



Aerobic Treatment Technologies for the Wine Industry

**Winery FAST[®] &
Floating FAST[®]**

Presented by:

Joe Gill

Smith & Loveless New Zealand, Ltd.



Smith & Loveless Inc.

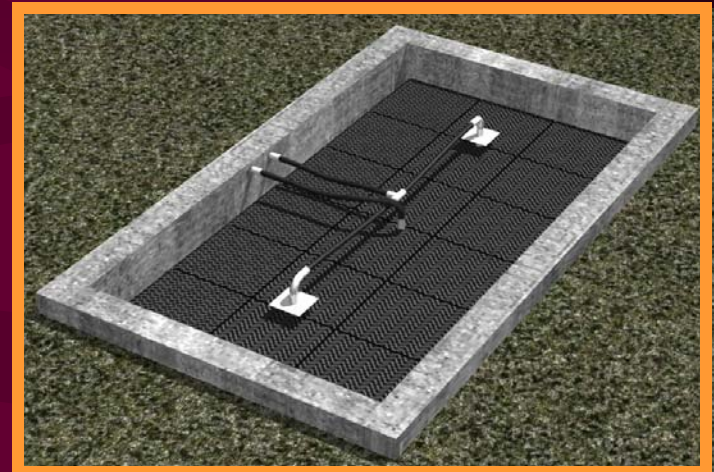
- **Founded 1946**
- **Based in Kansas City**
- **Manufacturing Locations in Kansas, Missouri and California**
- **Design & manufacture water, wastewater & pumping systems**
- **30,000+ Installation on all seven continents**



S&L FAST[®] Systems for Wineries

Winery FAST

Land-Based Wastewater Pretreatment



Floating FAST

In-Pond Treatment

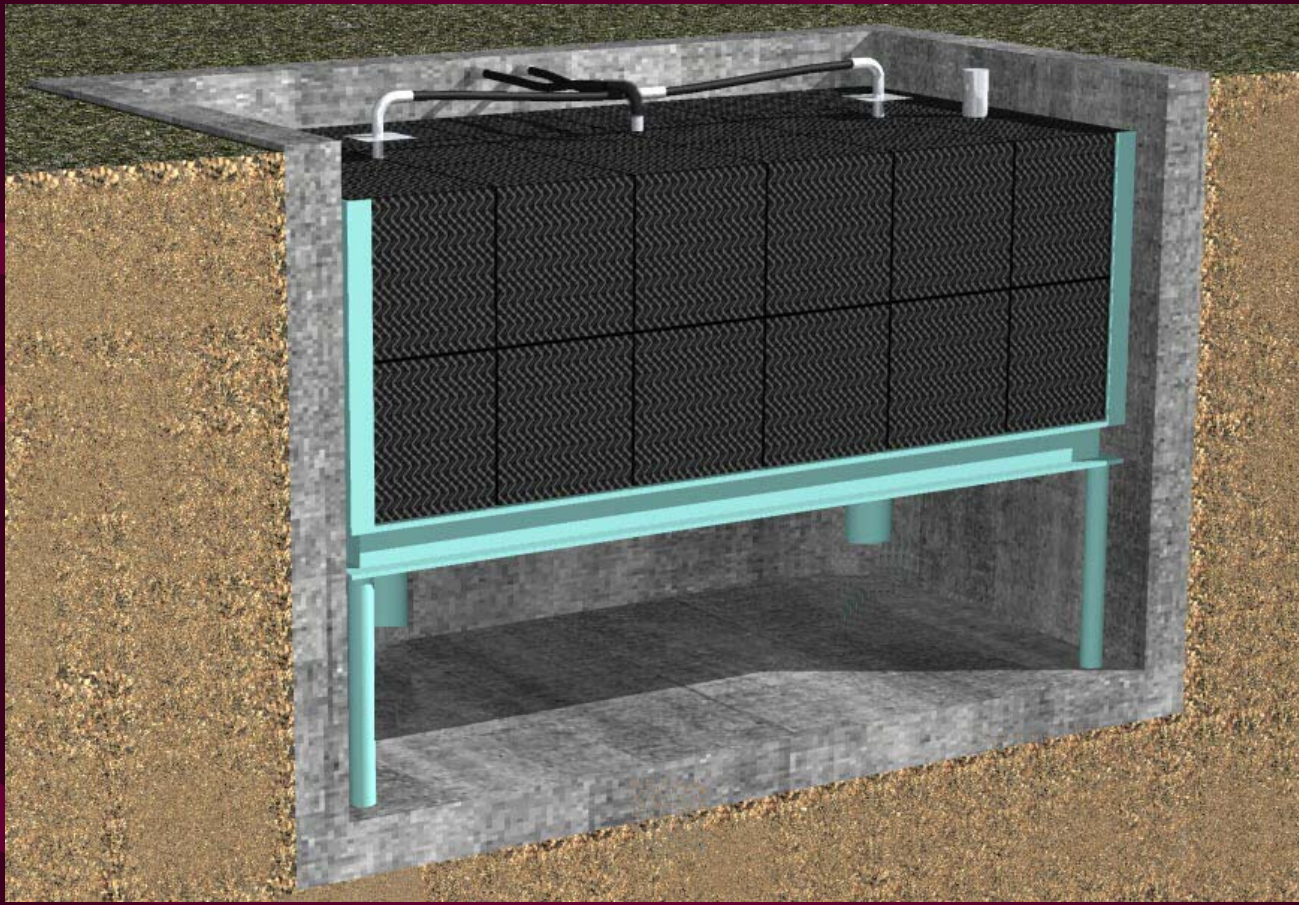
FAST Process

- ***FAST is an acronym for***
 - **FIXED**
 - **ACTIVATED**
 - **SLUDGE**
 - **TREATMENT**
- **Fixed-film Activated Sludge Process**
- **Utilized in more than 1,600 installations for industrial wastewater and municipal sewage**

