

Indian Creek Sediment Allocations Webinar

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U.S. Environmental Protection Agency

December 4, 2014



Overview

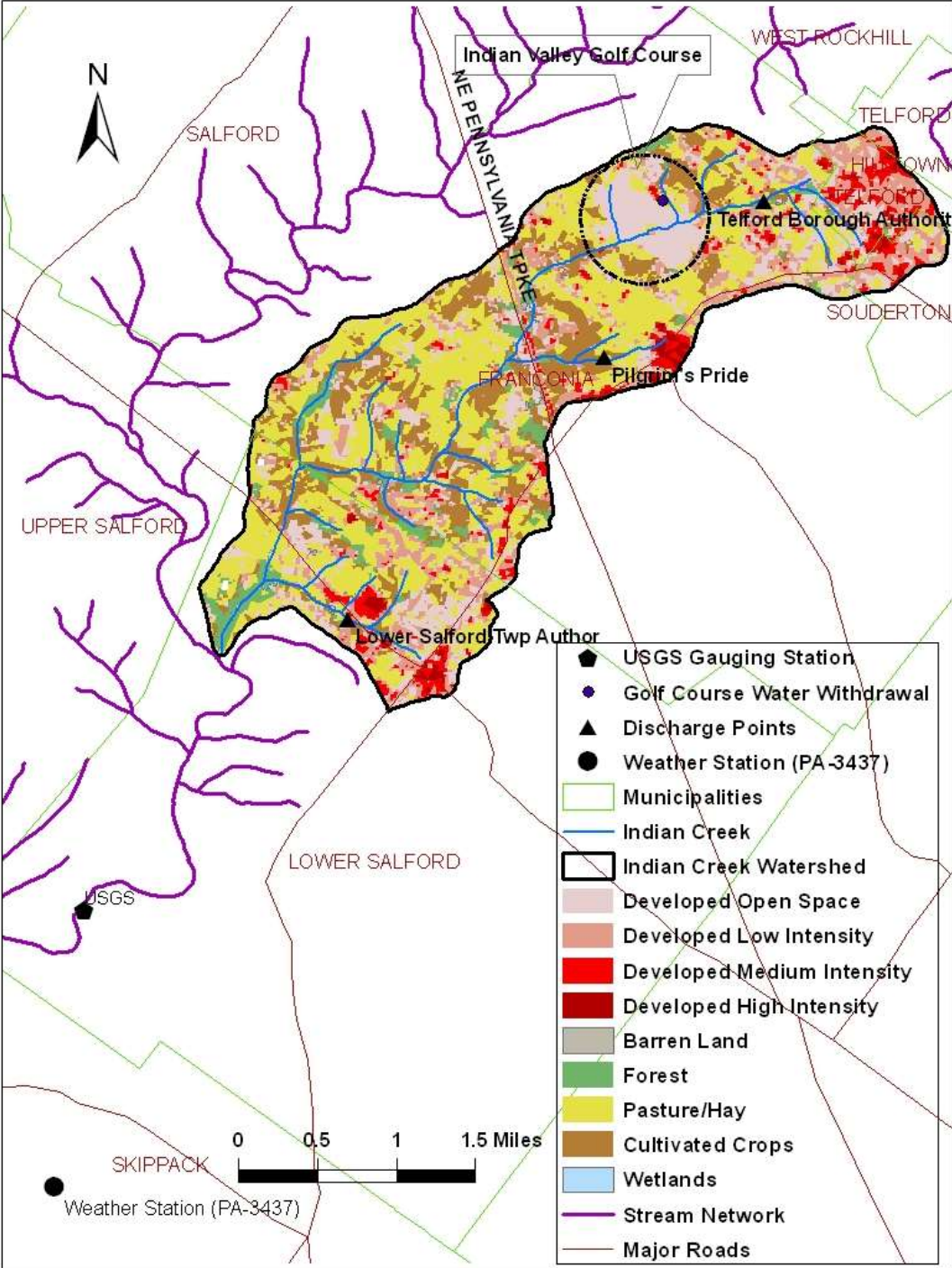
- Welcome
- Background
- Project Plan
- Data Needs
- Questions?



