# Mirasol Springs
# Proposed Texas Land Application Permit

TCEQ Proposed Permit No. WQ0016335001

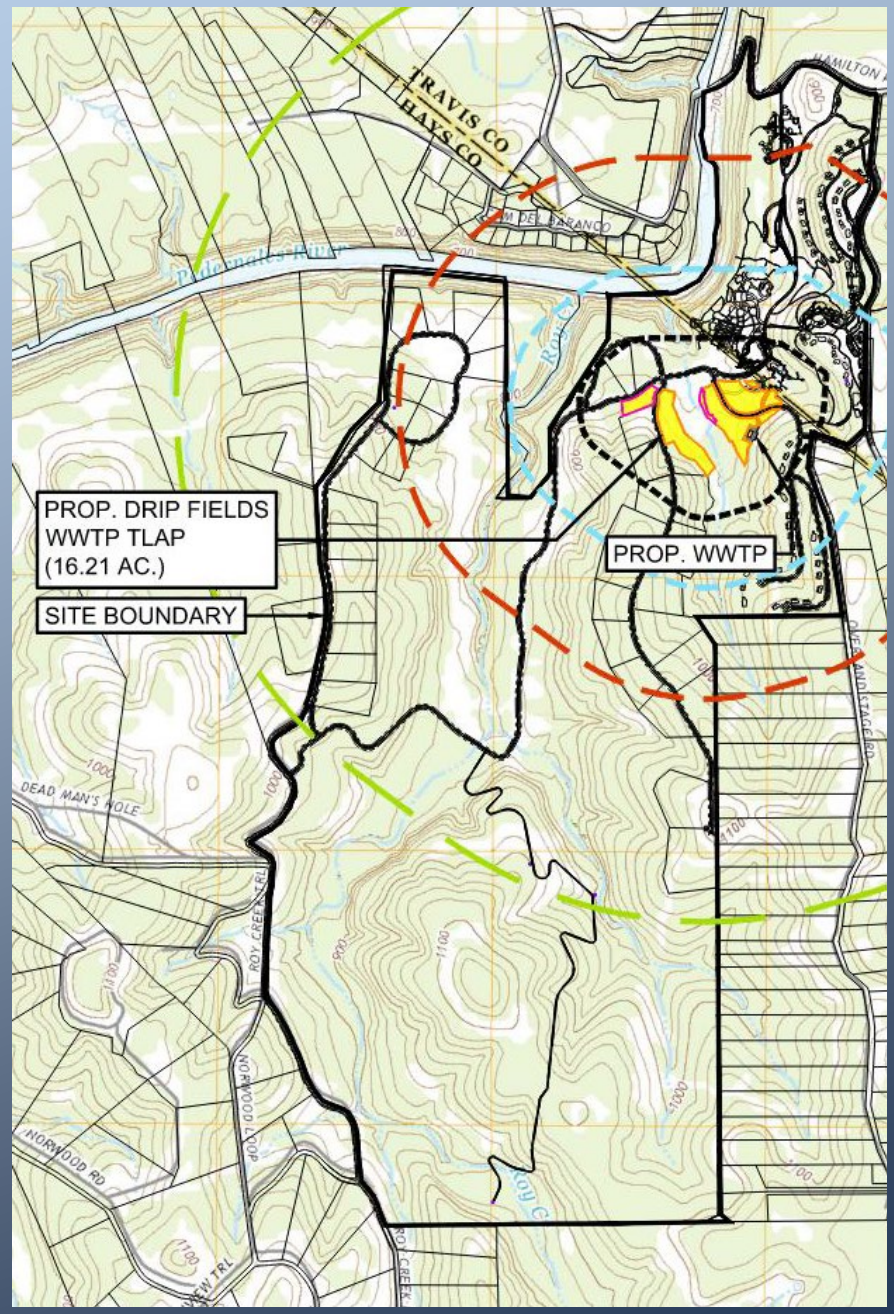
Public Meeting February 12, 2024

Dripping Springs Ranch Park

Murfee Engineering Company

# Mirasol Springs

- **Facility:** Mirasol Springs Water Reclamation Facility
- **Applicant:** Clancy Utility Holdings
- **Location:** 0.8 Miles Southwest of the intersection of Hamilton Pool Road and Stagecoach Ranch Road
- **Disposal Site:** N30° 9’46” W95° 08’18”
- **Service Area:** 1,409-acre Mirasol Springs development including a 73-key hotel, 2 restaurants, event and visitor venues, retail, 71 single-family residences




Murfee Engineering Company

# Discussion of Disposal Area Selection

- Coordination with professional geoscientists (P.G.)
- Inspection of site for karst and other recharge features
- Soils tested for depth and suitability
- Consideration of slopes and drainage paths
- Consideration of phosphorous and nitrate loading/adsorption capacities
- Maintained enhanced buffer zones

