

# Fairfield County Utilities



## ***Tussing Road WRF NPDES Appeal***

***(ERAC Case No. 235929)***

**(Fairfield County Tussing Road WRF)**

**Brandon Fox, Chief Water Reclamation Operator**

June 15, 2010

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# Fairfield County Utilities

- ◆ Explain current plant and NPDES permit
- ◆ Define basis for Permit appeal
- ◆ Describe Permit appeal process
- ◆ Define lessons learned

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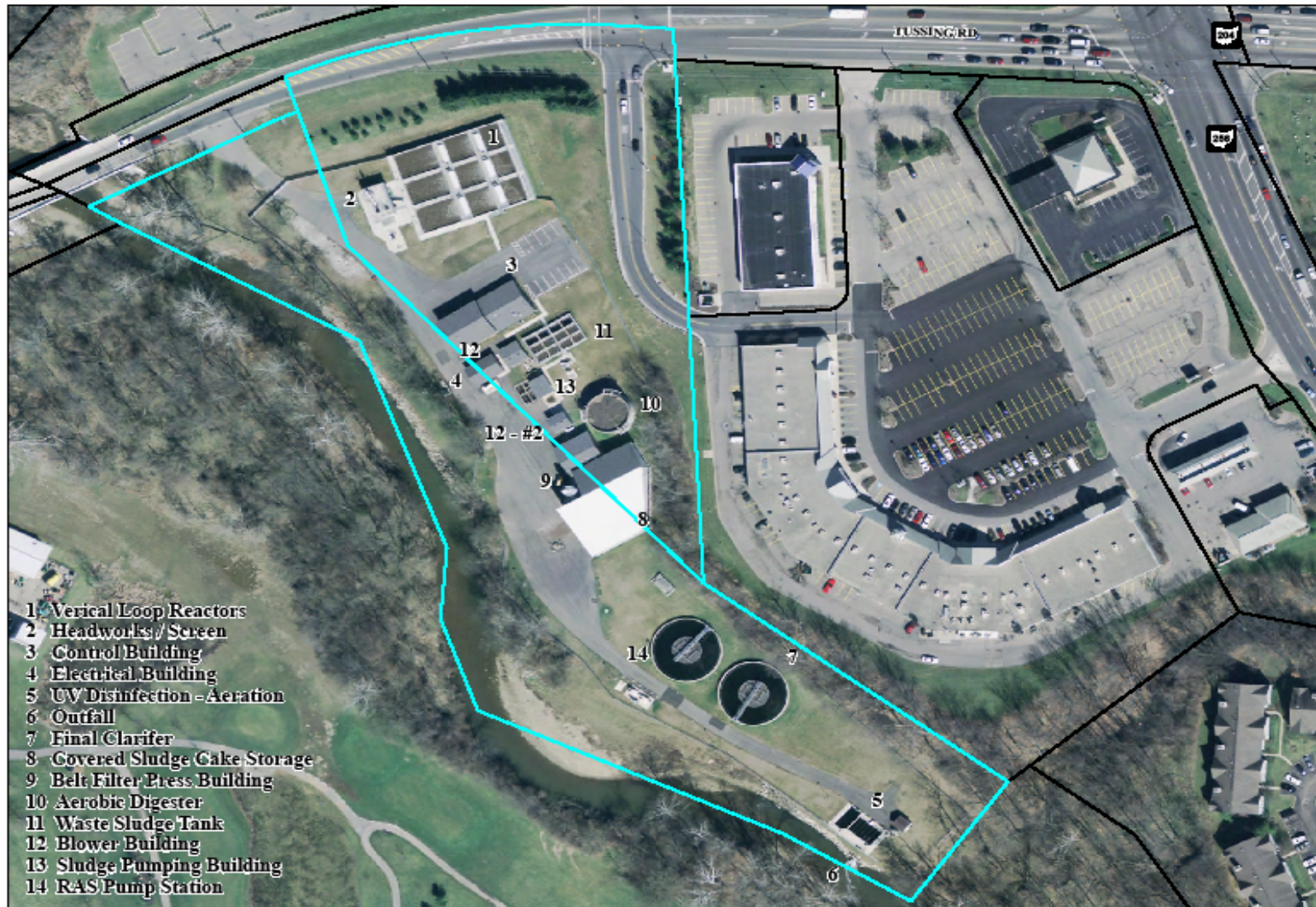
# Fairfield County Utilities

