This presentation premiered at WaterSmart Innovations

watersmartinnovations.com

watersmart
INNOVATIONS

Private Sewer Utilities – Filling the Void

Anish Jantrania
Craig Goodwin

OUTLINE

- “The Void” – what, why, where, is it?
- Decentralized Wastewater Systems
- Land Use Planning w/ Decentralized Systems
- Management of Decentralized Systems
- Real World Examples
- Questions / Discussion

Sustainable Water and Wastewater Infrastructure
… for Today and Tomorrow.

The Void

Poorly maintained conventional septic systems

Responsibly managed centralized treatment plants

Centralized Collection and Treatment Systems - POTWs with NPDES Permits

Size (MGD)	Numbers
0.01 - 0.10	5,983
0.11 - 1.00	6,589
1.01 - 10.0	2,427
> 10	446
Other	146
Total	15,591

Total flow ~ 29 BGD

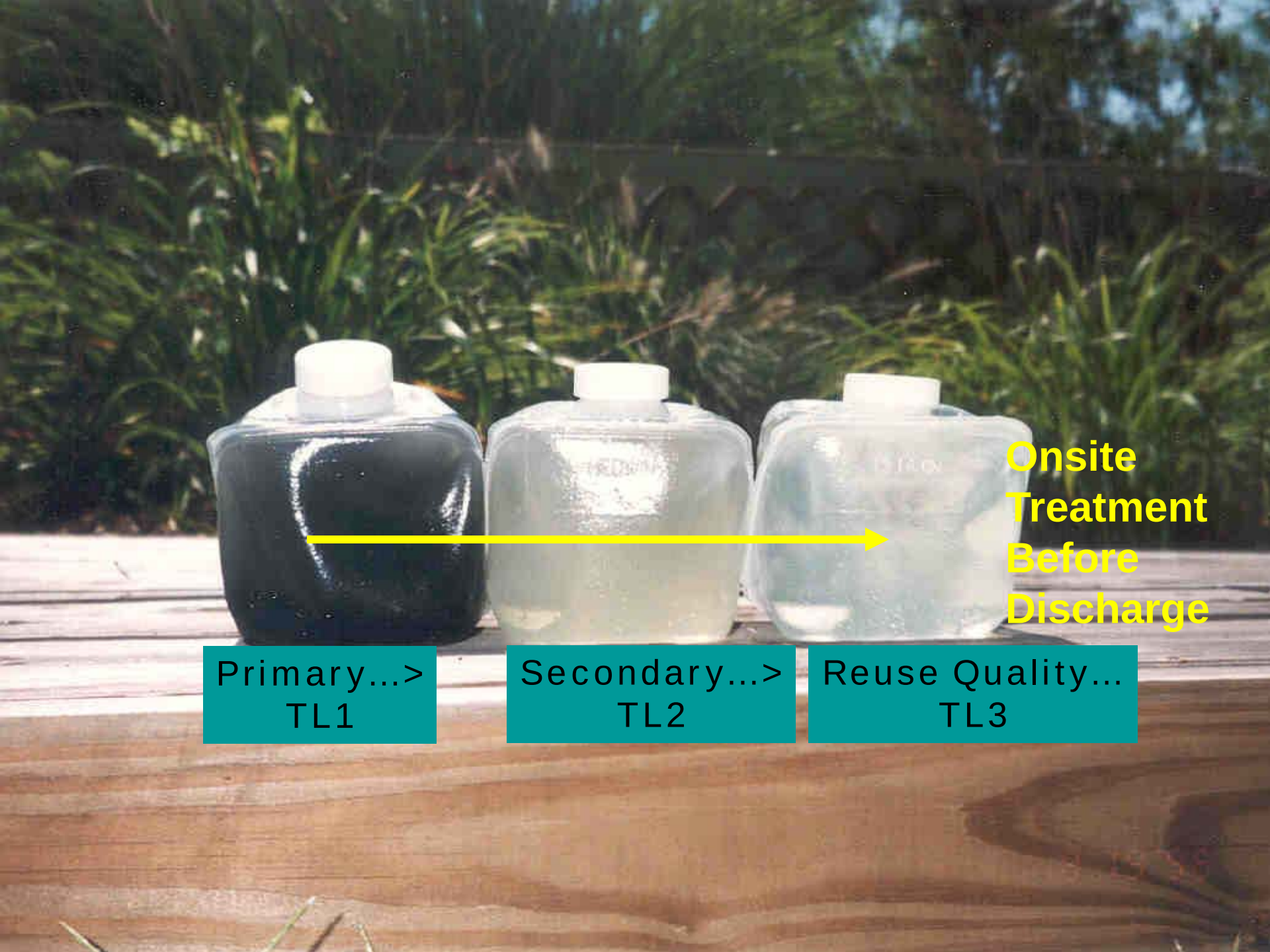
Ref: Wastewater Engineering
Metcalf & Eddy
Third Edition.

