all pipes and repeated every three feet (3') or less, pursuant to OAC 252:656-27-4.

## Certified Operator Required

Suppliers shall have at least one certified operator employed at all times for each water reuse system. Operators shall be certified pursuant to OAC 252:710 Waterworks and Wastewater Works Operator Certification.

## Inspections

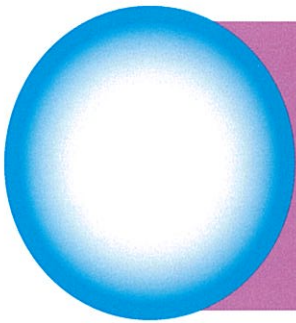
A supplier may become approved by DEQ to inspect the supplier's users' storage and distribution systems in lieu of DEQ performing the inspections. The application requirements to set up a user inspection program are pursuant to OAC 252:627-1-5(f). The supplier's inspector must have completed a DEQ approved water reuse training class. Water reuse systems will be charged an additional \$50.00 per user as part of their annual fee, if the supplier does not have a DEQ approved inspection program.





## Monthly Operating Reports (MORs)

Suppliers shall complete DEQ Form 627-001 "Water Reuse System Monthly Operation Report" for each month. The MORs for Categories 2 and 4 shall be submitted to DEQ by the fifteenth (15th) day of the following month. All suppliers of reclaimed water for all categories shall maintain MORs on-site for three (3) years and make them available for review by DEQ upon request.



## Annual Fee for Suppliers

Category 2- \$700.00

Category 3- \$400.00

Category 4- \$200.00

Category 5- \$100.00

Water reuse systems will be charged an additional \$50.00 per user if the supplier does not have a DEQ approved inspection program.



**Table 1**

Category	Treatment Required	Uses
1		
2	<p>Secondary treatment, nutrient removal, coagulation, filtration, turbidimeters, and disinfection. Disinfection by chlorination or a combination of UV and chlorination in accordance with OAC 252:656-21; 656-3-4(b) (7)(C) and shall achieve 5-log removal or inactivation of Adenovirus type 15 and Salmonella typhimurium and 3-log removal or inactivation of Giardia lamblia.</p>	<p>Category 2 reclaimed water shall only be allowed for uses in Categories 3, 4, 5, and: Drip irrigation on orchards or vineyards; spray or drip irrigation on sod farms, public access landscapes and public use areas/sports complexes, including unrestricted access golf courses; toilet and urinal flushing; fire protection systems; commercial closed-loop air conditioning systems; vehicle and equipment washing (excluding self-service car washes); and range cattle watering.</p>
3	<p>Secondary treatment, nutrient removal, and disinfection. The disinfection by chlorination shall be in conformance with OAC 252:656-21 at point of entry into the distribution system.</p>	<p>Category 3 reclaimed water shall only be allowed for uses in Categories 4, 5, and: Subsurface irrigation of orchards or vineyards; restricted access landscape irrigation; irrigation of livestock pasture; concrete mixing; dust control; aggregate washing/sieving; new restricted access golf course irrigation systems; industrial cooling towers and once-through cooling systems; and restricted access irrigation of sod farms.</p>
4	<p>Primary treatment, disinfection, and storage detention time. The disinfection shall be in conformance with OAC 252:656-21 at point of entry into the distribution system. The storage detention time following primary treatment shall be in accordance with OAC 252:656-25-2(g).</p>	<p>Category 4 reclaimed water shall only be allowed for uses in Categories 5 and: Soil compaction and similar construction activities; and existing restricted access golf course irrigation systems utilizing water that has received primary treatment in lagoon systems. Permits to construct shall not be issued for new Category 4 restricted golf course irrigation systems pending further research and evaluation of performance data collected from existing systems.</p>
5	<p>Primary treatment</p>	<p>Category 5 reclaimed water shall only be allowed the following uses: Restricted access pasture irrigation for range cattle; restricted access irrigation of fiber, seed, forage and similar crops; and irrigation of silviculture.</p>

<sup>1</sup>The daily mean operating filter effluent turbidity (continuously monitored) is calculated as the average of turbidity measures at  $\leq 1.2$  hour intervals over 24 hours, and must be reported monthly.