Murfee Engineering Company

# About Proposed TLAP Permit No. WQ0016335001

- 39,000 gallons per day – subsurface area drip disposal
- TLAP Areas: 16.2 acres within the Mirasol Springs Development
- Conventional activated sludge with tertiary filtration
- Sludge dewatering and dry solids hauling to processing facility
- Disinfection using chlorine
- Effluent storage for irrigation ~180,000 gallons (4.5 days)

Murfee Engineering Company

# About Proposed TLAP Permit No. WQ0016335001

- Target effluent quality:

| Constituent | Concentration |
|---|---|
| BOD5 or CBOD5 | 5 mg/l |
| Turbidity | 3 NTU |
| Fecal coliform or E. coli | 20 CFU/100 ml |
| Enterococci | 4 CFU/100 ml |

- Additional storage of effluent in tanks for use during summer months
- No discharge of effluent to nearby waters (streams, rivers, or seasonal drainage areas)
- Clancy Utility Holdings supports the TCEQ's draft permit

Murfee Engineering Company

# Additional Considerations

- Plan to apply for 30 TAC 210 Type I authorization for beneficial effluent reuse
- Proposed treatment process will produce effluent quality exceeding the minimum requirements of 30 TAC Chapter 210 Type I
- Enhanced field area results in limiting loading to approximately half the regulatory maximum
- 600,000 gallons of additional effluent storage in steel tanks

Murfee Engineering Company

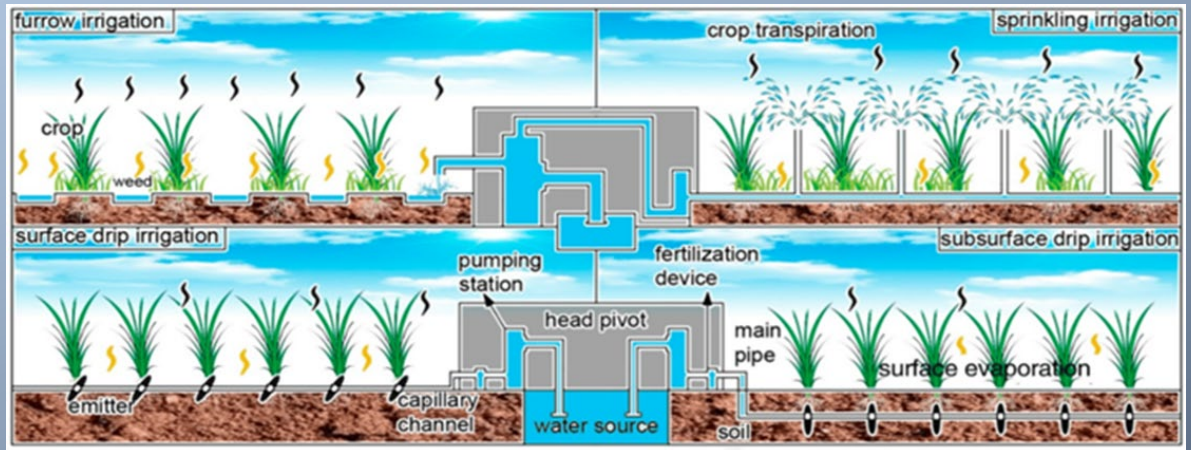
# Soil Evaluation

- Soil Evaluation completed by WWD Engineers and Texas A&M Agrilife Labs
- Found soil depth to range from 34” to 49”
- Soils contains less than 1 ppm of phosphorous and nitrate-nitrogen
- Site investigations revealed no identified karst features, outcrops, or other recharge features in the proposed TLAP area

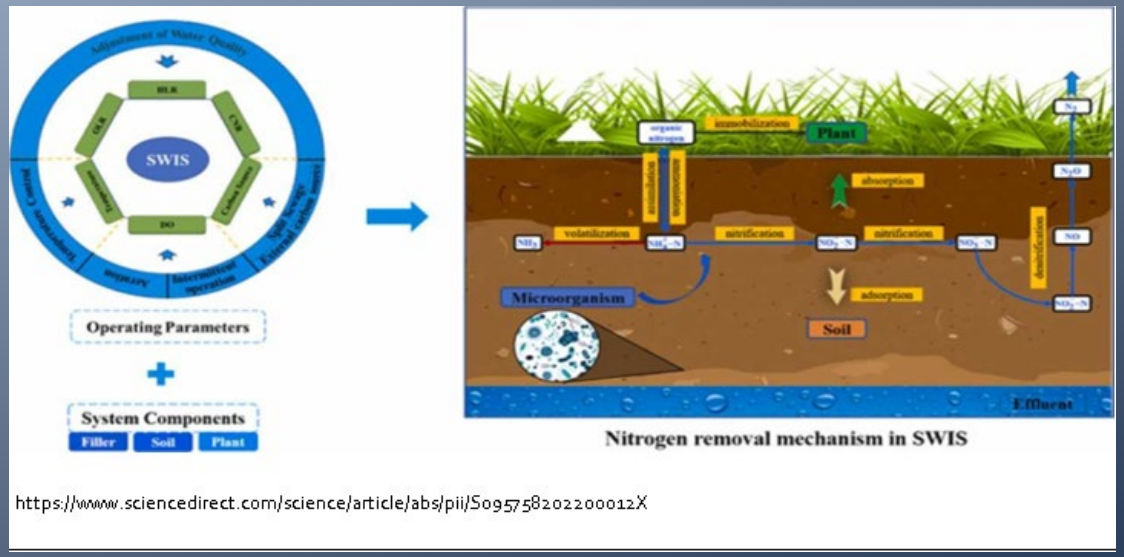
Murfee Engineering Company

# Uptake by Crops

- The goal of drip irrigation is to ensure all remaining nitrogen and phosphorous is used by either microorganisms in the soil or by the crop planted on the field




