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Impact of Drought on Stream Aesthetics and Wastewater Treatment

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Wastewater Treatment Plants

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Decreased Inflows

- **Decreased contaminant assimilation capacity**
  - **Smaller facilities (<10,000 pop) are most vulnerable**
- **Variability in water temp affects oxygen solubility, biological reaction rates and pathogen survival**

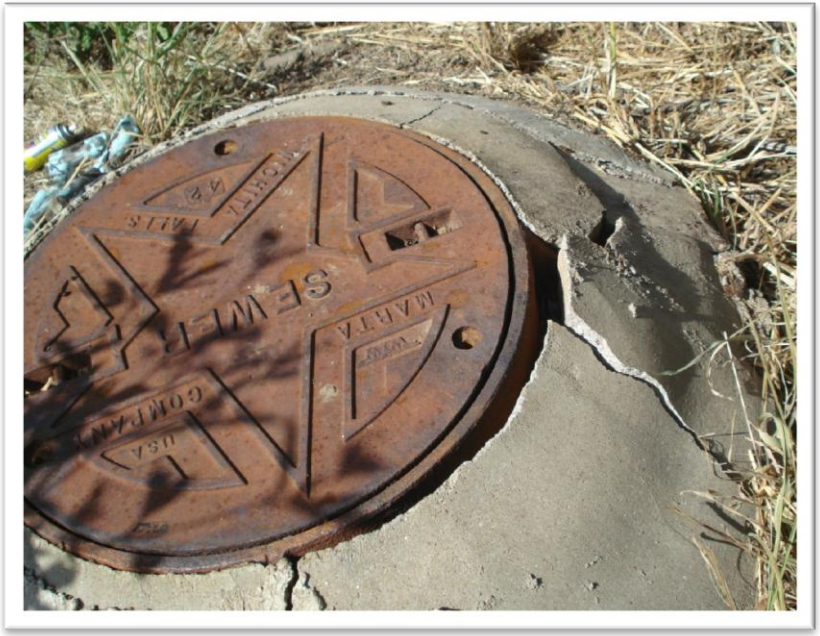
- **Influent is more concentrated:**
  - **Ammonia,**
  - **Nitrate**
  - **Phosphate**
  - **TSS**
  - **TDS**
  - **Conductivity**

Increased Water Temperatures

- Increases bacterial reaction rate – reduces density of settled sludge
- Aeration of warm water increases BOD
- Chlorination rates
- Waste activated sludge must be thickened
- Increases rate of nitrification in activated sludge systems which may lower the pH of the aeration tank and reduce growth rate of nitrifying bacteria

Structural Concerns

- Contracting soils can cause damage to underground pipes and concrete structures
- Pipe corrosion
- Accumulation of sediment in pipes
- Allow solids (plastic, rags, etc.) to accumulate at joints, bends and in junction boxes



Plant Aesthetics

- **Increased concentration of influent can create odor problems**
- **Algal growth in clarifiers**
- **Accumulation of sediment downstream of discharge**

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Drought and Wastewater

- **Misinterpretation**
- **Higher treatment costs**
- **More direct oversight by personnel**
- **Can lead to unattainable discharge standards**
  - **Loadings can reach permit limits before discharge flows**
- **Increased regulatory impact**