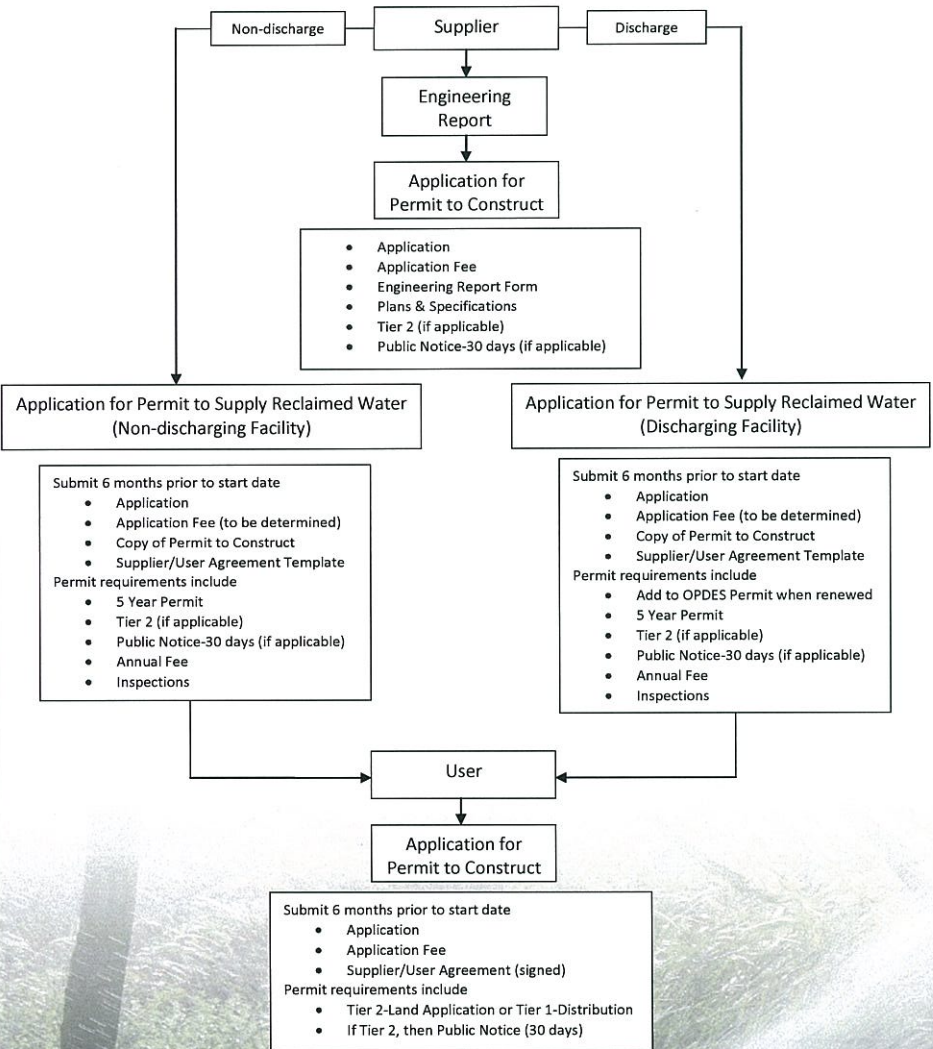
<sup>2</sup>The maximum 24 hour turbidity must be based on highest measure from continuous monitoring taken at  $\leq 1.2$  hour intervals over 24 hours.



