# 2. Recycled Water Basics

MCWD USER SUPERVISOR TRAINING

# Training Contents

1. **What is Recycled Water?**
    1. How is Wastewater Treated?
    2. Measurements of Safety
    3. Treatment vs Risk
2. Recycled Water Regulations
3. Our Recycled Water
4. Why Use Recycled Water?

# How is Wastewater Treated?

The two stages of traditional wastewater treatment consist of:

1. Primary treatment

   Removes 70-85 percent organic and inorganic suspended solids through **screening and settlement**

2. Secondary treatment

   Mixes **air and microorganisms** to remove the remaining suspended and dissolved solids as biomass that **settles out**

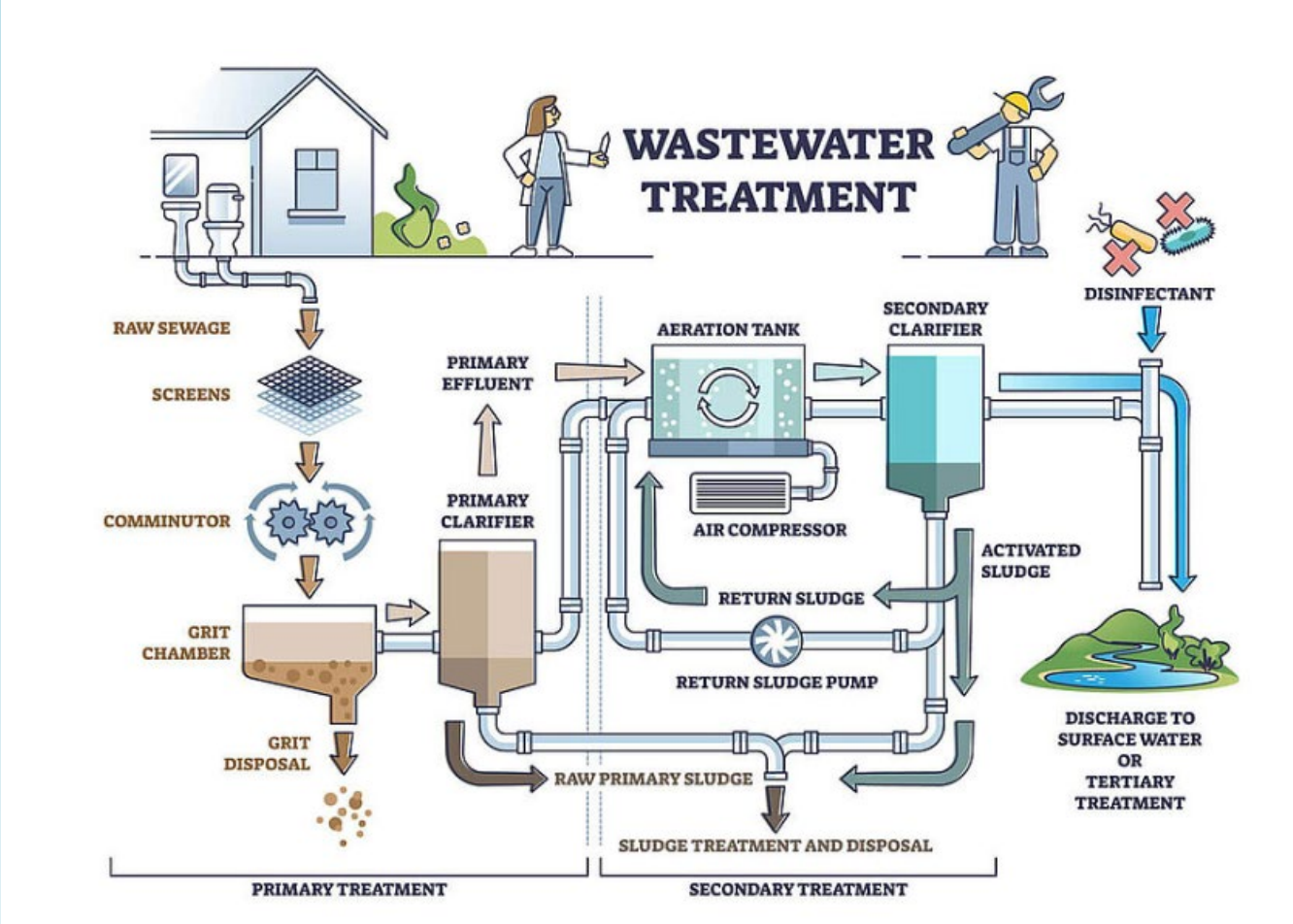


Photo on this slide courtesy of elementar

# How is Wastewater Treated?

Beyond traditional treatment, wastewater can undergo:

1. Tertiary treatment

   Further treatment removing up to 99% of impurities with **filtration and disinfection**

2. Advanced purification

   Further treatment typically involving **microfiltration, reverse osmosis, and UV light disinfection**

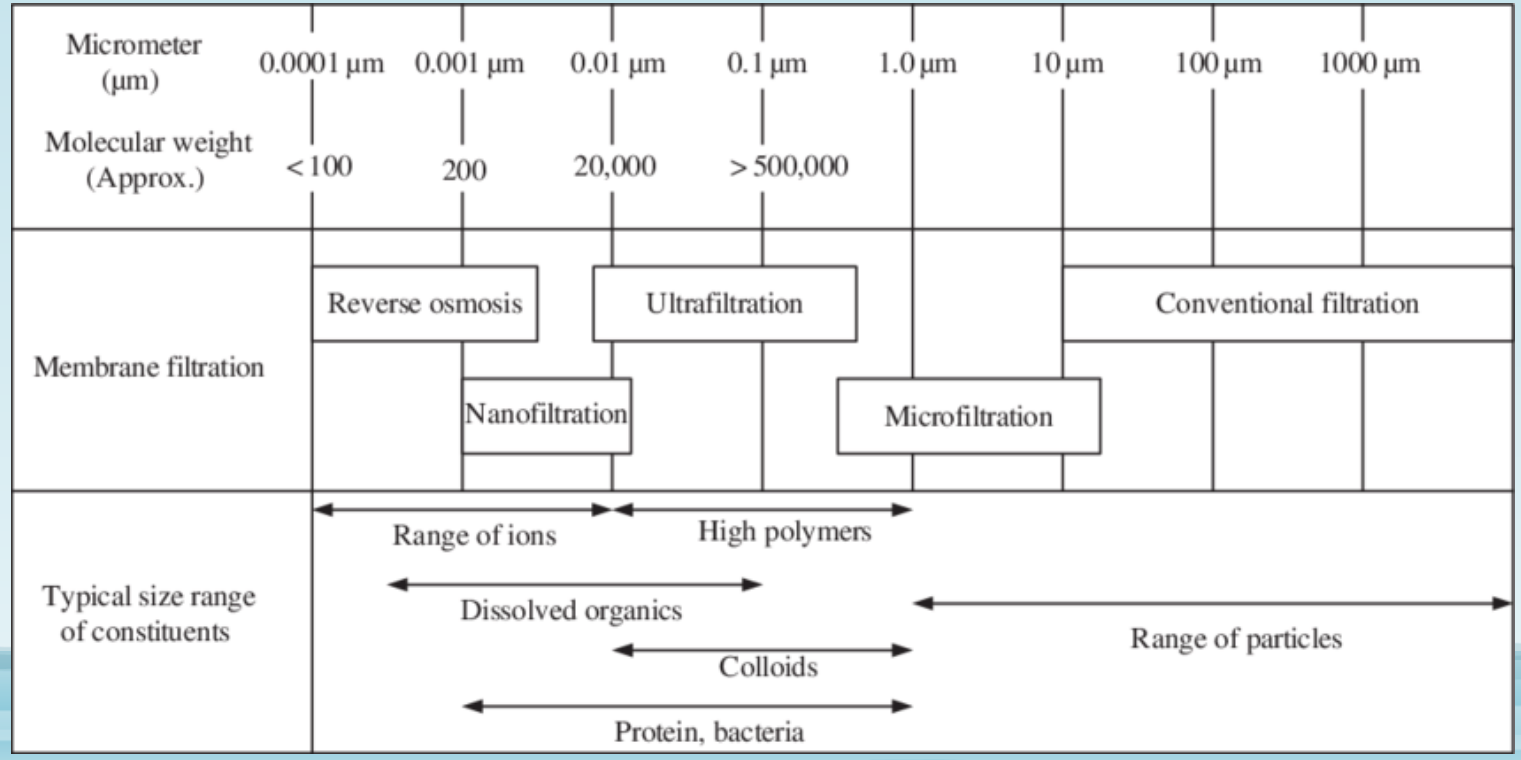


Photo on this slide courtesy of Chiam, Chel-Ken & Sarbatly, Rosalam. (2011). Purification of Aquacultural Water - Conventional and New Membrane-based Techniques.

# Measurement of Safety

- Recycled water is heavily regulated to ensure safety
- Safety is determined by microbiological characteristics of the final product water → **total coliforms**
  - Fecal coliforms from feces
- Title 22: "The median concentration of total coliform bacteria… does not exceed an MPN of 2.2 per 100 milliliters…."