## Tussing Road WRF

### Facility Information:

- ◆ Facility upgrade completed 2005
  - Expansion cost ~ \$6 Million
- ◆ Capacity
  - Permitted Capacity = 3.0 MGD
  - Current Flow ~ 1.9 MGD
- ◆ Discharge Location
  - Blacklick Creek within the Big Walnut Creek Watershed - (Big Walnut TMDL)

# Fairfield County Tussing Road Water Reclamation Facility



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# Fairfield County Utilities

## Tussing Road WRF

- ◆ Removal Percentages '06-'09
  - CBOD<sub>5</sub>      2.2 mg/l (98.6%)
  - TSS            2.4 mg/l (98.9%)
  - NH<sub>3</sub>          0.1 mg/l (99.4%)
  - TP             1.1 mg/l (83.5%)
  - TDS           1720 mg/l (-4.5%)?

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# Fairfield County Utilities

## Tussing Road WRF

### ◆ NPDES Permit Information

- 2003 Permit- (upgrade design permit)
  - No Phosphorus or Total Dissolved Solids (TDS) Limits
- 2006 Permit (Appealed Permit)
  - Phosphorus Limit –
    - 1.0 mg/l by August 1, 2009
    - 0.5 mg/l by July 31, 2013
  - Total Dissolved Solids Limit –
    - 1646 mg/l by August 1, 2009

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# Ohio EPA Permit Basis- 2006

- ◆ OEPA documents which lead to the Tussing Road Permit limits
  - Biological and Water Quality Study of the Big Walnut Creek Basin 2000 (11-26-03)
    - Stream Designation- WWH
  - Total Maximum Daily Loads for Big Walnut Creek Watershed (8-19-05)
    - Stream Modeling

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# Fairfield County Utilities

## Tussing Road WRF

- ◆ Could the Tussing Road Facility meet the proposed TP and TDS permit limits?
- ◆ If so, at what cost?



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# Fairfield County Utilities