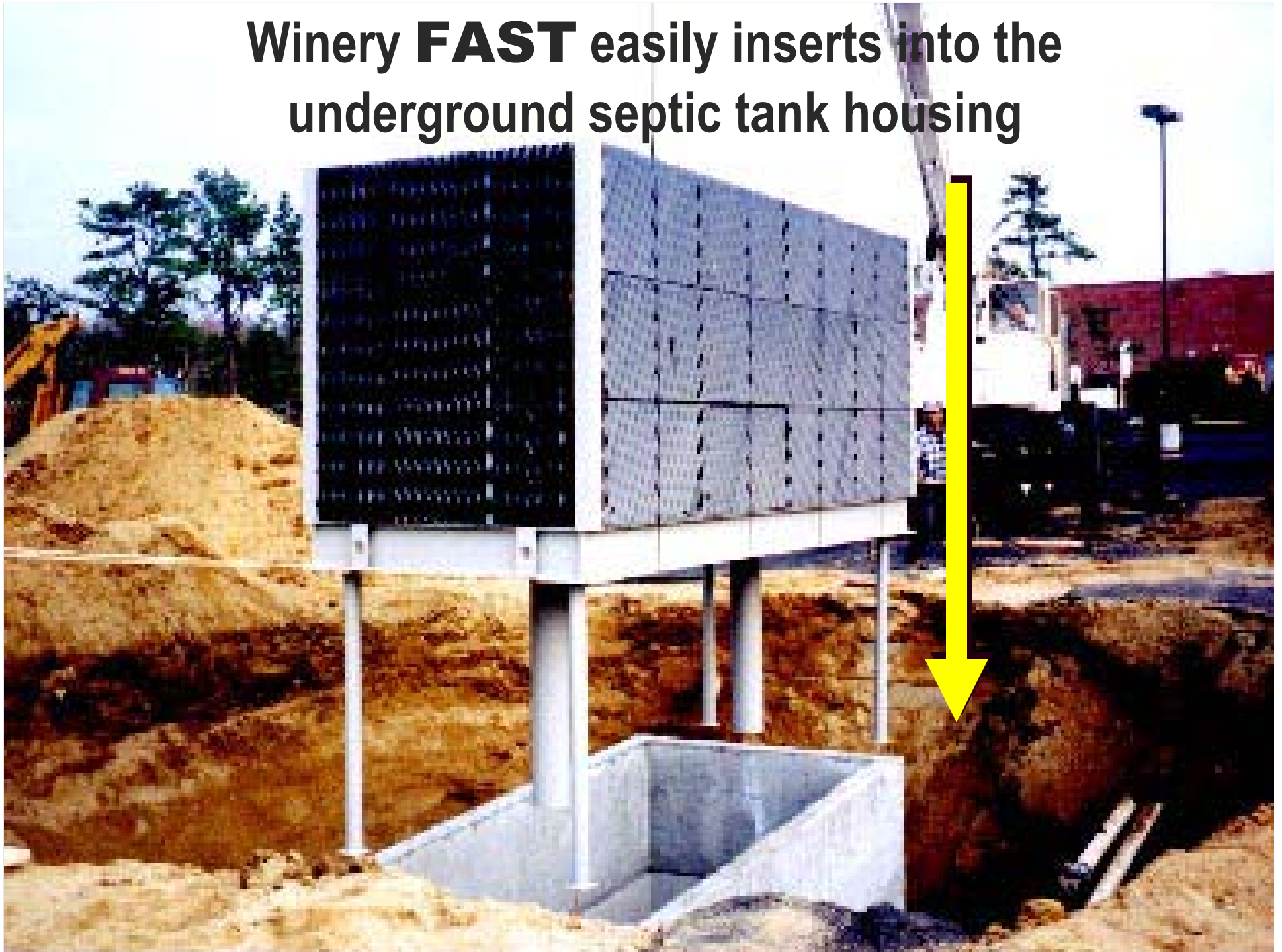
FAST Process: *General Features*

- **High BOD/TSS Reduction (85-95%)**
- **High Surface Area to Volume Ratio**
- **Lower Solids Production**
- **No Washout of Bacteria**
- **No Clarifier Necessary**
- **No Daily Maintenance (only one moving part)**
- **Up to 30,000 GPD in a single modular unit**
- **Unlimited Capacities with Field Erected Units**