Photo on this slide courtesy of WaterReuse Association

# Treatment vs Risk

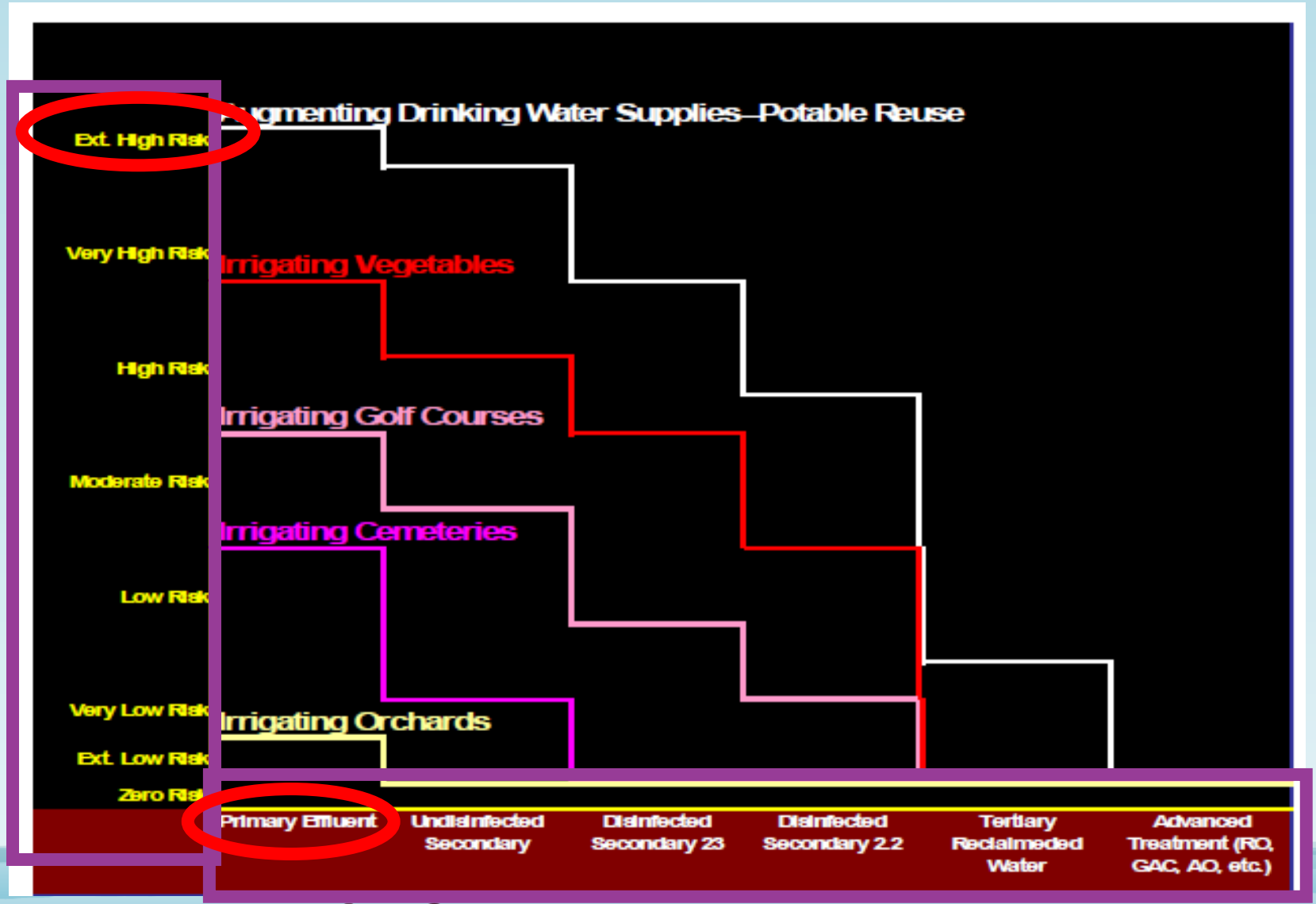


Photo on this slide courtesy of WaterReuse Association

# Training Contents

1. What is Recycled Water?
2. **Recycled Water Regulations**
    1. Regulatory Authorities
    2. Regulations
3. Our Recycled Water
4. Why Use Recycled Water?

# Regulatory Authorities

- State Division of Drinking Water (DDW)
  - Administers and enforces regulations about the protection of public health

- Central Coast Regional Water Quality Control Board (CCRWQCB)
  - Administers and enforces regulations about discharge and treatment of water waster
  - Implements State regulations and issues Agency Recycled Water Permits

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# Regulatory Authorities

- Marina Coast Water District (MCWD)
  - Is a State-approved Recycled Water Administer Agency
  - Authorizes and enforces Recycled Water Use Permits
    - Only **certain uses** of recycled water are covered under the permit


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# Regulations

1. Undisinfected secondary recycled water
    1. Oxidized wastewater
2. Disinfected secondary-23 recycled water
    1. Median MPN ≤ 23/100ml, oxidized & disinfected
3. Disinfected secondary-2.2 recycled water
    1. Median MPN ≤ 2.2/100ml, oxidized & disinfected
4. Disinfected tertiary recycled water
    1. Median MPN ≤ 2.2/100ml, chlorine CT of 90 minutes OR 99.999% polio removal, filtered & disinfected
5. **Advanced treated water** (purified water)
    1. Undergoes reverse osmosis and oxidation, under drinking water maximum contaminant levels (MCLs)