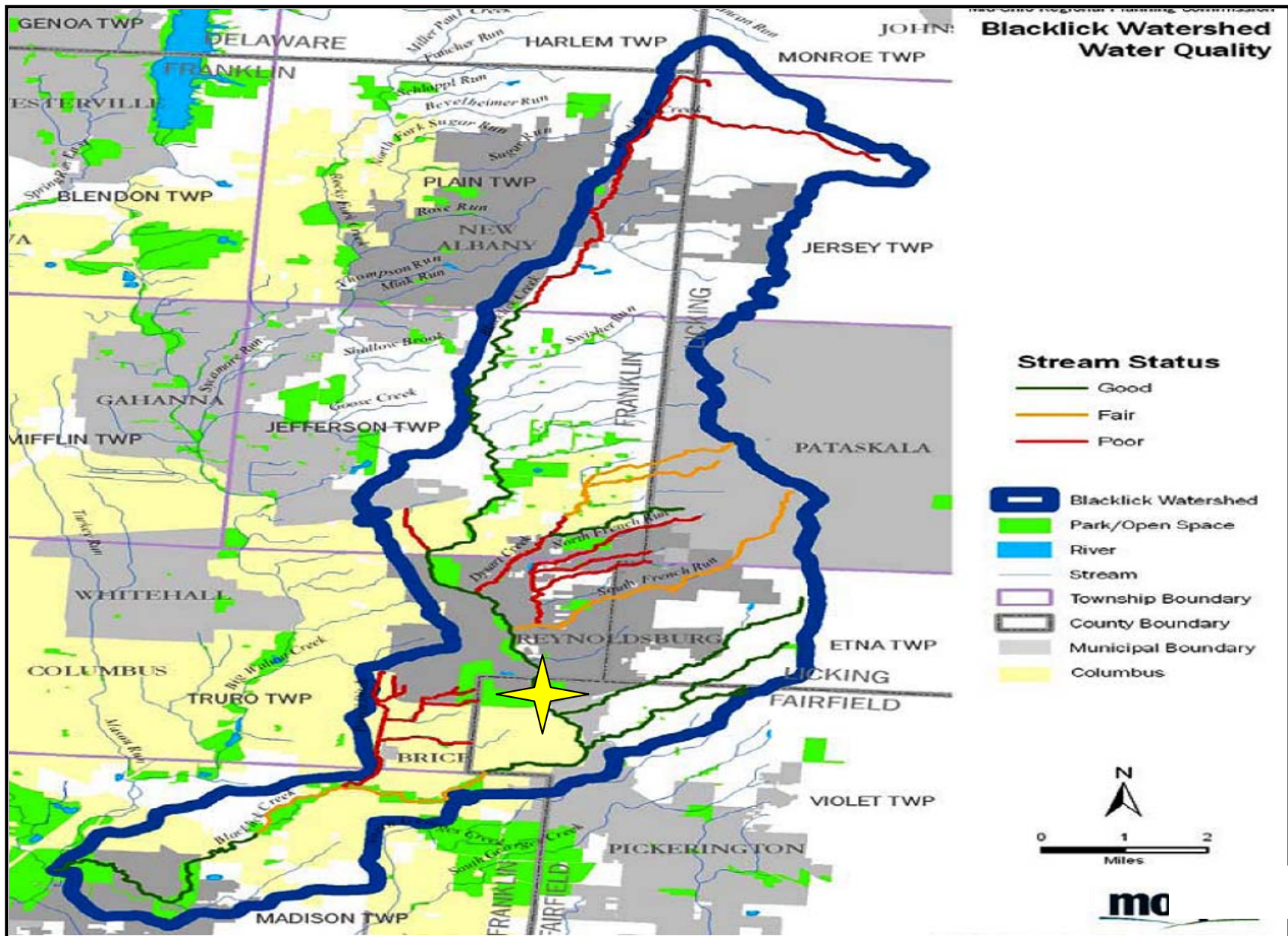
## Tussing Road WRF

- ◆ Arcadis engineering hired in 2007
  - Conducted background compliance study and provided treatment options to meet limits
- ◆ TP removal ~ \$5.2 m. (Capital/O & M)
- ◆ TDS removal ~ \$8.0 m. (Capital/O & M)
  - Total \$13.2 m. for TP and TDS removal

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# ERAC Appeals Process

- ◆ O.R.C. 3745.04: may appeal final action of the Director of OEPA to Environmental Review Appeals Commission (ERAC)
- ◆ Standard of review: prove Director's action was unlawful or unreasonable (lack valid factual foundation)