Winery **FAST**



Winery **FAST** easily inserts into the
underground septic tank housing

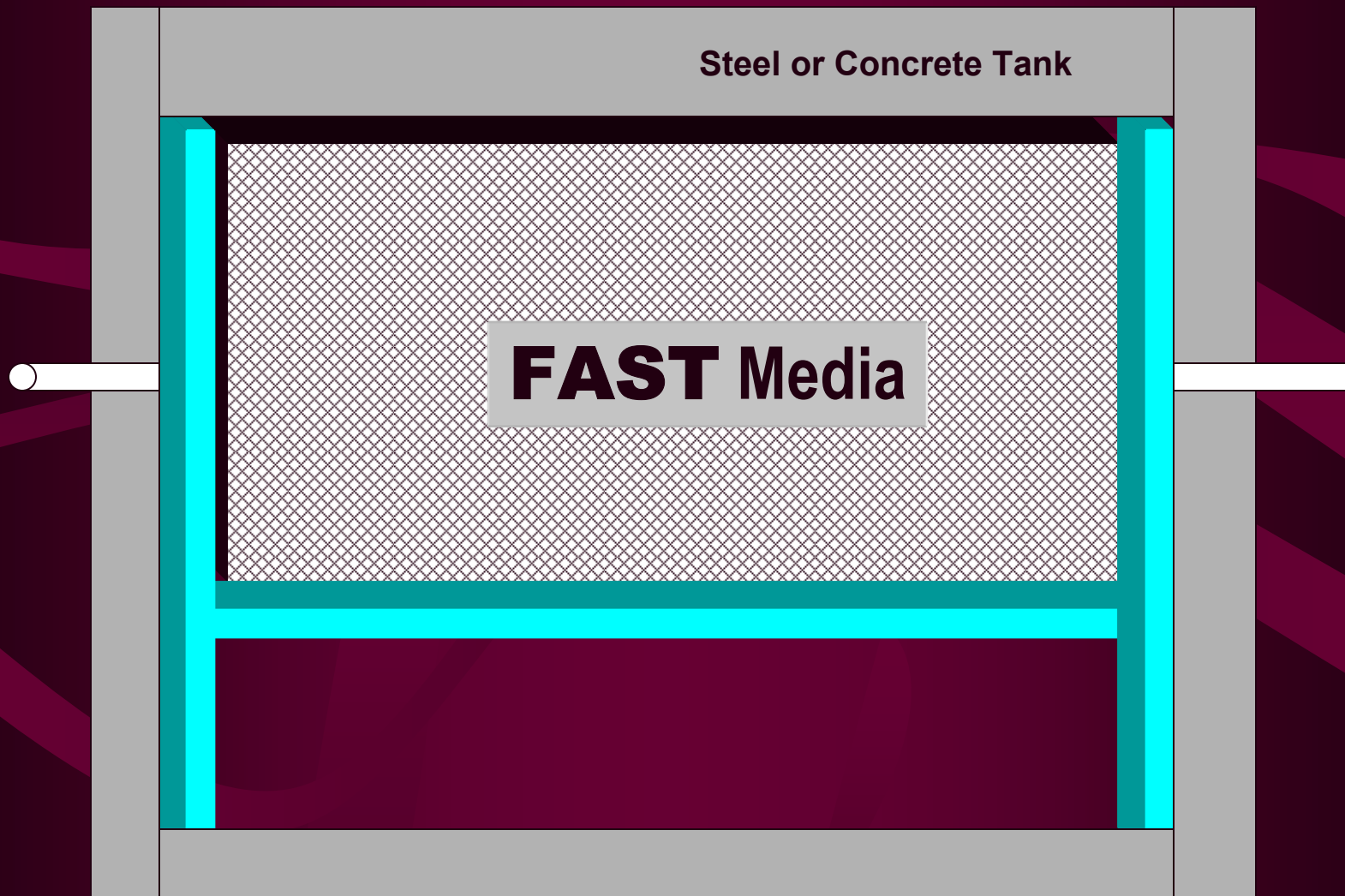


Winery **FAST**
Aeration



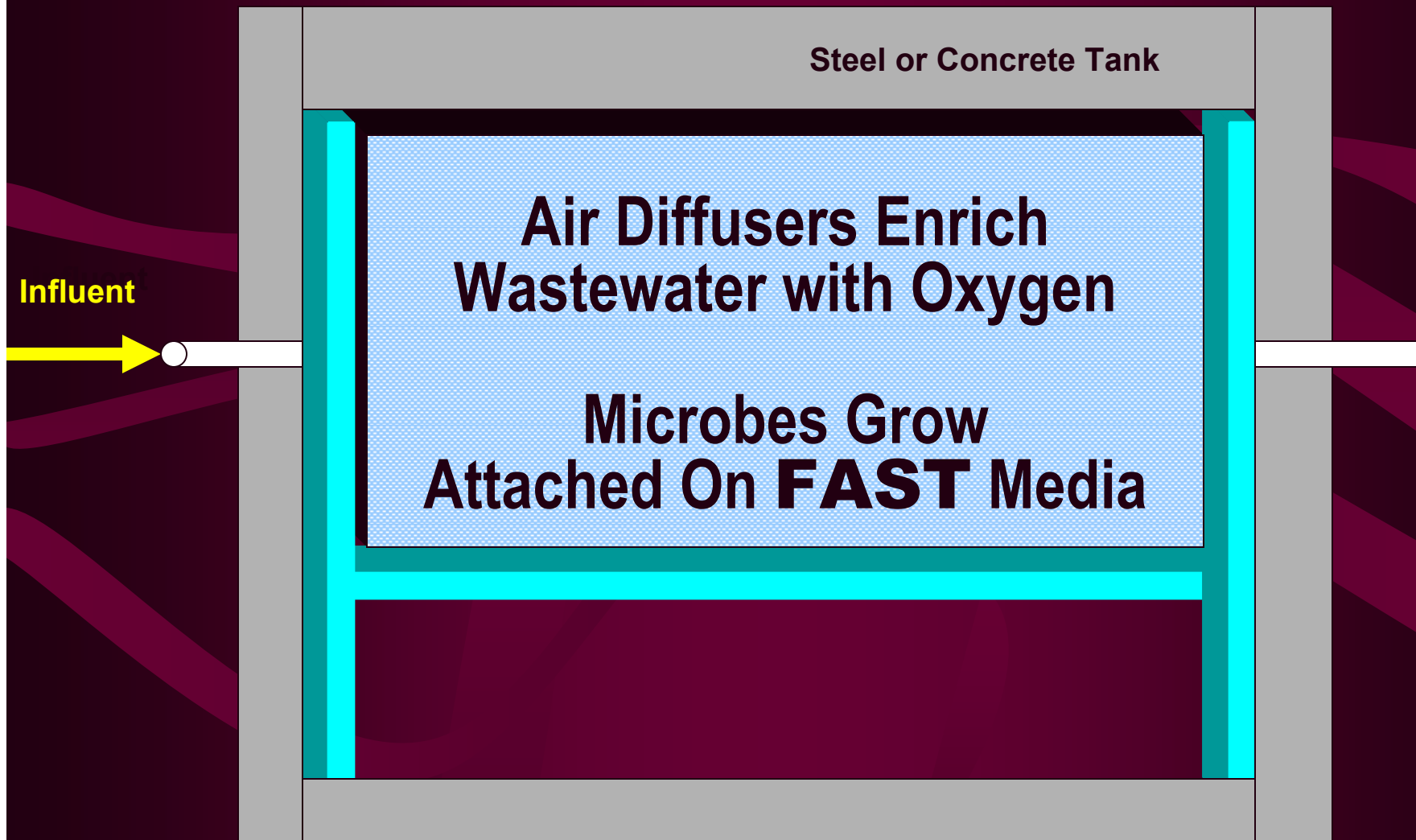
FAST Process: *How it Works*

grade



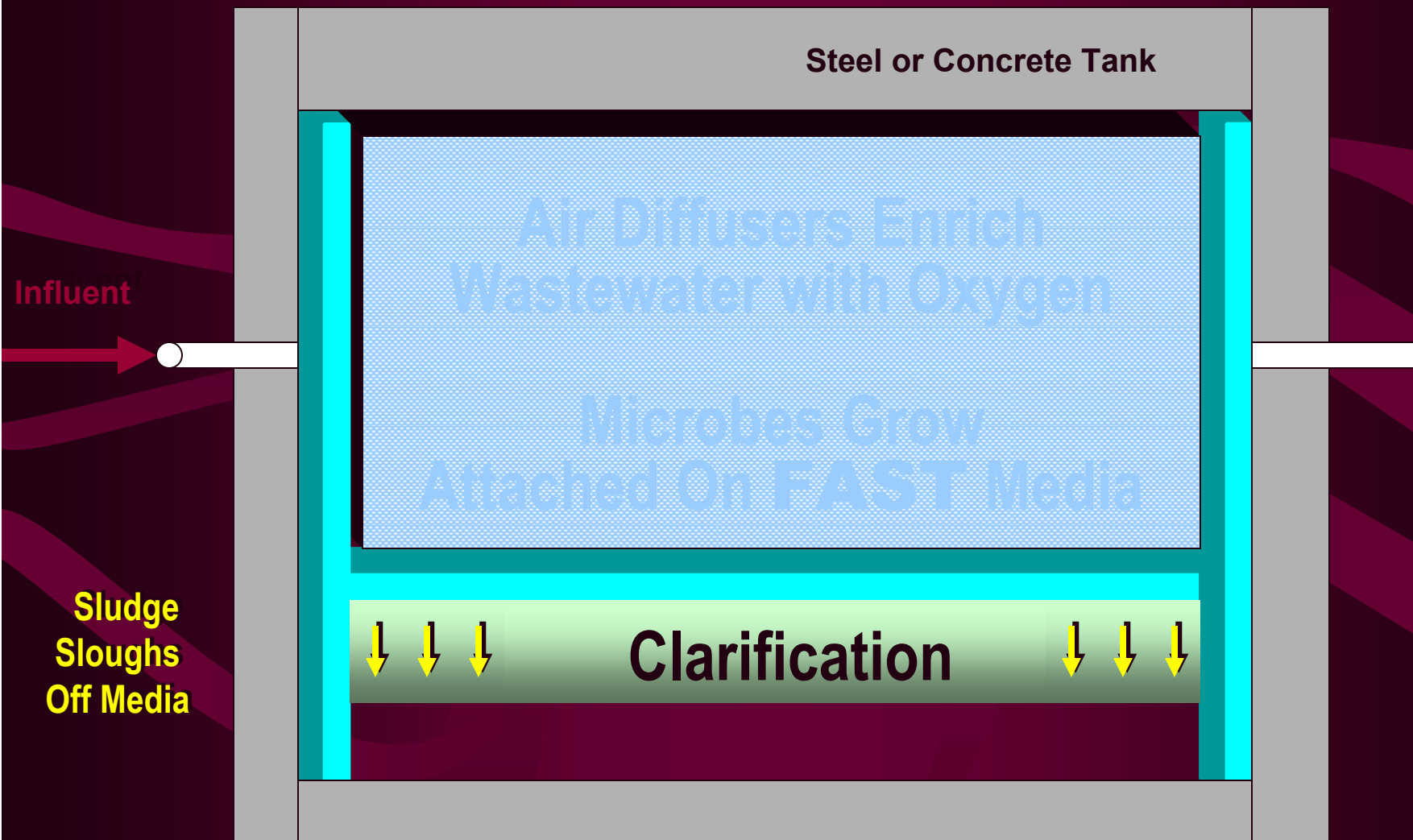
FAST Process: *Aeration*

grade



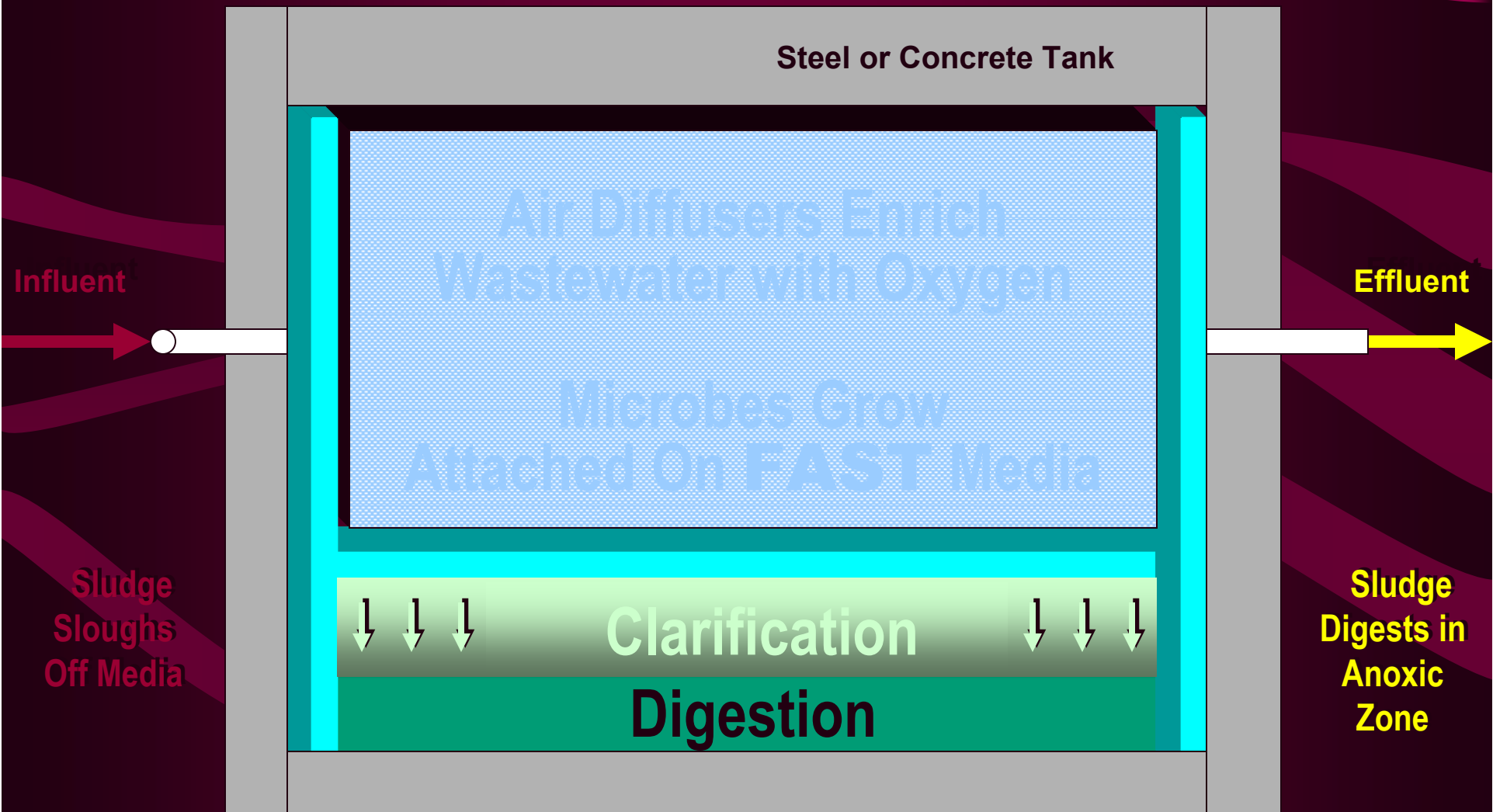