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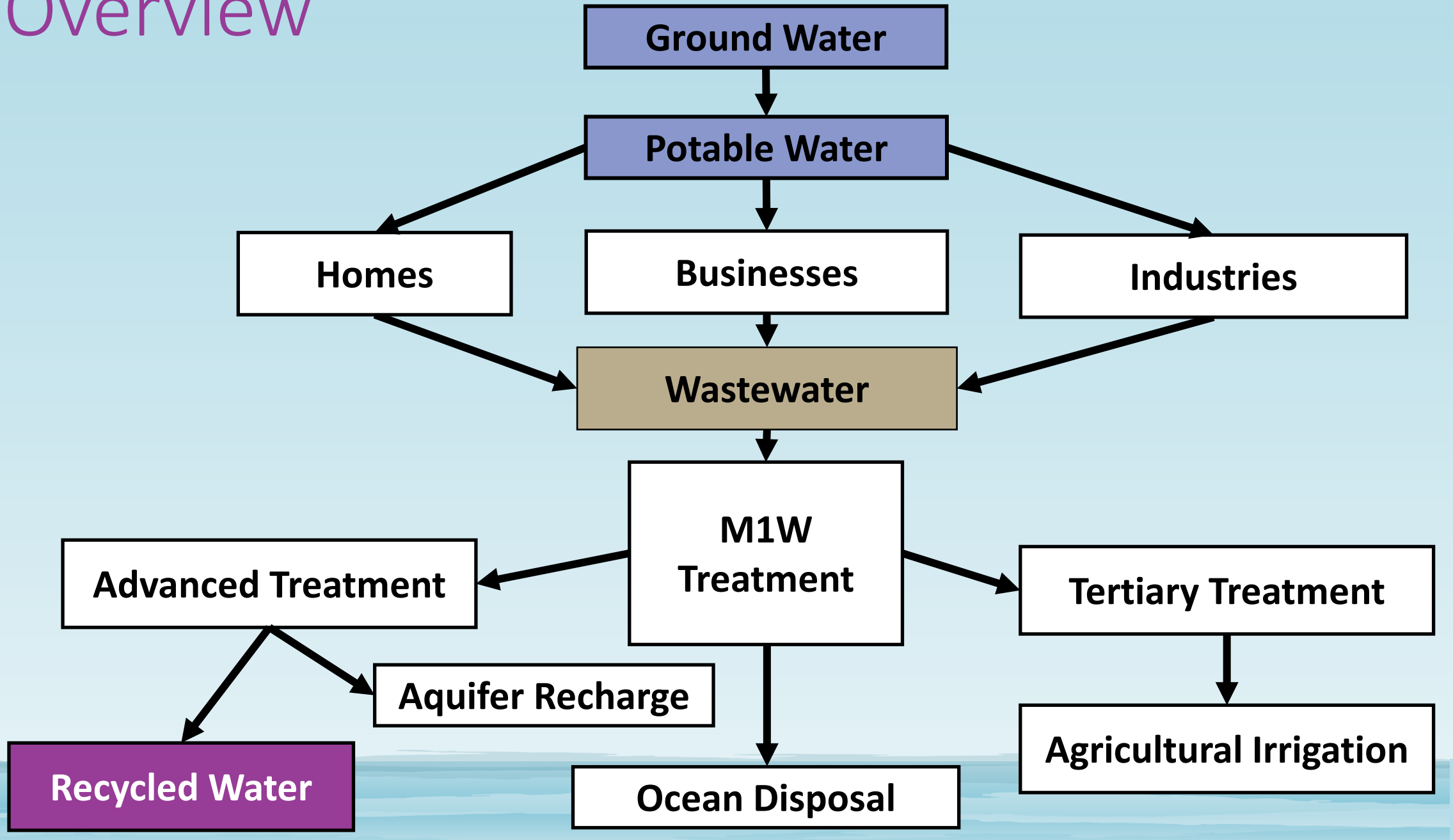
# Training Contents

1. What is Recycled Water?
2. Recycled Water Regulations
3. **Our Recycled Water**
    1. Overview
    2. M1W Treatment Process
4. Why Use Recycled Water?

# Overview


Ground Water
Potable Water
Homes
Businesses
Industries