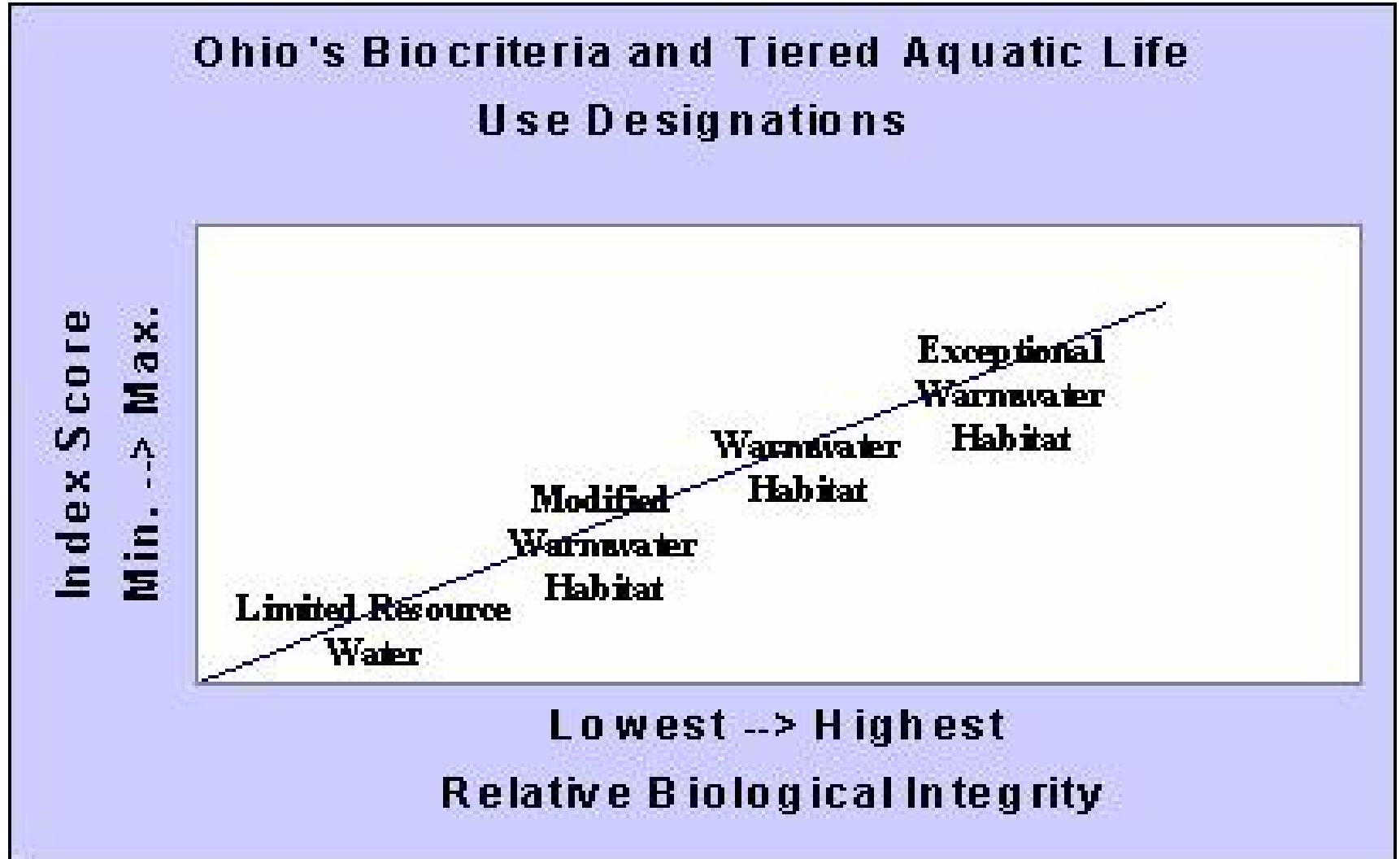
- ◆ None Attainment at 27.1 to 22.4 RM
- ◆ Full Attainment from 20.4 to 4.83 RM