Onsite Wastewater Treatment

Effluent quality from an irresponsibly managed septic tank…..

Effluent quality from a responsibly managed septic tank…..

* Approximately 25 millions dwellings use “septic systems” that discharges ~ 3 BGD effluent disperse in soil/land based systems.
* 37% of new constructions do not have access to centralized systems.


Onsite
Treatment
Before
Discharge
Primary...>
TL1
Secondary...>
TL2
Reuse Quality...
TL3

The Void

Poorly maintained conventional septic systems

Responsibly managed **decentralized** systems

Responsibly managed centralized treatment plants

The Void

Poorly maintained conventional septic systems

Responsibly managed **decentralized** systems

Responsibly managed centralized treatment plants

Decentralized Approach

New Homes

Existing Communities

Existing Homes

New Communities

Decentralized Approach

Wastewater management approach that is not a centralized approach, i.e., not a typical sewer, treatment plant, and discharge approach;

Decentralized wastewater system that IS operated and maintained by a Responsible Management Entity (RME) just like a centralized sewer system;

Decentralized Approach Manages wastewater at or near the source ("On-Site");

The Source can be residential and/or commercial and/or industrial;

Decentralized Approach

Wastewater IS treated before discharge to meet effluent quality necessary for discharge into the receiving environment of the project site;

Effluent is dispersed typically underground (trench, bed, drip, mound) or on top of ground (spray, greenhouse);

LAND is the receiving environment as opposed to surface water;

Collection, treatment, and dispersal technologies are managed by RME (public or private).

Decentralized Technologies

Wastewater Collection

Gravity Sewer

Pressure Sewer

Vacuum Sewer

Effluent Sewer

Wastewater Treatment

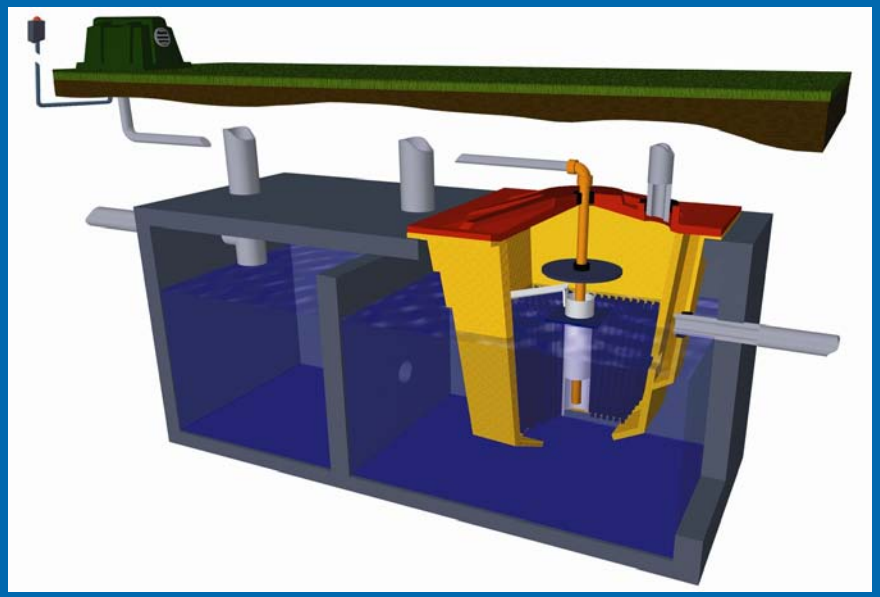
Septic Tanks
Aerobic Systems
Advanced Aerobic Systems
Natural Systems
Disinfection Systems
Waterless Toilets
Grey water System
HE Distillation System
Engineered Neno-particles?