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Streams

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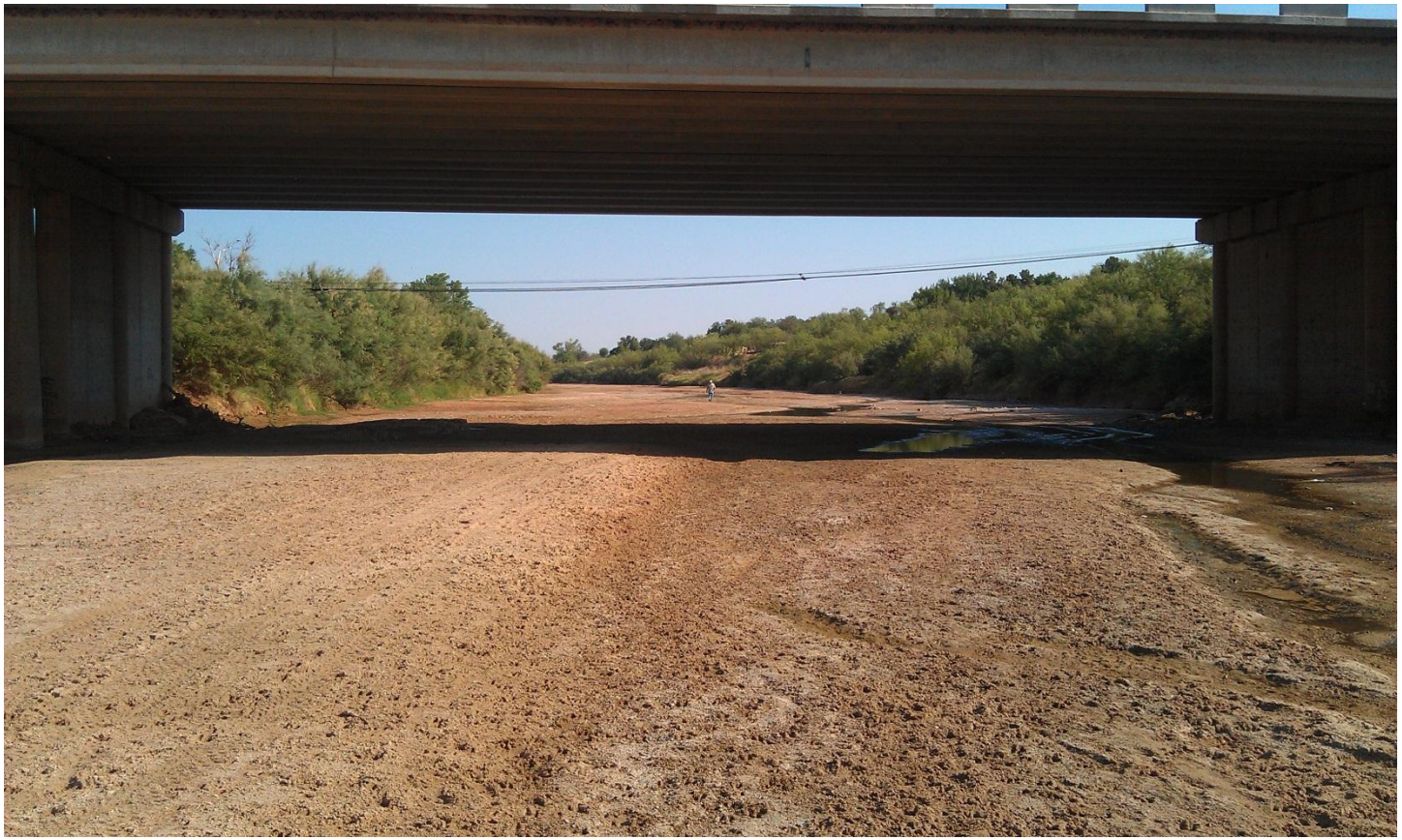
Worst Case Scenario



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Pooling and/or No Flow

- Low-dissolved oxygen
- Stagnant water
- Algal growth
- Pathogens
- Fish Kills
- Odors
- Accumulation of sediment and/or debris