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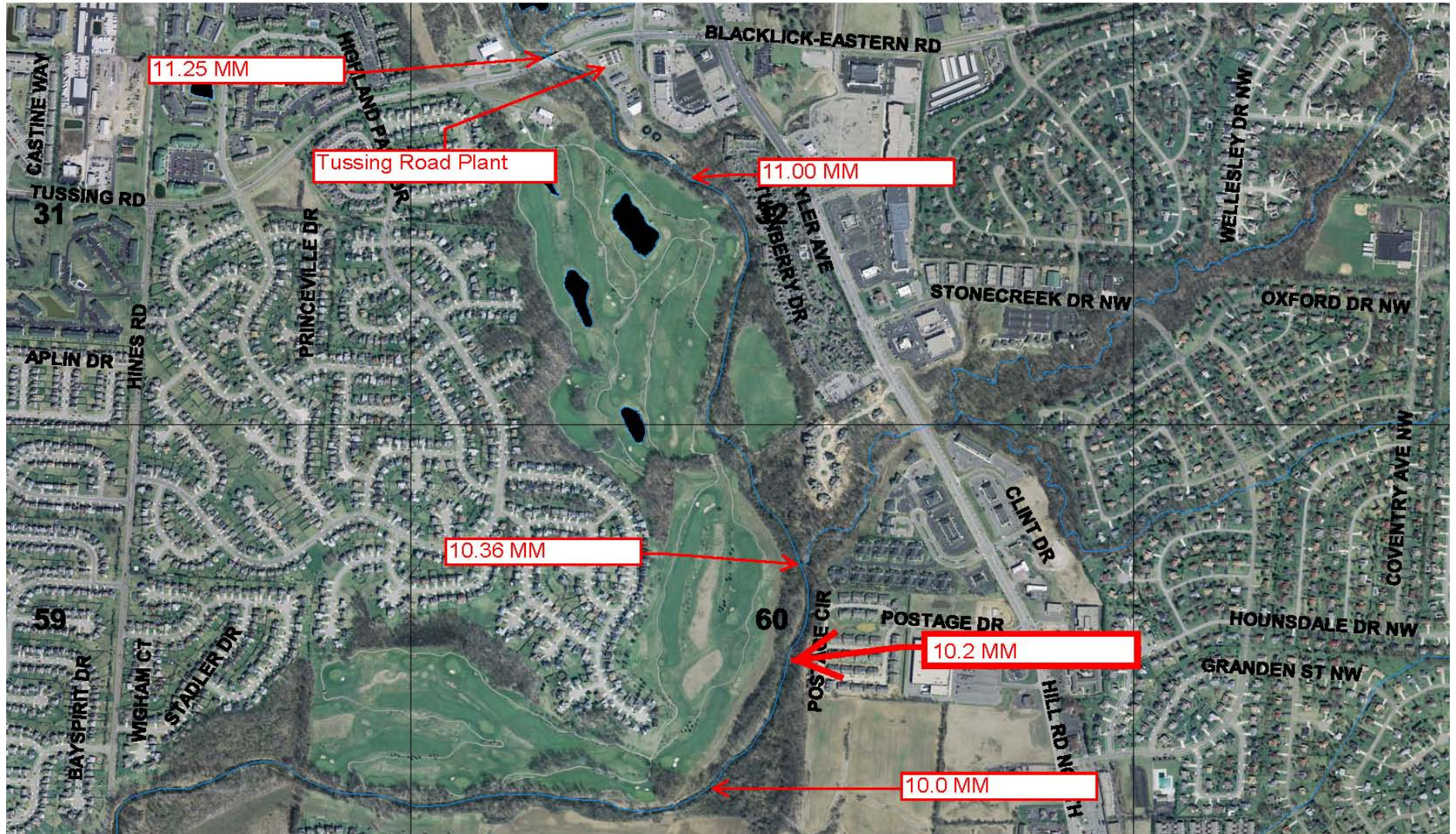
# County retains professional assistance

- ◆ Additional capital cost \$12.1 M and operations cost of \$1.07 M on a stream in “Full Attainment” as determined by OEPA
- ◆ SZD, Malcolm Pirnie, Enviro Science Inc. and ARCADIS were hired to appeal the permit.
  - 6111.03 (J)(3) – The Director shall give consideration to the technical feasibility and economic reasonableness of removing the pollutants.
  - Appeal the Permit
    - In 2007
    - Hearing in February 2009
    - To Date, No Ruling Received

# Biological and Water Quality Study



# Blacklick Creek TMDL



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# Ohio EPA Basis for TP Limit