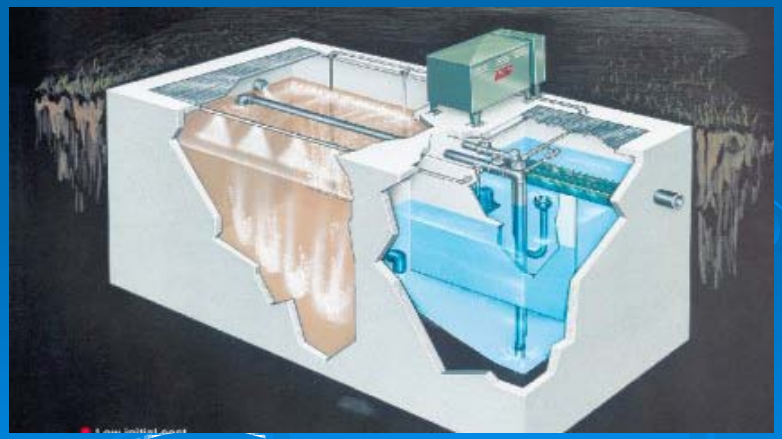
Effluent Management

Trenches
Drip
Spray
Filter bed
Evapo-Transpiration Bed
Greenhouse
Indoor Reuse
Outdoor Recycle

With these tools available, we can find decentralized wastewater solution for ANY given site as long as $$$$$ is available!