Background

- June 30, 2008 – EPA established Indian Creek TMDL for nutrients and sediment.
- March 21, 2014 – EPA reconsideration decision regarding the Indian Creek Sediment TMDL
 - Confirmed concerns that the reference watershed approach and sediment loading rates should be revisited.
- April 3, 2014 – Voluntary remand of Indian Creek Sediment TMDL granted.

Indian Creek Watershed



Indian Creek is impaired for sediment

- All data to date support PADEP's identification of siltation (sediment) impairment in Indian Creek
- Since Pennsylvania does not currently have numeric criteria for sediment, EPA interpreted Pennsylvania's existing narrative standard at 25 PA Code Section 93.6(a) & (b):

Water may not contain substances attributable to point or nonpoint source discharges in concentration or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life; and In addition to other substances listed within or addressed by this chapter, specific substances to be controlled include, but are not limited to, floating materials, oil, grease, scum and substances which produce color, tastes, odors, turbidity or settle to form deposits.

Stakeholder Engagement

- EPA is seeking to engage Indian Creek watershed stakeholders on best way to address sediment impairment
 - Develop Sediment Reduction Plan
 - Revise the Sediment TMDL
- EPA, PADEP and stakeholders need to determine existing sediment loads and potential sediment allocations for Indian Creek
- EPA is requesting local data by January 15, 2015

Sediment Allocations Project Plan

- Generalized Watershed Loading Function (GWLF) model
- Reference watershed approach
- Use local data (as available)
- Confirm approach/assumptions with stakeholders

Key Areas for Consideration

- Accounting for stream bank erosion
- Determining an appropriate reference stream
- Updating land use data
- Refinement of MS4 allocations

The GWLF Model

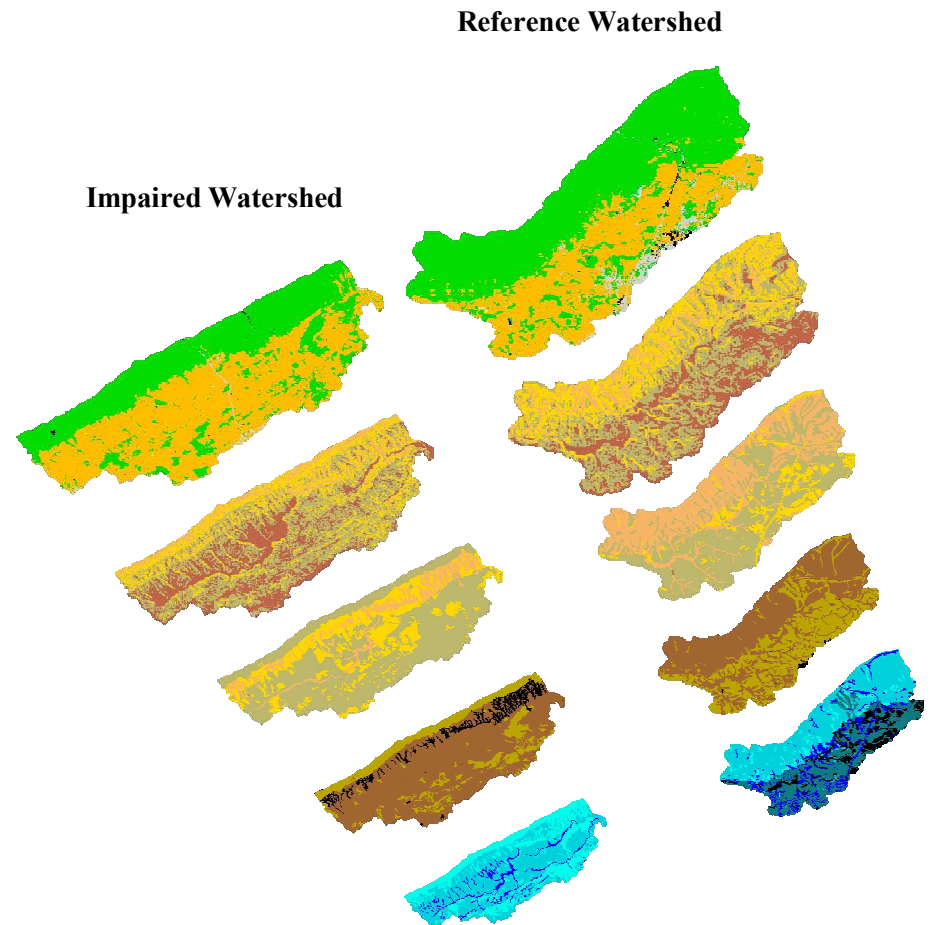
- Widely accepted model for sediment loads in streams
- Capable of modeling streambank erosion
- Continuous-simulation
- Spatially-lumped
- Daily time step for water balance
 - Calibrated to monitored data
- Monthly time step for pollutant loading
 - Effective for modeling annual loads, but generally not possible to calibrate
- Consistency in modeling the target and reference watersheds is vitally important

