

OM&R Report & GIS

Mill Creek Coalition

Clarion & Jefferson Counties, Pennsylvania

July 20, 2007



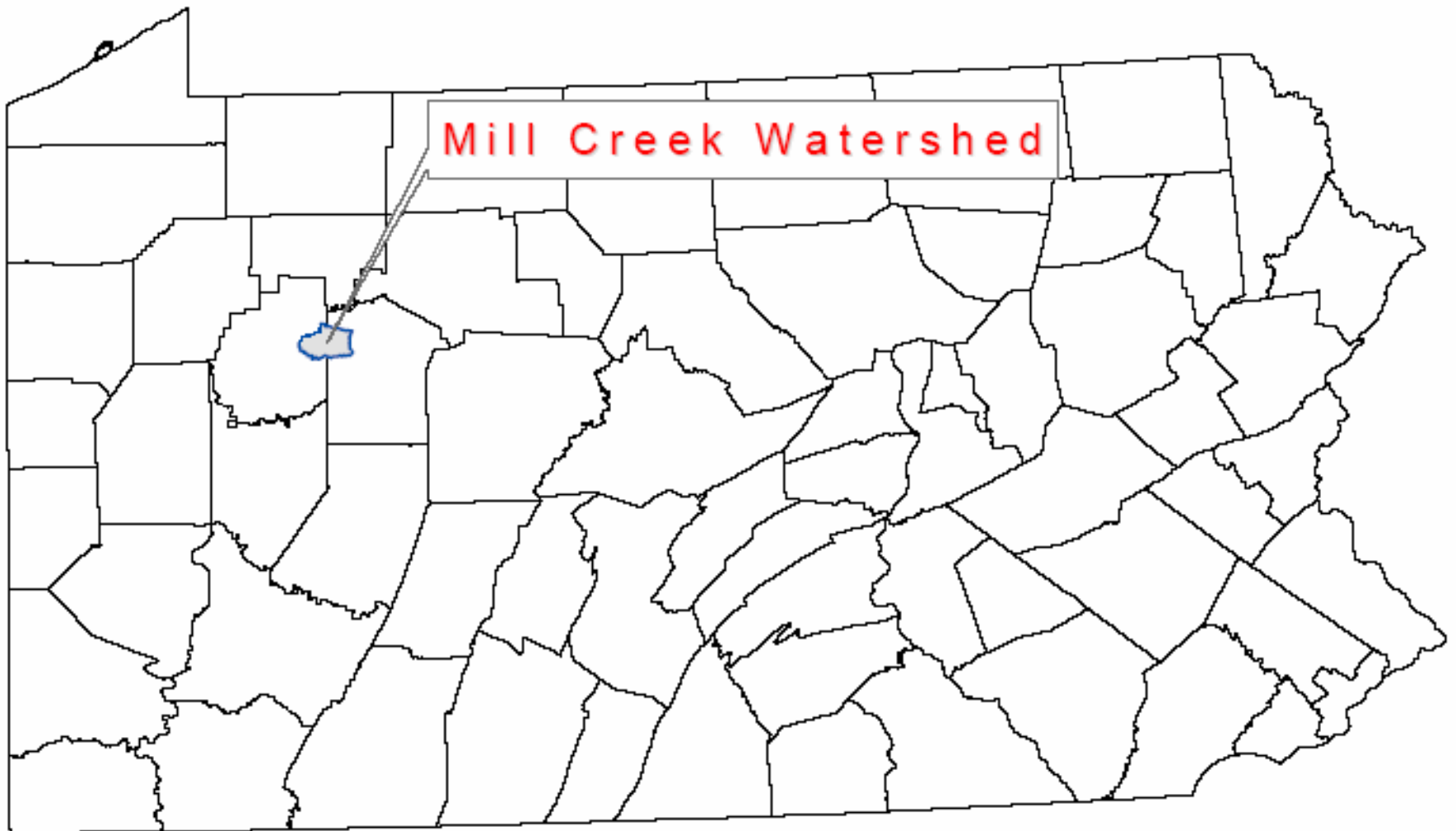
Pete Dalby, Mill Creek Coalition

Tim Gourley, P.E. Dietz-Gourley Consulting, LLC

Mill Creek Coalition

Who we are:

- County Conservation Districts – Clarion & Jefferson
- Federation of Sportsmen – Clarion County & Jefferson County
- Iron Furnace Chapter of Trout Unlimited
- League of Women Voters of Clarion County
- Mill Creek Chapter, National Wild Turkey Federation
- Northwest Pennsylvania's Great Outdoors Tourist Promotion Agency
- Seneca Rocks Audubon Society
- NRCS



Mill Creek Watershed

Overview

Operation, Maintenance, & Replacement Plan

- OM&R Plan Data Analysis
 - Component Ranking Criteria
 - Individual System Analysis Methodology
- GIS Application
- Final Report

Project Partners

- Mill Creek Coalition
- Clarion University – Biology & AGES Depts
- DEP, NRCS, & OSM
- WPCAMR
- Headwaters Charitable Trust
- The EADS Group, Inc. (Clarion)
- Dietz-Gourley Consulting, LLC

OM&R PLAN

- Records review
- Site investigation & data collection
- Data analysis
- Report preparation
- GIS application

OM&R GIS Application

- Format existing data
- Standardize sample points & data entry
- Develop geospatial database
- Data analysis
- Data analysis presentation
 - Color coded indicators

OM&R GIS Application

- Microsoft Access
 - Information database
 - Water sample chemistry
 - System information
- ESRI ArcView
 - Data presentation
 - Report access

System Component Rankings

- Treatment Effectiveness
- ALD
 - Alkalinity
 - Iron Alkalinity Demand (IAD)
- AVFW
 - Redox potential (Eh)
- Settle Ponds
 - % Iron removal

System Component Rankings

ALD Ratio:

Effluent Alkalinity & Cubitainor Alkalinity

IAD Factor:

Effluent Alkalinity & Metal Concentrations

Satisfactory: ALD Ratio $> 80\%$

Moderate: ALD Ratio $< 80\%$ & ALD Factor > 0

Reduced: ALD Ratio $< 80\%$ & ALD Factor < 0

System Component Rankings

AVFW:

Eh - measure of the redox couple

(measure of the electron concentration)

Satisfactory: Eh < -50 mV

Moderate: Eh < 0 mV

Reduced: Eh > 0 mV

System Component Rankings

Settle Basin:

% Iron removal

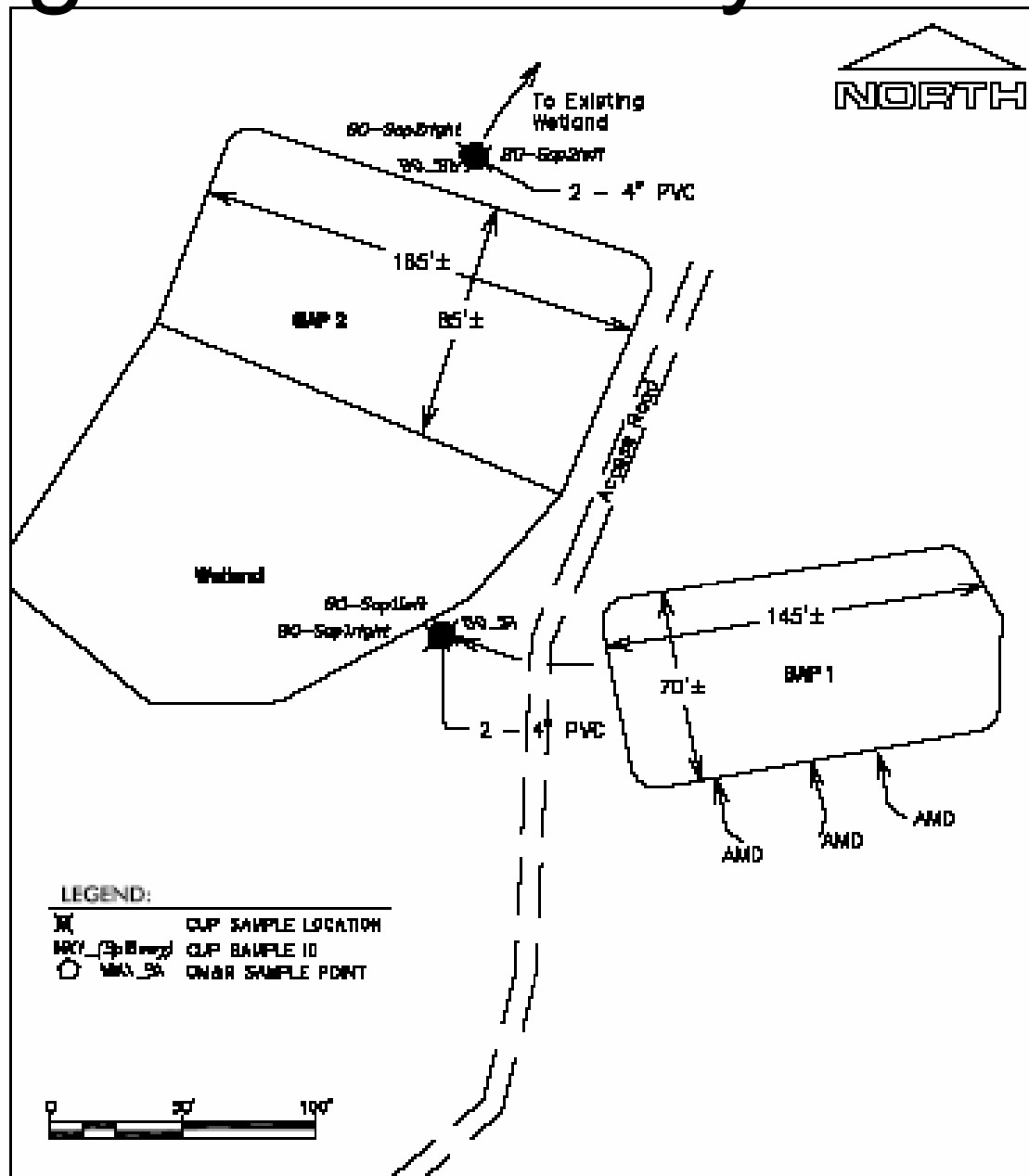
(iron in – iron out) / iron in

Satisfactory: > 90%

Moderate: > 80%

Reduced: < 80%

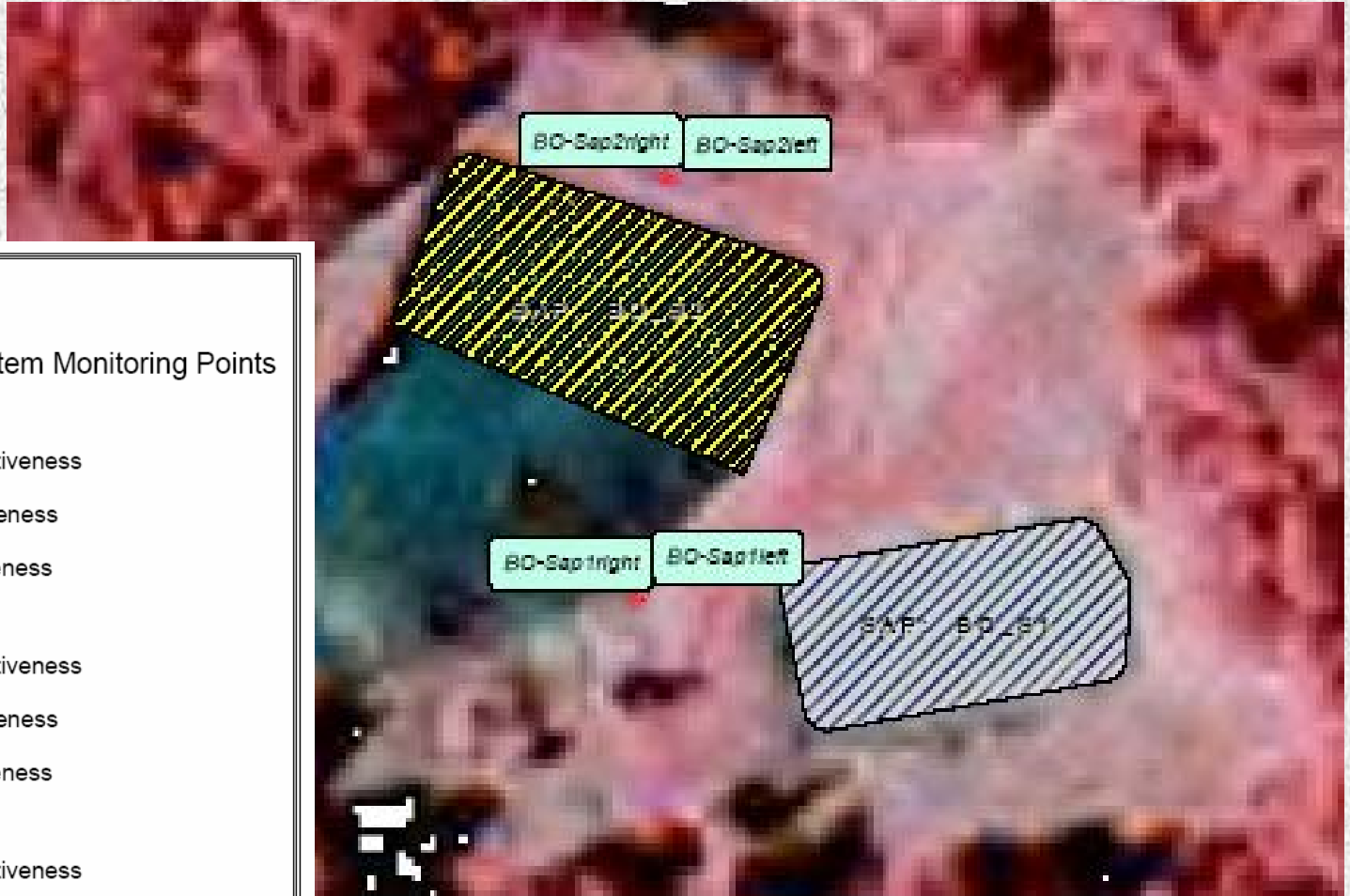
Bog Treatment System



Bog Treatment System



Bog Treatment System





Legend

⊕ Treatment System Monitoring Points

ALD Ranking


 Satisfactory Effectiveness


 Moderate Effectiveness

 Reduced Effectiveness

Aerobic Pond Ranking

 Satisfactory Effectiveness

 Moderate Effectiveness

 Reduced Effectiveness

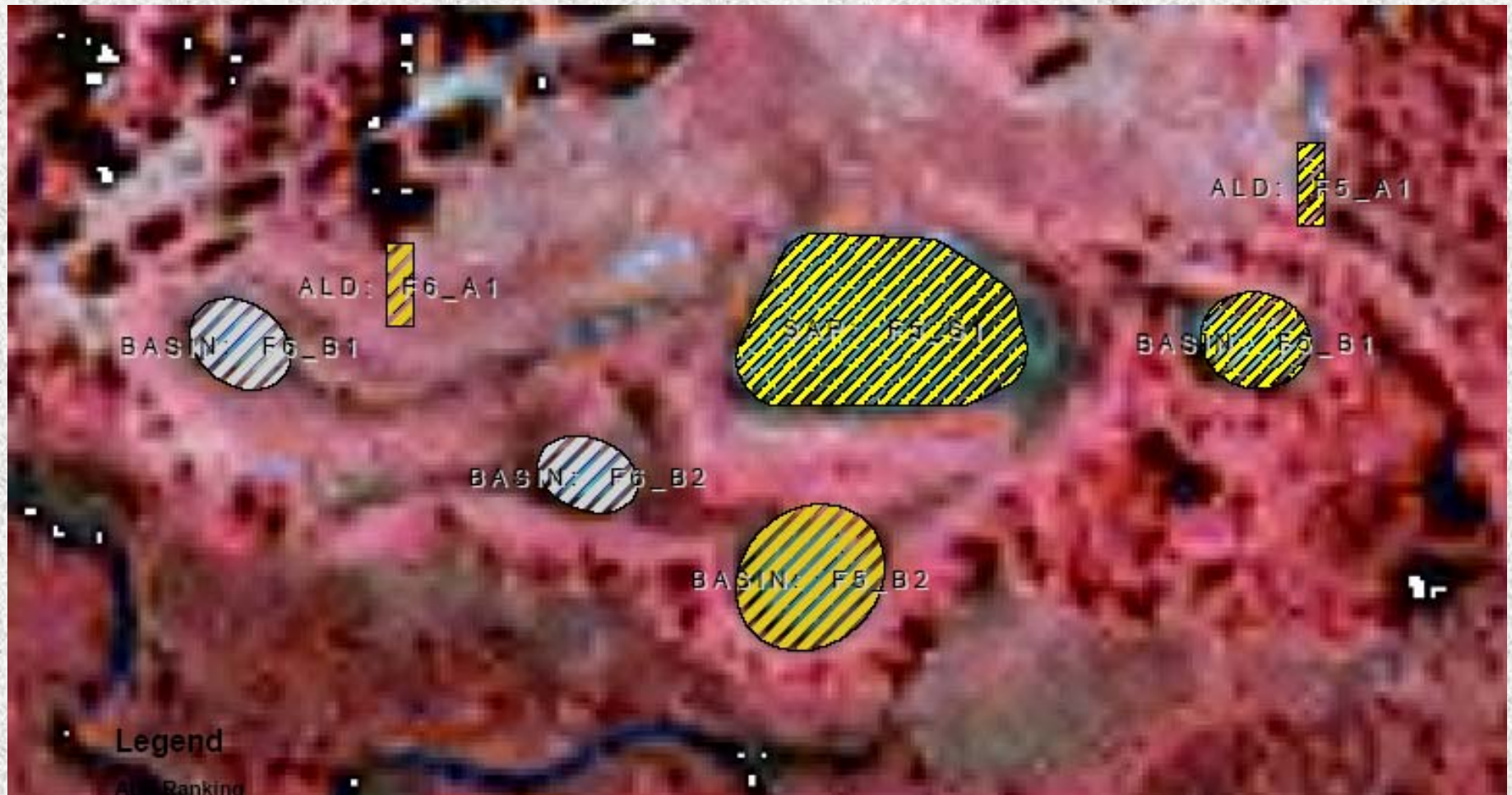
SAPS Ranking

 Satisfactory Effectiveness

 Moderate Effectiveness

 Reduced Effectiveness

Filson 5/6 Treatment System



Individual System OM&R Report

- Data collection & analysis
 - Field investigation
 - Historic data review
- Report
 - Recommendations
 - Interim & Long Term
 - Supporting data

Mill Creek Coalition System Overview

Satisfactory Effectiveness

Why?

- Component sizes
- Water chemistry

Mill Creek Coalition System Overview

Moderate Effectiveness

Why?

- Overload: acidity
- Short circuiting of flows
- Solids accumulation

Mill Creek Coalition System Overview

Reduced Effectiveness

Why?

- Untreated flows – upwellings
- ALD productivity
- Undersized components
- Overloads: hydraulic & acidity

Mill Creek Coalition OM&R & Final Report

OM&R Report

1. Summary & Recommendations
2. Operation & Maintenance Plan
Timeframe & costs
3. Engineering Evaluation
Replacement/overhaul costs

GIS Application

Orientation to database & geospatial data

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