Suspended Growth Systems – *"ATUs"*





Attached Growth Systems – *"Media Filters"*

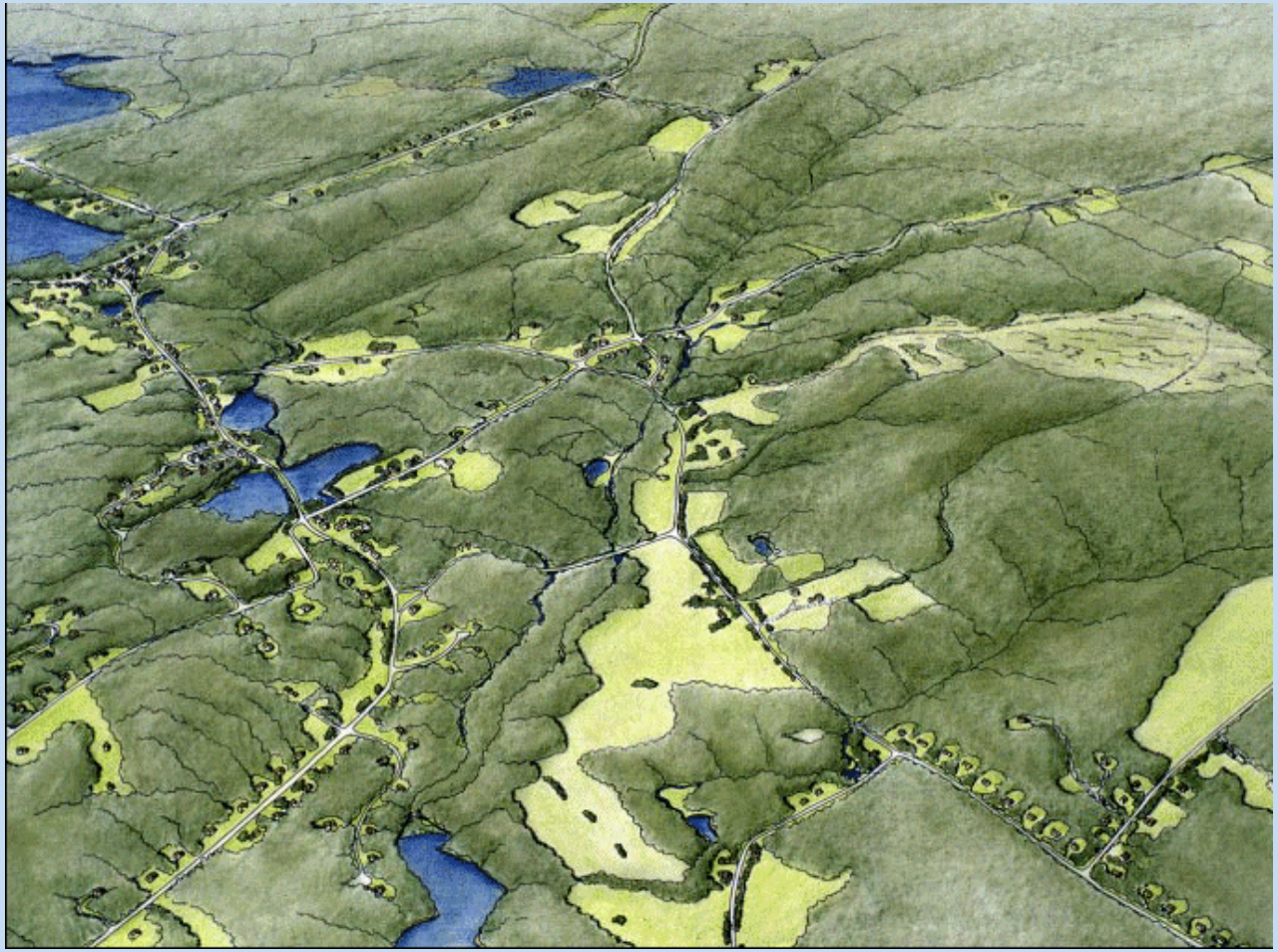
Attached Growth Systems – *"Media Filters"*

LAND USE PLANNING CONSIDERATIONS

- Watershed Goals
- Public Health
- Transportation
- Cultural Resources
- Fish & Wildlife Resources
- Recreation
- Schools
- Social Services
- Employment
- Farmland Resources
- Economic Development Goals and Costs

Planning with Decentralized Technologies

Undeveloped Land Needing Wastewater Infrastructure



Water & Wastewater Infrastructure Choices

When Access to Central Sewer is NOT available:

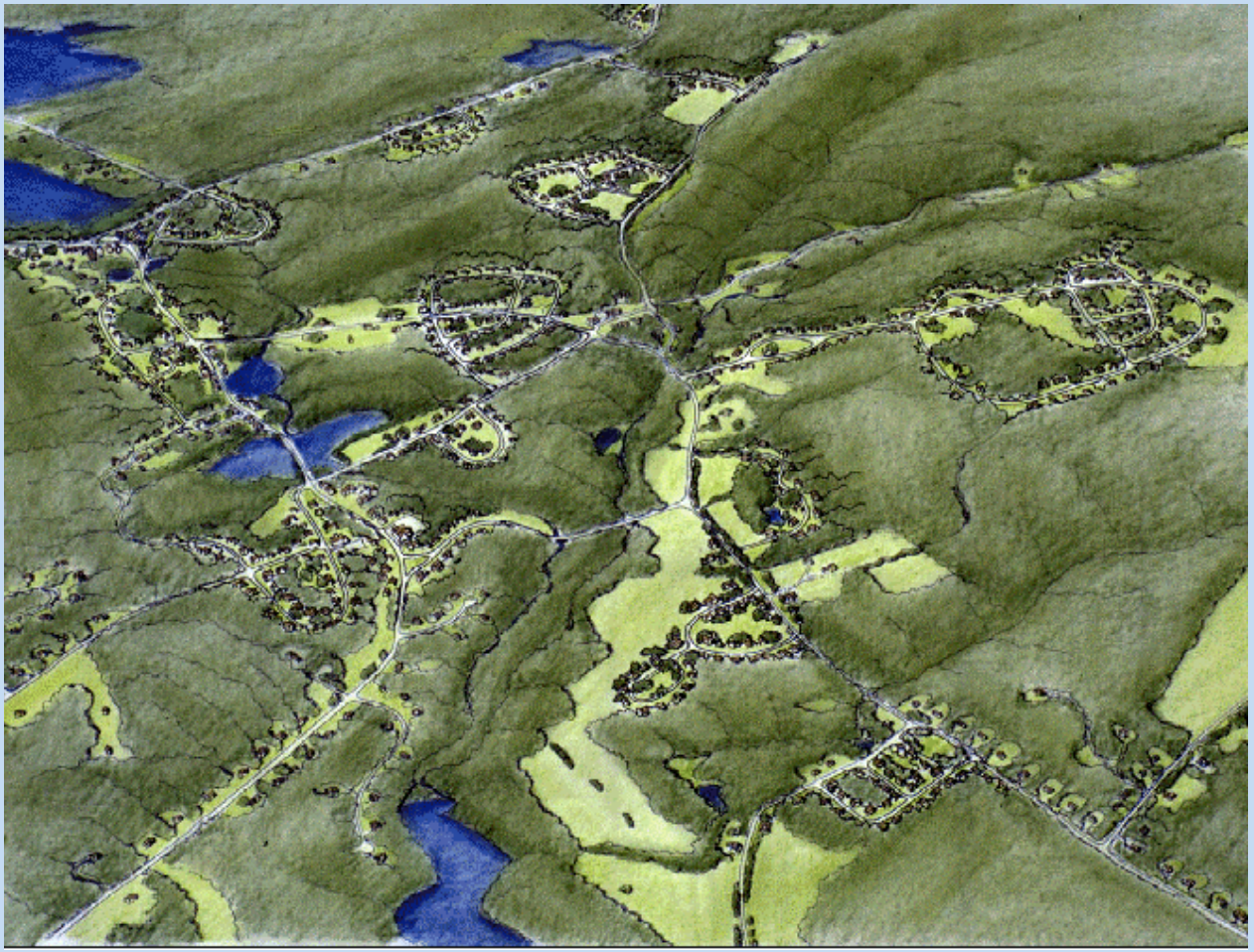
- **Home Based (e.g., well & septic)**
- **Managed Decentralized Based**
  - **Subdivision Based**
  - **Community Based**

Planning with Decentralized Technologies

Planning with Conventional Home Based Approach

Planning with Decentralized Technologies

Planning with Managed Decentralized Approach



Biggest Roadblocks

1. County Comprehensive Plans for Water & Sewer do not recognize Decentralized Technologies;

2. Government Utility Model Not Willing to Manage Decentralized Technologies;

3. Septic System Permitting Program Applied to Regulate Managed Decentralized Technologies.

Overcoming Road Blocks

Private (Non-Government) Utilities – Filling the Void

- Professional Management
- Charging Market Rates
- Maintenance Bond Security
  - 3 Years Operating Costs
  - Allowance for Equipment Replacement/Upgrade