FAST Process: *Clarification*

grade



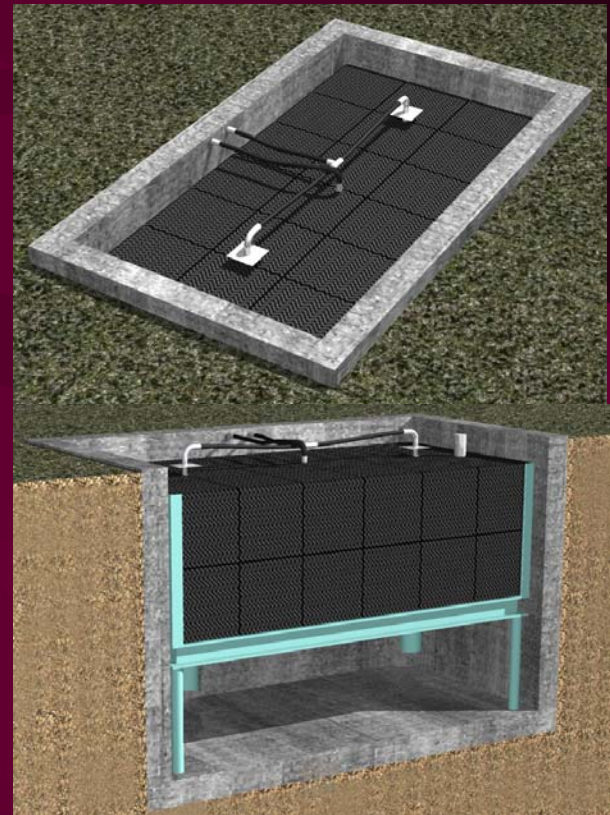
FAST Process: *Digestion*

grade



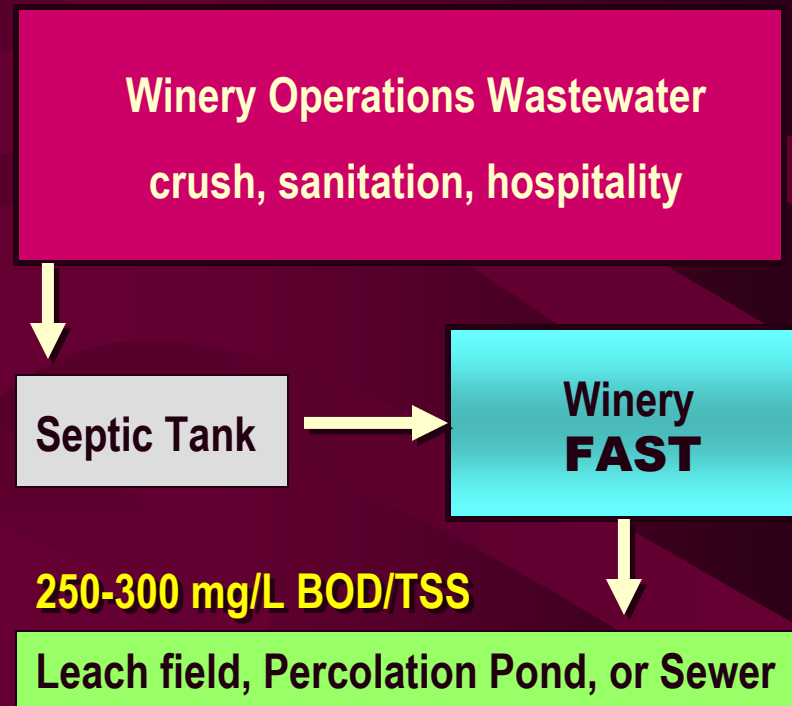
Winery **FAST** Benefits

- Land-based Pretreatment that Reduces BOD/TSS Levels to Sanitary and Secondary
- Proven Aerobic Process Lowers Salts Unlike Anaerobic
- Prevents Leach Field Failures Extends Leach Field Life