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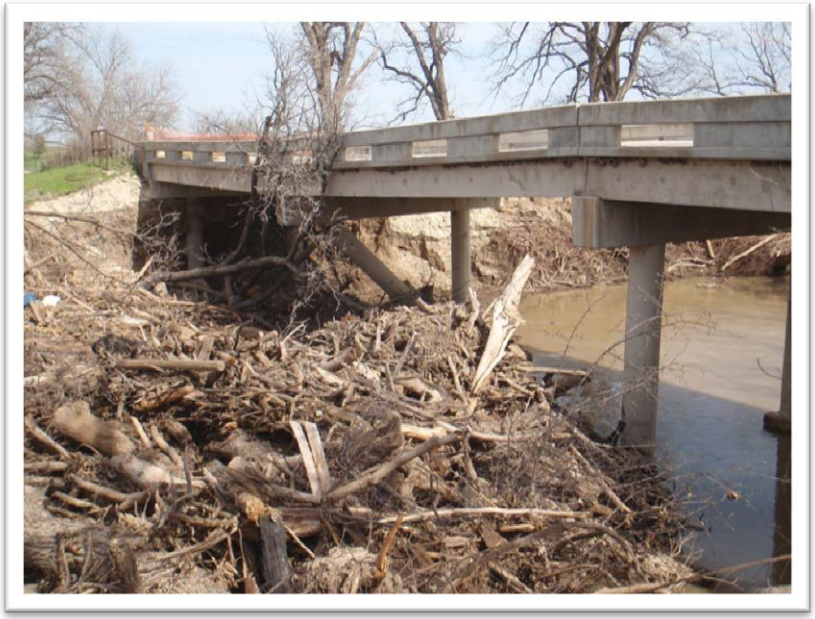
Low Flows

- **Effluent dominant**
- **Algal growth**
- **Accumulation of sediment and/or debris**
- **Odors**



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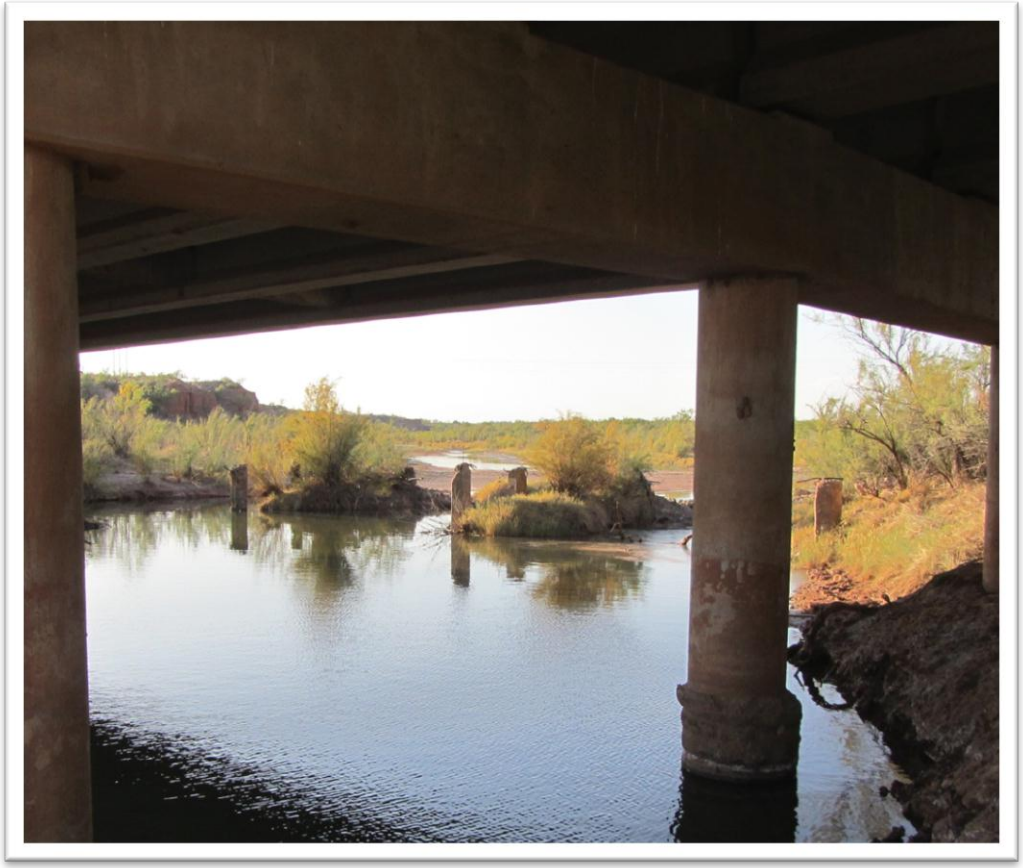
Terrestrial Vegetation

- **Exposed sediment may attract terrestrial vegetation**
- **Post drought affects**
  - **Taste and odor**
  - **Snags**



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Misinterpretation of Conditions