Life Cycle Costs

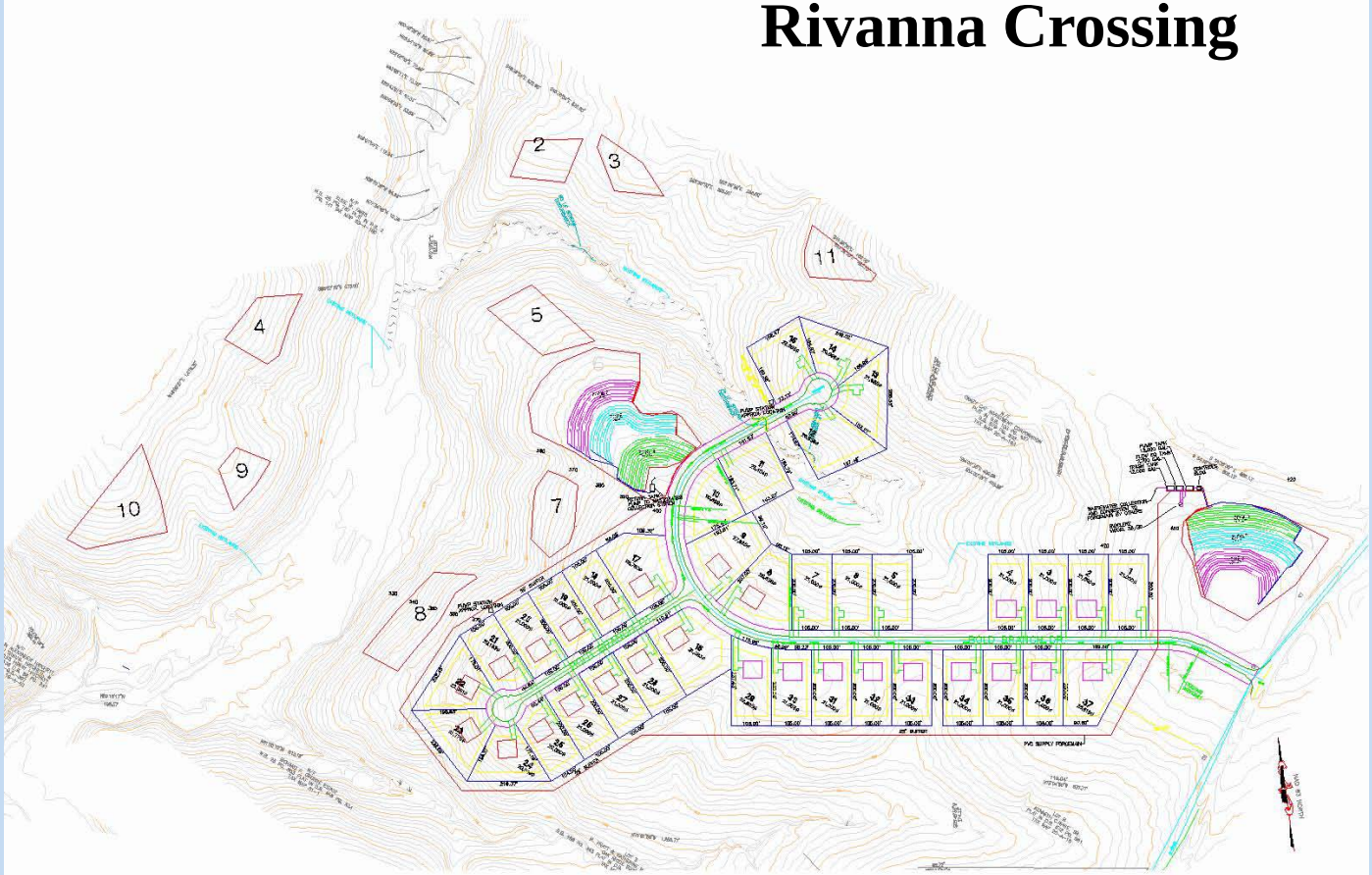
Sustainable Solutions require Informed Choices