Testing Frequency	Limits	MORs
Reserved	Reserved	Reserved
Turbidity: Continuous	Turbidity shall not exceed the following: <ul style="list-style-type: none"> <li>• Daily average 2 NTU<sup>1</sup></li> <li>• 5 NTU &gt; 5% of the daily maximum per month<sup>2</sup></li> <li>• 10 NTU at any time</li> </ul>	Supplier Submit MORs to DEQ
Chlorine disinfection at POE: Continuous	(1) Free available chlorine residual shall always be <u> 1.0 ppm</u> at POE to distribution system and following any subsequent storage or treatment  <b>OR</b> The chlorine residual at the POE to the distribution system and following any subsequent storage or treatment shall be at a level to prevent growth of slime and regrowth of pathogens in the distribution and storage systems as determined by an approved chlorine decay rate model pursuant to OAC 252:656-3-4(b)(7)(C)  <b>AND</b> (2) Free available chlorine residual at the end-of-pipe shall always be <u> 0.20 mg/l</u>  <b>OR</b> Combined chlorine residual at the end-of-pipe shall always be <u> 0.50 mg/l</u>	
Chlorine disinfection at end-of-pipe: Daily		
Fecal Coliform: Daily	Fecal Coliform: No detectable fecal coliform organisms in four of the last seven daily samples, single sample maximum <u> 23 cfu/100 ml</u>	
Nitrogen/Phosphorus: Monthly	<u> </u> most stringent agronomic rate	
CBOD5: Weekly	< 5.0 mg/l	
Chlorine disinfection: Every 12 Hours	Free available chlorine residual at the POE to the distribution system and following any subsequent storage or treatment shall always be <u> 0.20 ppm</u>  <b>OR</b> Combined chlorine residual at the POE to the distribution system and following any subsequent storage of treatment shall always be <u> 0.50 mg/l</u>	Supplier Maintain MORs On Site
Fecal coliform: 3 per Week	<ul style="list-style-type: none"> <li>• Monthly geometric mean of &lt;200 cfu/100 ml</li> <li>• Single sample maximum &lt; 400 cfu/100 ml</li> </ul>	
Nitrogen/Phosphorus: Monthly	<u> </u> most stringent agronomic rate	
BOD5 or CBOD5: Weekly	< 20 mg/l	
Fecal coliform: Weekly	<ul style="list-style-type: none"> <li>• Monthly geometric mean of &lt;200 cfu/100 ml</li> <li>• Single sample maximum &lt; 800 cfu/100 ml</li> </ul>	Supplier Submit MORs to DEQ
Chlorine disinfection: Daily	Free available chlorine residual at the POE to the distribution system and following any storage or treatment shall always be <u> 0.20 ppm</u>  <b>OR</b> Combined chlorine residual at the POE to the distribution system and following any subsequent storage or treatment shall always be <u> 0.50 mg/l</u>	
Dissolved oxygen: Weekly	> 2.0 mg/l	
	None	Supplier Maintain MORs On Site

Figure 1.

# Water Reuse Permitting Process



# Definitions

**Supplier** means a person or entity that treats and provides reclaimed water pursuant to a permit issued by DEQ.

**User** means a person or entity that uses reclaimed water. In those instances in which the supplier and the user are the same entity, the entity is a "supplier" subject to the provisions of OAC 252:627 Water Reuse.

**Reclaimed water** means wastewater that has gone through various treatment processes to meet specific water quality criteria with the intent of being used in a beneficial manner.

**Water reuse system** means a treatment and distribution system designed to treat and supply reclaimed water.

**MOR** means Monthly Operation Report.

**Lagoon** means a soil or lined basin, either below or above ground level, that is designed, maintained and operated to store, recycle and/or treat wastewater.

All forms required for Water Reuse are located at:

[www.deq.state.ok.us/wqdnew/forms.html](http://www.deq.state.ok.us/wqdnew/forms.html).

All applications, engineering reports, plans and specifications, and other documentation are to be submitted to:

*Water Quality Division  
Oklahoma Department of Environmental Quality  
P.O. Box 1677, 707 N. Robinson  
Oklahoma City, OK 73101-1677  
405-702-8100  
[www.deq.state.ok.us](http://www.deq.state.ok.us)*