Stream Bank Erosion in GWLF

- Model inputs affecting stream bank erosion
 - Amount of developed land
 - Livestock density
 - Runoff potential (curve number)
 - Soil erodability
 - Slopes

Reference Watershed

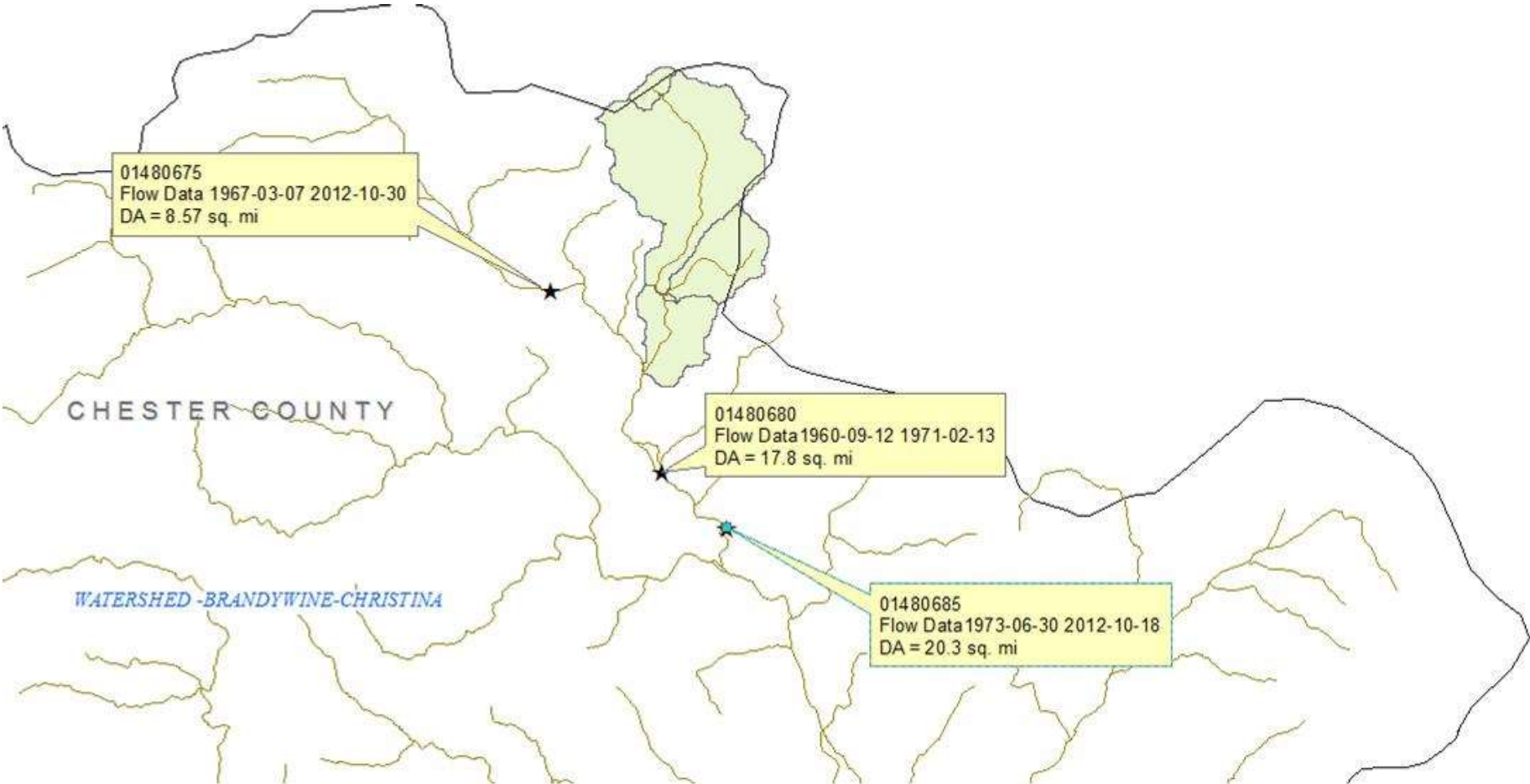
- Non-impaired with similar characteristics
 - Land use
 - Watershed size
 - Soils
 - Topography
 - Stream order
 - Ecoregion
- Land use represents human impacts
- Other factors affect aquatic life potential