- Improves Percolation Rates
- Low Profile



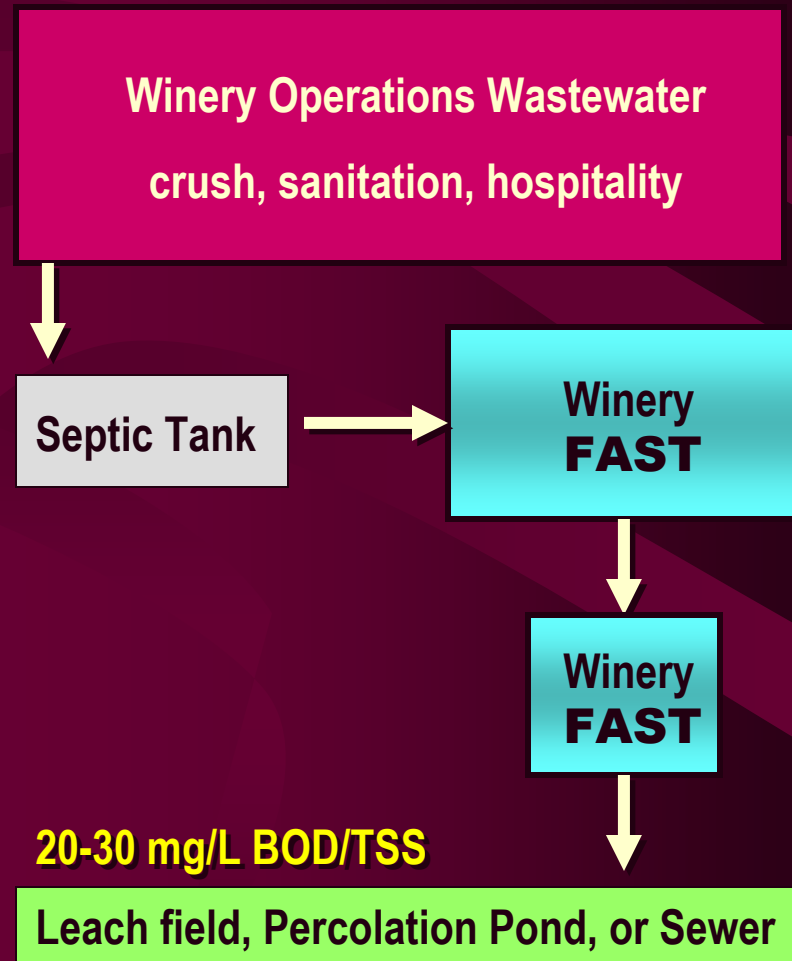
Winery **FAST** Options

- Reduce High-Strength BOD/TSS Levels Down to **Sanitary Levels**



Winery **FAST** Options

- Reduce High-Strength BOD/TSS Levels Down to Sanitary Levels
- Reduce Levels Down to **Secondary Effluent** with second smaller Winery **FAST** unit