Wastewater
M1W Treatment
Advanced Treatment
Tertiary Treatment
Aquifer Recharge
Recycled Water
Ocean Disposal
Agricultural Irrigation

# M1W Treatment Process

1. **Primary/secondary treatment**

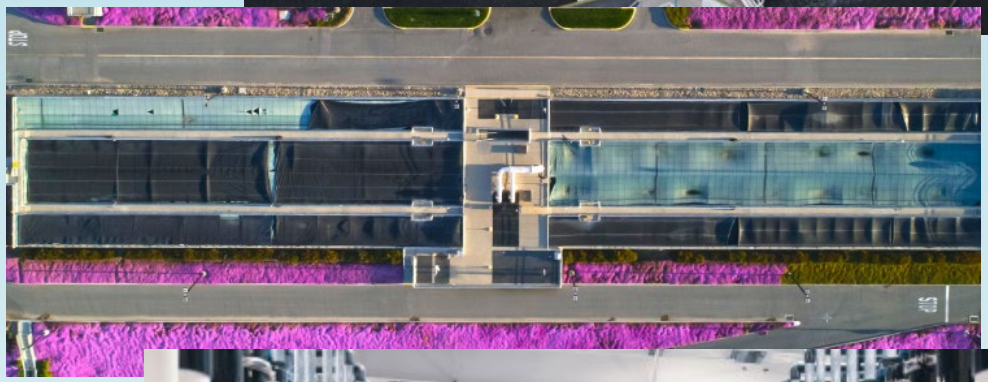
   Headworks, primary clarifiers, trickling filters, bioflocculation basins, secondary clarifiers