Black Horse Creek

- PADEP identified Black Horse Creek as an appropriate reference watershed for Indian Creek.
 - Standard comparison of watershed characteristics
- Located within Brandywine Christina watershed (HUC 02040205) in Chester County, PA
- Approximately 3.85 square mile drainage area
- Black Horse Creek will be modeled consistently with Indian Creek

Black Horse Creek



Hydrologic Calibration

- Indian Creek
 - 2008 Indian Creek TMDL
 - USGS 01472810 on East Branch Perkiomen Creek
 - 58.7 mi² watershed including Indian Creek
 - USGS 01472810 will be assessed for hydrology calibration
- Reference Watershed – Black Horse Creek
 - USGS 01480685 will be assessed for hydrology calibration
 - Located on Marsh Creek near Downingtown, PA

Municipal Separate Storm Sewer System (MS4) Loads

- In the 2008 TMDL model the entire watershed contributed load to the MS4s
- Permit holders may have updated information as to contributing areas
 - Local jurisdictions have been asked for updated data
 - What is the extent of the sewershed?
- MS4 loads can be calculated to more accurately reflect the types of land areas that contribute
 - For instance, impervious urban/residential areas

Land Use

- In the 2008 TMDL, the 2001 National Land Cover Dataset (NLCD) was used
- The 2011 NLCD is now available
- Local jurisdictions may have more accurate/refined data
- The best available land use data will be used in the modeling effort

Local Data Needs

- MS4 boundaries
- Land use/cover
- Impervious surfaces
- Soils
- Topography
- Livestock numbers
- BMP data
 - Type
 - Location
 - Area treated
 - Efficiency
- In the absence of local data, the best available national/regional/state data will be used

Data Requested from Local Stakeholders

- Local land-cover data
 - Developed areas (*GIS data layer or percentage of developed area in the watershed*)
 - Impervious Areas (*GIS data layer or percentages of impervious area in the watershed*)
- BMPs
 - Area treated (drainage) (*GIS data layer, or percentages of treated area*)
 - Outfall location (*GIS data layer or a description of the location*)
 - Sediment trapping efficiency (*A percentage load or concentration reduction for each/any BMPs that have been studied.*)
- Photos of streambank erosion in the watershed
- MS4 permits
 - Delineation/description of permit areas (*GIS data layer or a narrative description*)
 - Delineation/description of contributing drainage areas (*GIS data layer or drainage acreage(s) within the watershed*)
- Livestock numbers and locations (animal density is an input to the GWLF model for calculating streambank erosion)

Data Requested from PADEP

- Information on all permits, particularly those containing Total Suspended Solids (TSS) or Settleable Solids (SS) permit limits (*e.g.*, NPDES, general construction permits, single family home discharge permits).
 - Permit Number
 - Location
 - Permitted or design flow
 - Disturbed/controlled area, if stormwater related (*e.g.*, construction permits)
 - Permit limits on solids
 - Monitored data (*e.g.*, discharge monitoring report - DMR), if available
- MS4 monitoring data if any is available.
- Water quality monitoring data, specifically TSS data.
- Recent benthic macroinvertebrate sampling data.

Timeline

Milestone	Date
Notification of potential local data to EPA	15-Dec-2014
<i>Final deadline for providing local data to EPA</i>	15-Jan-2015
Completion of water quality modeling	6-Mar-2015
Presentation of the new existing sediment loads (stakeholder meeting)	27-Apr-2015
Presentation of the new sediment allocations (stakeholder meeting)	21-Sep-2015
Final sediment allocations report.	19-Feb-2016

Final Deadline to Submit Local Data is January 15, 2015

Please send data to:

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Questions?

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