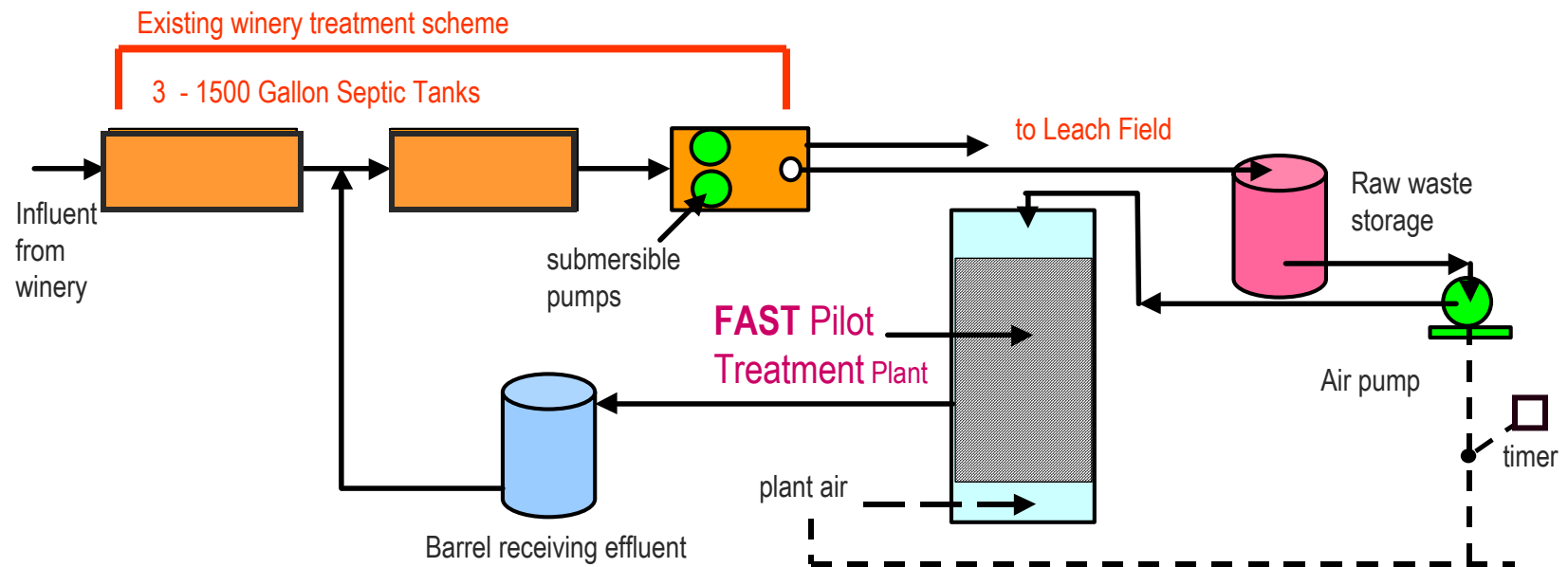


Winery **FAST** *Pilot Test*

- 50,000 case per Year Winery in Monterey Co.
- Pilot Test Period = 60 days
- Test Flow = 15 GPD
- Influent Crush Period BOD = 10,000 mg/l
- Influent Non-Crush BOD = 2,000 mg/l
- TSS Range = 0-2,800 mg/l

Winery **FAST** Pilot Test

Pilot Plant Flow Scheme - Monterey County, CA



Winery **FAST** Pilot Test Results

Influent Characteristics

- Flow 15 GPD
- BOD Range =
2,000 - 10,000 mg/l

Effluent Characteristics

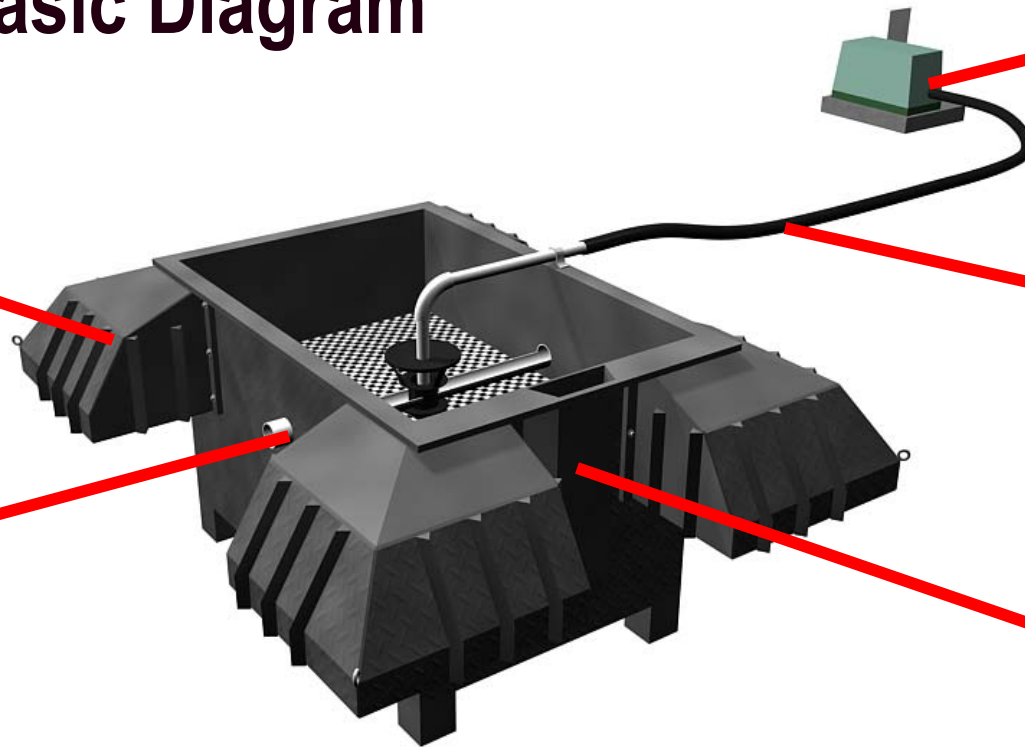
- pH 7.5 (avg.)
- BOD Range 0-500 mg/l
- BOD Removal% 80-99%
- Avg. Removal % 94%