2. **Tertiary Treatment**

   Flocculation, tertiary filters, and chlorine disinfection

3. **Advanced Purification**

   Ozonation, microfiltration, reverse osmosis, UV disinfection + hydrogen peroxide



Monterey One Water

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MARINA COAST WATER DISTRICT

# Training Contents

1. What is Recycled Water?
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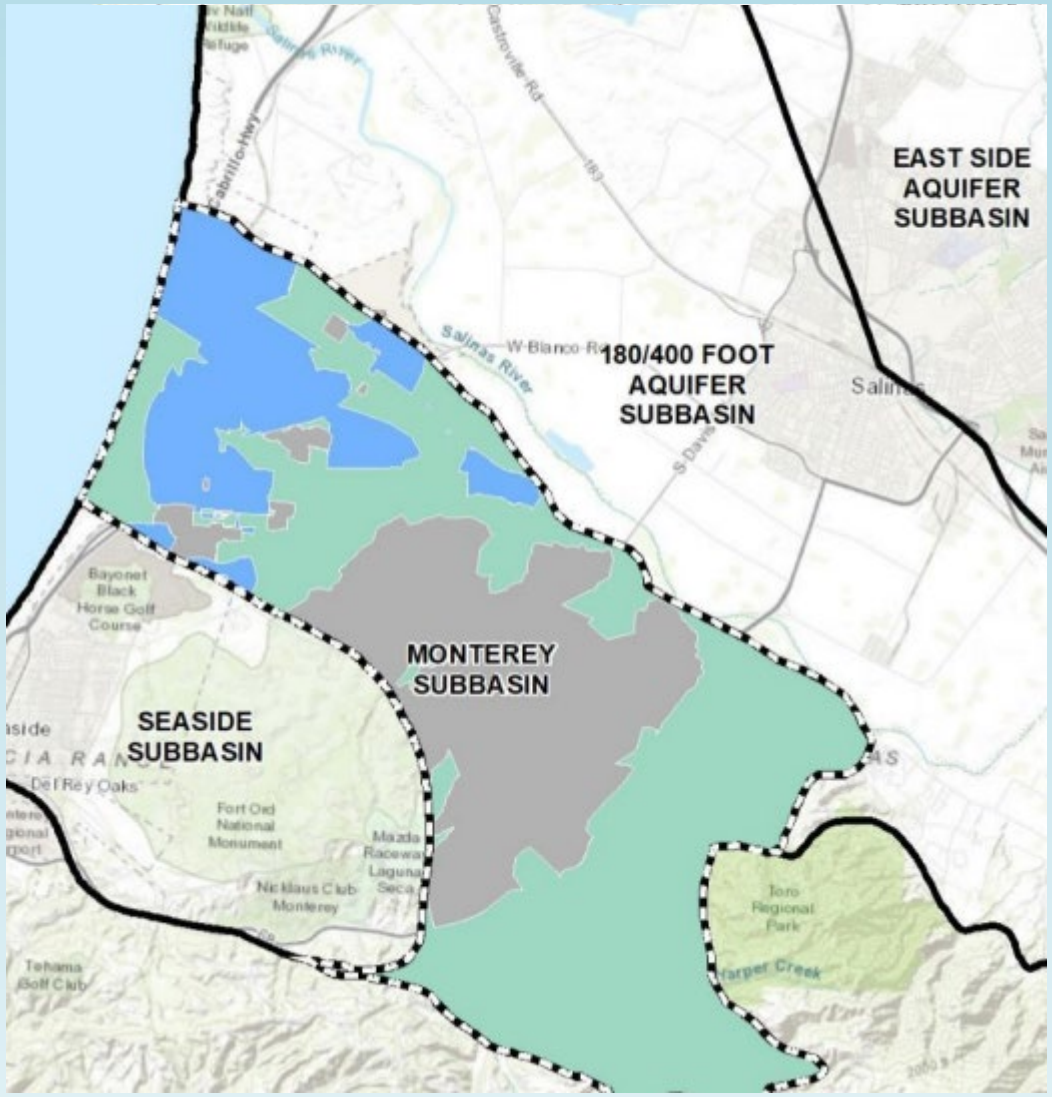
3. Our Recycled Water
4. **Why Use Recycled Water?**
    1. Groundwater
    2. Benefits
    3. Drought & Shortage