- I. Total Phosphorus limit – 0.5 mg/l
  - A. Bug Score – Index of Biotic Integrity (IBI)
    - 1) IBI went from 39 upstream to 44 downstream
  - B. Fish Score – Invertebrate Community Index (ICI)  
(Macro invertebrate communities)
    - 1) ICI went from 48 upstream to 38 downstream
      - a) Both good aquatic life and within Warm water Habitat
  - C. Dissolved Oxygen Levels
    - 1) A slightly higher fluctuation from 10.2 RM to 11.25 RM
      - a) Algae Plum assumed – none observed

# County Appeal Basis

## I. Total Phosphorus limit – 0.5 mg/l

A. Aquatic life around the facility is in FULL attainment

B. Bug Score – Index of Biotic Integrity (IBI)

1) IBI score increased (39 to 44)

a) OEPA own studies show fish are more sensitive to phosphorus than bugs

C. Fish Score – Invertebrate Community Index (ICI)

1) ICI considered good aquatic life (48 to 38)

a) 48 was an anomaly (Scores ranged from 38 to 42)

b) Collecting method – counts 2% of bugs then multiplies

i. Explains variation in counts

D. Dissolved Oxygen Levels

1) A slightly higher fluctuation from 10.2 RM to 11.25 RM

a) No Algae observed

b) 48 hours of data collection (OEPA requires 72 hour)

c) Plant not isolated

a) DO is effected by canopy and other nonpoint sources

E. Items that affect amount of phosphorus a stream can assimilate

1) Substrate, gradient (important in stream modeling)

a) Modeling was on average stream and did not account for substrate



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# Ohio EPA Basis for TDS Limit

## I. TDS limit

- I. TDS limit derived based on Ohio Water Quality Study (WQS) of 1500 mg/l; WQS adopted to prevent toxicity

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# County Appeal Basis

## I. TDS limit

- A. TDS limit is not derived based on Blacklick Creek stream data but assumptions from other streams
  - 1) USEPA study states fresh water fish and other aquatic life have no problem with TDS levels up to 10,000 mg/l
    - a) USEPA Study concluded waters with dissolved solids in excess of 15,000 mg/l were unsuitable for most freshwater fish
  - 2) Tests performed at the facility demonstrated that Plant effluent is not toxic to aquatic organisms.
  - 3) Aquatic life around the facility is in FULL attainment
- B. Currently only six TDS limits in the state permits
  - 1) No scientific data to backup the proposed limits

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# Phosphorus & Total Dissolved Solids

- I. TP and TDS limits are not supported by substantial and reliable evidence
  - A. All studies by OEPA show Blacklick Creek in Full Attainment downstream of the facility
  - B. OEPA Expert (Bob Miltner) says you should **not** impose a limit unless or until the data shows an adverse biological impact
- II. The TP & TDS limit for the Tussing WRF is not necessary to maintain stream attainment
- III. TMDL failed to consider:
  - A. Other impacts to attainment of WWH use in Blacklick Creek when it imposed a TP limit
  - B. Nonpoint sources of TP

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# County Lessons Learned

- I. Biological and Water Quality Study (WQS)
  - A. Review and Comment – This will determine the stream classification – (Fish & Bug counts)
    - 1) WQS will determine if the stream is WWH or EWWH, etc.
- II. Total Maximum Daily Loads- TMDLs
  - A. This document will be used to set limits -
    - 1) TMDL assigns proposed limits on facilities – stream modeling
- III. Review and comment on facility Draft Permits
  - A. OEPA may adjust limits based on comments before permit becomes effective
- IV. Finally Appeal the Permit
  - A. O.R.C. 6111.03 (J)(3) – The Director shall give consideration to the technical feasibility and economic reasonableness of removing the pollutants.

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# County Lessons Learned

## I. Review any rule changes

### A. Example - Surface Water Quality Rule 3745-33-04 (C)

- 1) “Any point source, the construction of which is commenced ...shall not be subject to any more stringent standard of performance during a ten year period beginning ...
  - a) Proposed revision would remove this requirement prohibiting this statement



# *Questions and Contact Information*

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