Floating **FAST**

Basic Diagram

Float

Effluent provides additional aeration



Small blower based on land

Air hose
no electricity

FAST
Media
Tank

Floating **FAST**

Basic Diagram - *in pond*

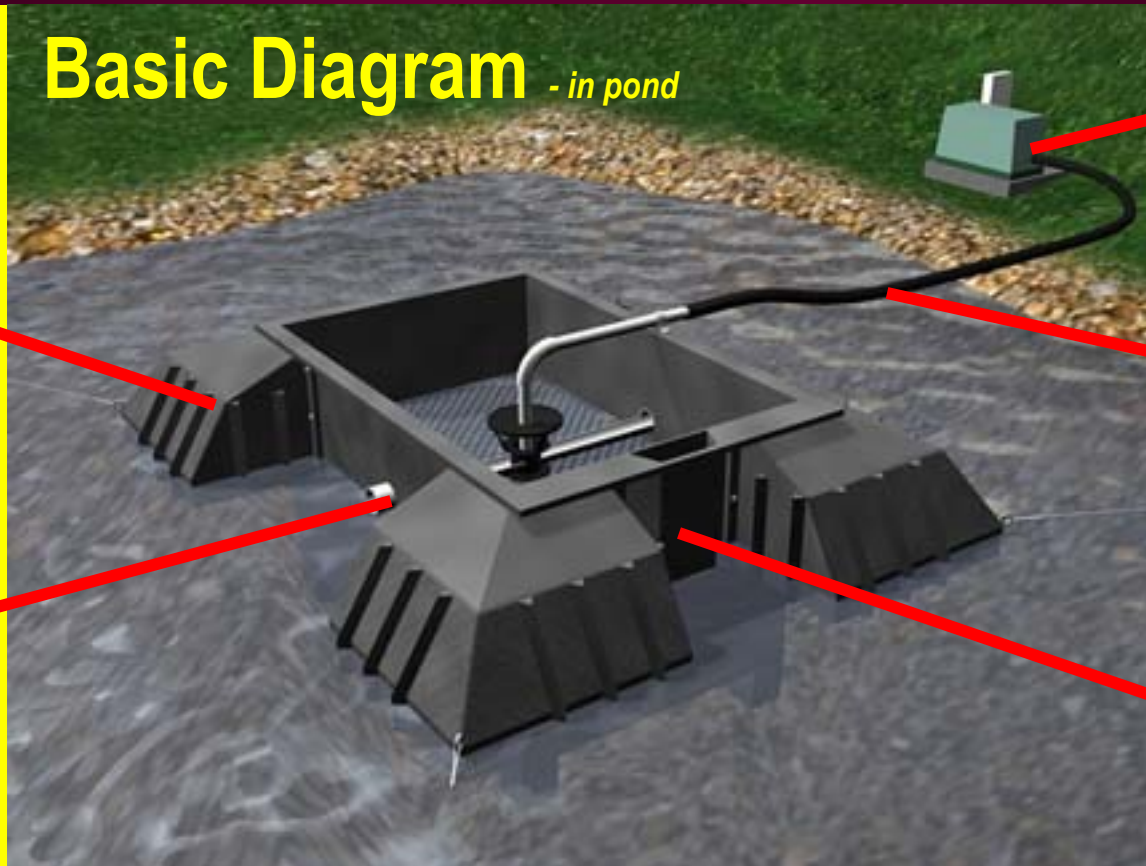
Float

Effluent provides additional aeration

Small blower based on land

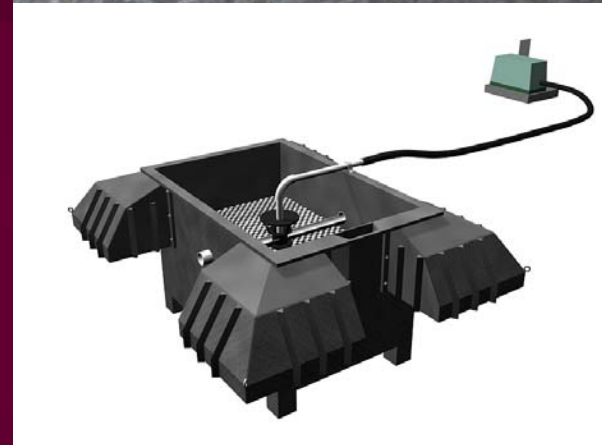
Air hose
no electricity

FAST
Media Tank



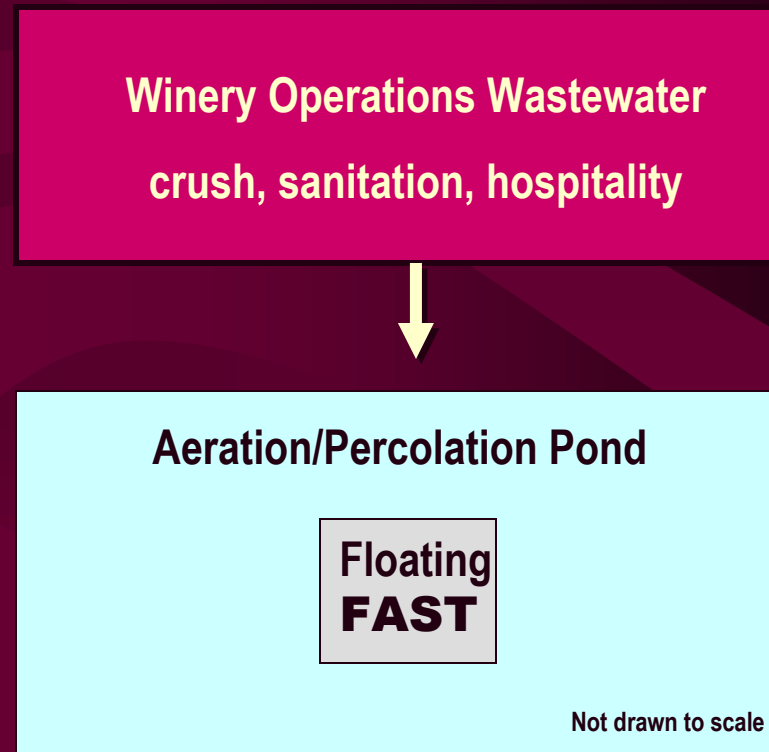
Floating **FAST** Benefits

- In-Pond treatment that offers aerobic treatment
- Offers similar oxygen transfer rates as aerators **plus treatment**
- Various configurations
- Low maintenance and safe
- Can eventually be re-used as land-based unit