https://www.mdpi.com/2077-0472/13/7/1463



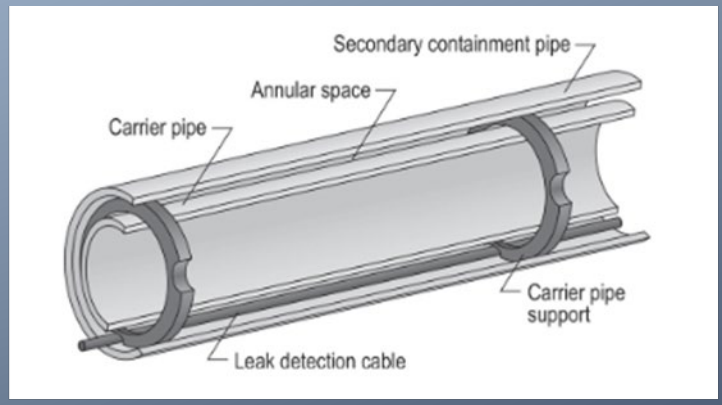

Nitrogen removal mechanism in SWIS

https://www.sciencedirect.com/science/article/abs/pii/S095758202200012X

Murfee Engineering Company

# Collection System Enhancements

- Transmission of raw wastewater from across Roy Creek, and other potentially sensitive areas, will include special considerations:
  - Dual containment piping
  - Leak detection interlocked with pump controls




https://inldigitallibrary.inl.gov/sites/sti/sti/5558900.pdf Figure 1

Murfee Engineering Company

# Anticipated Effluent Quality

- Typical Concentrations of Nutrients
  - Total Kjedahl Nitrogen ~7 mg/L
  - Nitrate-Nitrogen ~2 mg/L
  - Total Phosphorous ~1 mg/L

| Contaminant | Maximum Concentration |
|---|---|
| $BOD_5$ or $CBOD_5$ | 5 mg/l |
| Turbidity | 3 NTU |
| Fecal Coliform or E. Coli* | 20 CFU/100 ml |
| Fecal Coliform or E. Coli** | 75 CFU/100 ml |
| Enterococci* | 4 CFU/100 ml |
| Enterococci** | 9 CFU/100 ml |
| * 30-day geometric mean | |
| ** maximum single grab sample | |

30 TAC 210 Type I irrigation effluent quality requirements

# Additional Chapter 210 Type I Information

- According to 30 TAC 210, municipal reclaimed water (wastewater treatment plant effluent) may be used for either Type I or Type II Irrigation. Type I Irrigation includes:
  - Watering of Public Parks
  - Watering of School Yards
  - Watering of Residential Lawns
  - Watering of Athletic Fields
  - Fire protection
  - Food-crop irrigation
  - Application to pastures grazed by milking animals
- Ch. 210 beneficial use regulated by and subject to TCEQ enforcement
- Enforcement Options include:
  - Administrative and civil penalties
  - Injunction and administrative orders requiring remedial action

# Monitoring and Maintenance

- Regular maintenance will include:
  - Mowing
  - Checking for soil moisture
  - Testing effluent quality
  - Inspections for system damage and proper operation
- Monitoring
  - Elder Spring currently monitored for flow and quality
  - Farm Well water quality sampling effort recently started
  - Baseline water quality monitoring will continue until construction is complete
  - Continue water quality monitoring while drip fields are in use

# System Monitoring

- Lift Station
  - Flow and level sensors
  - Pressure sensors
  - Back-up generator and ATS
- Water Recovery Facility
  - Process Monitoring includes flow, level, DO, turbidity, BOD5, TSS, TVSS
  - Effluent Monitoring includes flow, chlorine residual, turbidity, TSS, BOD5, E. coli, NH3-N, phosphorous
  - Alarms for out-of-range readings
  - Back-up generator and ATS

# Environmental Buffers

- Minimum required buffers:
  - Elder Creek drainage: 100’
  - Elder Spring: 500’
  - Unnamed drainage: 100’
- Actual buffers to be maintained:
  - Elder Creek drainage: ~150’
  - Elder Spring: 500’
  - Unnamed drainage: ~110’

Murfee Engineering Company

# Mirasol Springs
# Proposed Texas Land Application Permit

TCEQ Proposed Permit No. WQ0016335001

Public Meeting February 12, 2024

Dripping Springs Ranch Park

Murfee Engineering Company