# Groundwater

1. Regulated under the Sustainable Groundwater Management Act (SGMA)
    1. Requires Groundwater Sustainability Agencies (GSAs) to manage their local aquifers
        1. Groundwater Sustainability Plan
2. Marina sits on Monterey Subbasin & 180/400 Subbasin
    1. MCWD GSA responsible for Monterey Subbasin
        1. Works with Salinas Valley Basin GSA to create sustainability plan

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# Benefits

1. **Conservation** of our local groundwater source
2. Creating a **drought-proof** and **locally sustainable water resource** for keeping landscape green during droughts and water shortage
    1. Less susceptible to drought fluctuations than traditional potable sources → less likely to lose landscaping

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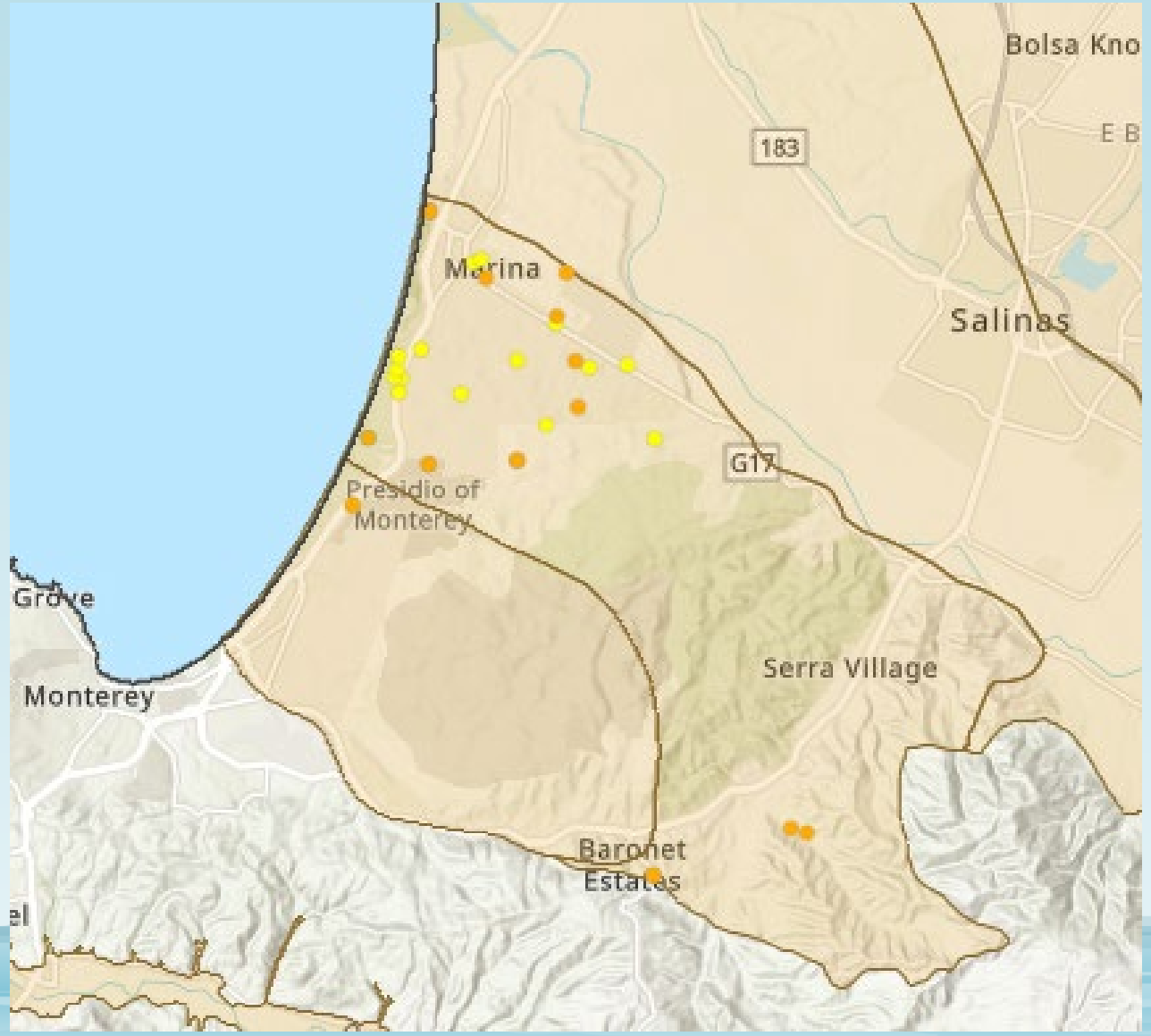
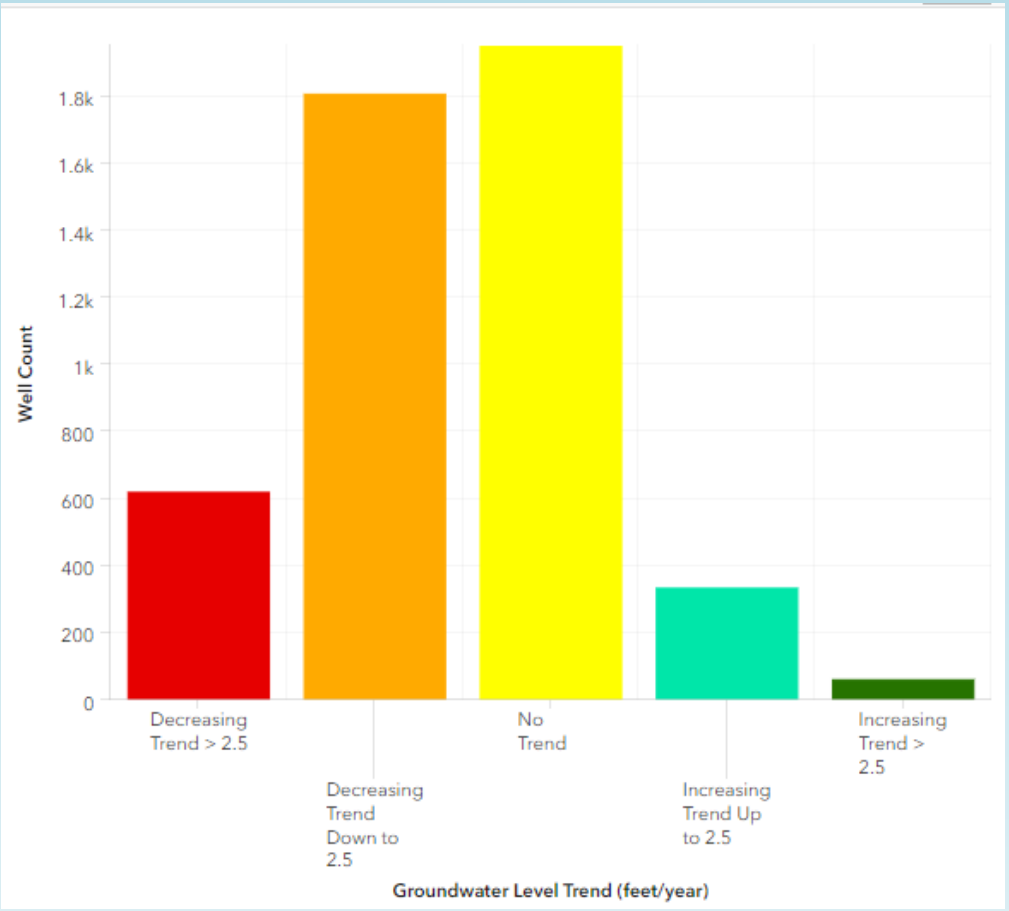
# Drought & Shortage

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# Please reach out to MCWD Engineering Department if you have any questions

**Thanks for watching our training!**

# MCWD Recycled Water - Safe, sustainable, drought-proof solutions protecting our groundwater's future

MCWD Beach Office