“A Homeowners Bill of Rights”
“Sustainability Measured – Part 1”

www.ncswastewater.com

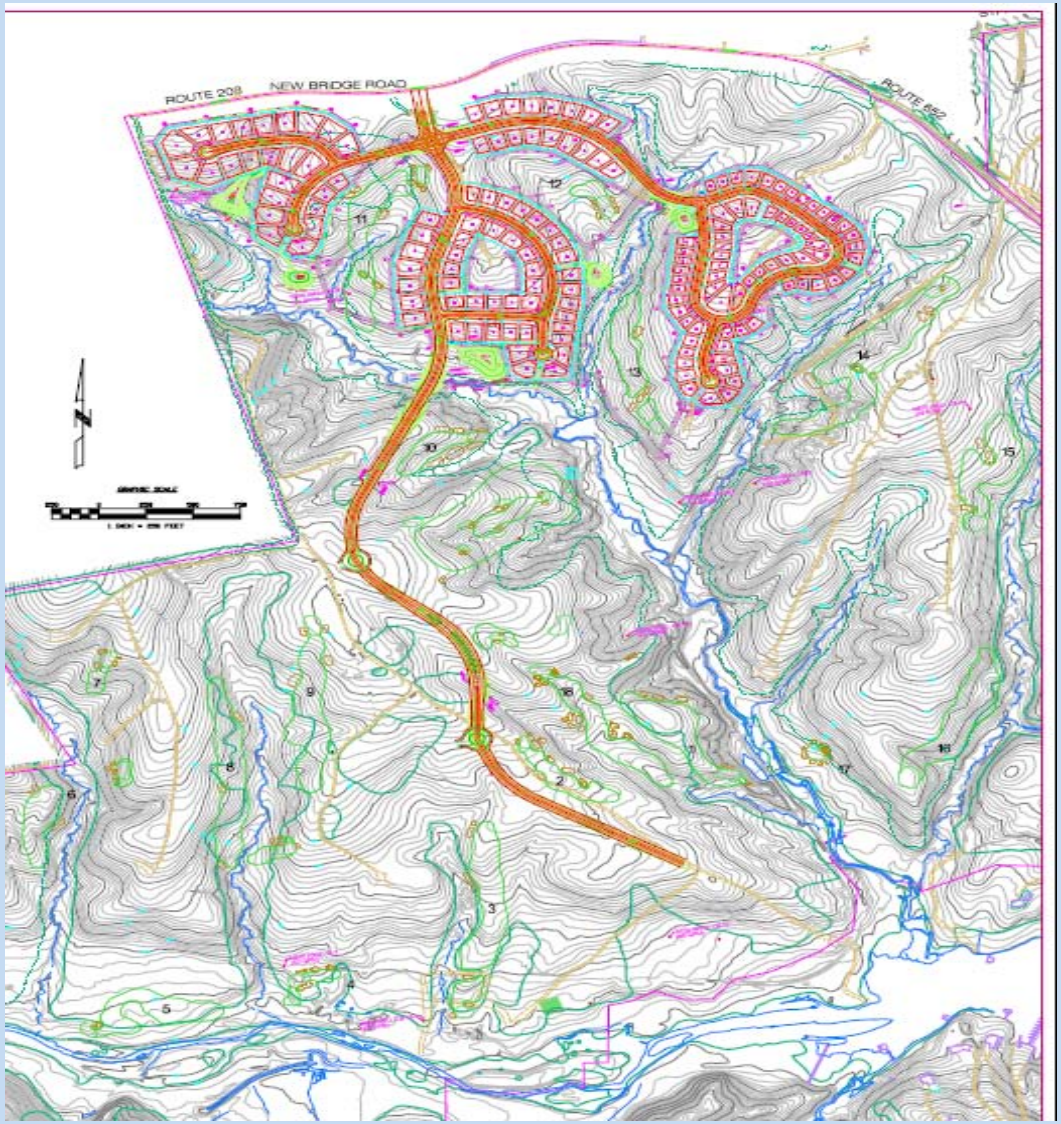
Land Conservation

Rivanna Crossing



92 acres
37 homesites
75% greenspace

Water Resource Conservation



Cutalong
Louisa County, VA

1,000 Acres
100,000 gpd Phase 1
500,000 gpd at Build Out
MBR Treatment Facility

DEQ Treatment Limits

5 BOD
5 TSS
8 TN
1 TN
2.3 Fecal
1 NTU

Land Conservation

Georgia Tech Club – Cherokee County, GA

252 Homes

STEP Collection

Drip Dispersal in Driving Range

Land Conservation

Stillwater Coves
Lincoln County, GA

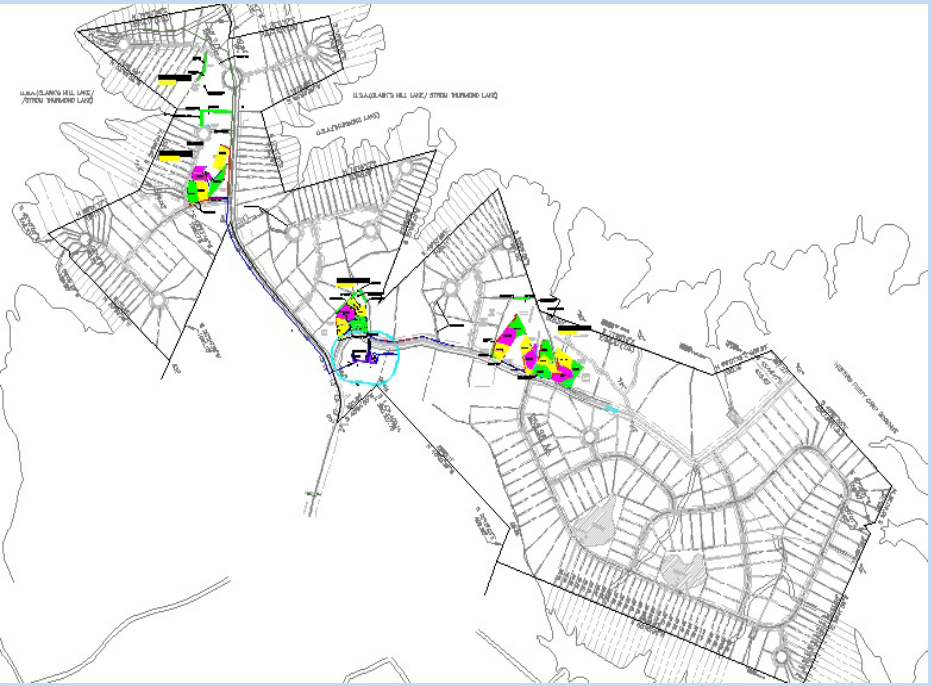
1,000 Acres
385 Homesites
18.8 Acre Dripfield

Financial Security

Stillwater Coves

116,000 GPD 18.8 Acre Drip Fields

NCS Maintenance Bond = $230,340



Private Utility Case Study

Coweta Crossroads Sewer LLC

- Formed October 2001 Coweta County GA
- 24,000 GPD permit through Georgia EPD
- 24 Tenants charged monthly rate negotiated at time of Lease Signing
- Each Tenant allocated lbs./month BOD & FOG
- $154,000 Maintenance Bond
- NCS responsible to EPD for performance

Utility Structure Why It Works

- Design/Build/Operate Accountability
- Predictable Monthly Budget for for Homeowners (no surprises or discretion)
- Regulatory Oversight of Rates
- Rates include Reserves for Replacement
- Operating Permits through the State
- States are more apt to take Enforcement Action against a Private Utility

Decentralized Approach

Summary:

1. Decentralized technologies are available now for meeting wastewater treatment and reuse needs;

2. Private (non-government) utility companies are offering wastewater services in area not served by Public (government) utility;

3. Utilities can offer wastewater services in a better efficient manner with improved regulations;

4. Decentralized approach is here to stay.

Questions / Discussion

Contact: **Anish Jantrania – 800-444-2371**
anish@nwcascade.com

Craig Goodwin – 800-444-2371
craig@nwcascade.com

www.ncswastewater.com