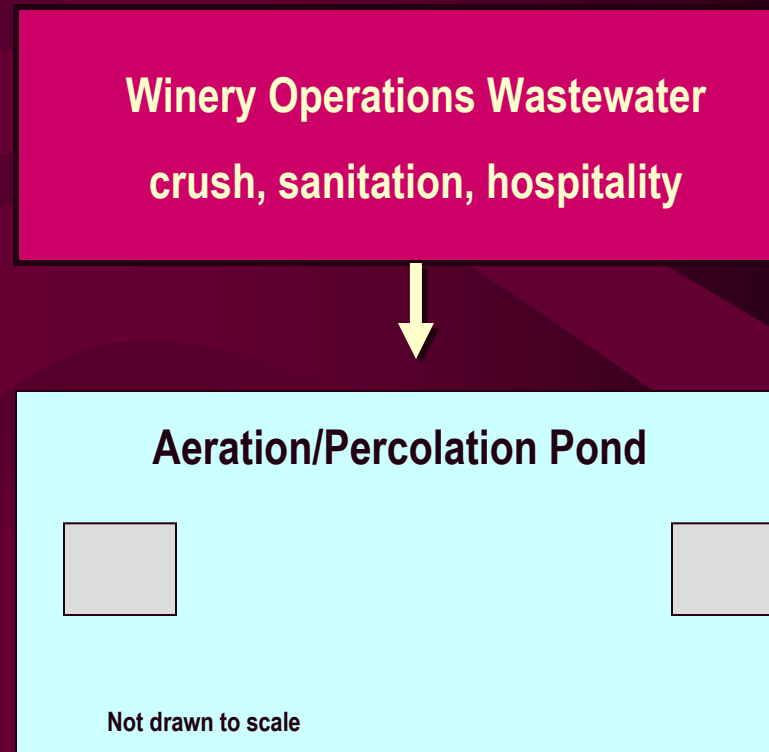
Floating **FAST** Options

- Floating **FAST** works in concert with natural pond process (and any existing aerators) to enhance treatment



Floating **FAST** Options

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- Multiple Units Operate in Different for Desired Levels and Outcomes



Influent and force through Effluent

Floating **FAST** Options

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Winery Operations Wastewater
crush, sanitation, hospitality



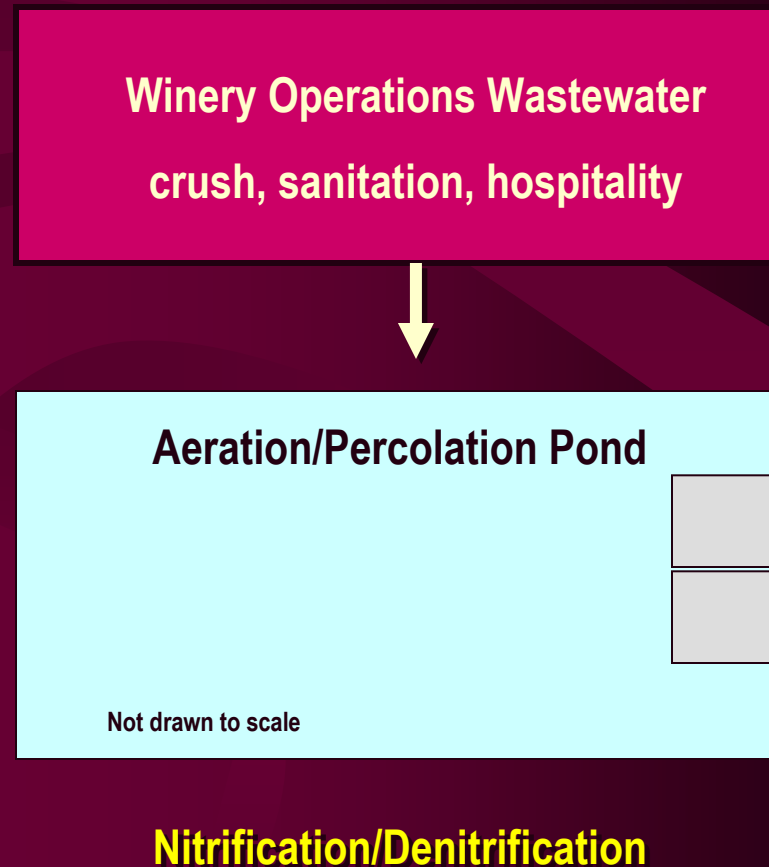
Aeration/Percolation Pond



Scattered Around Pond For Coverage

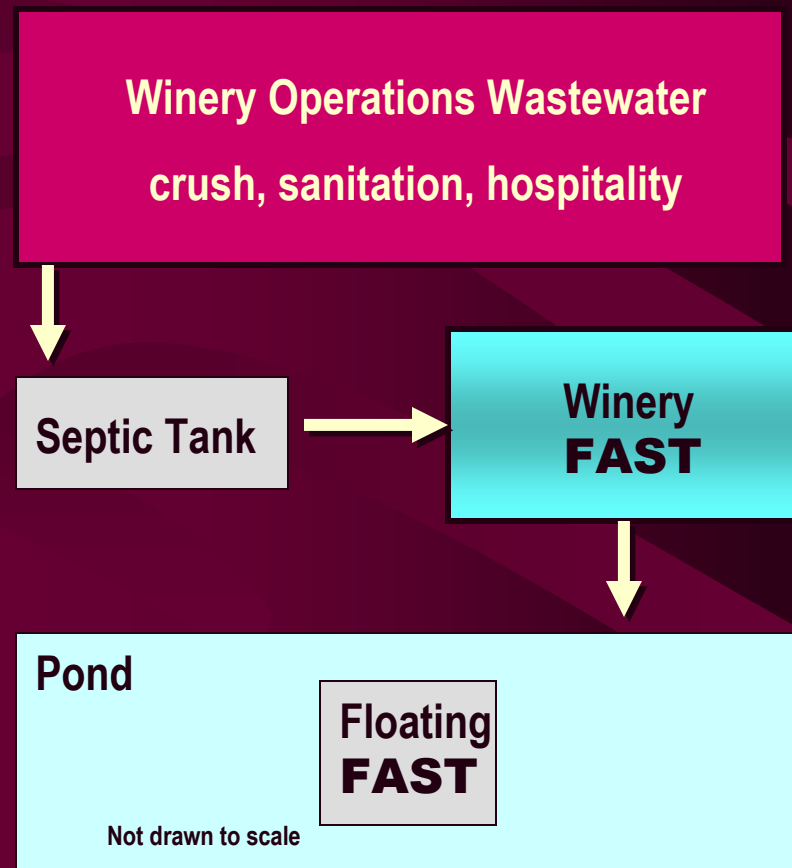
Floating **FAST** Options

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- Multiple Units Operate in Different for Desired Levels and Outcomes



Floating **FAST** Options

- For maximum results, pretreat with land unit **Winery FAST** and place Floating **FAST** in pond to enhance treatment



Pretreatment and In Pond Treatment



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