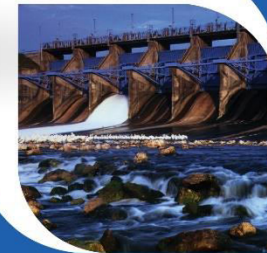


Village Creek-Lake Arlington Watershed Protection

Aaron Hoff

Trinity River Authority

February 11, 2016



Meeting Overview

- Village Creek-Lake Arlington WPP - Review
 - Aaron Hoff, Trinity River Authority – Watershed Coordinator
- Six Steps in the Watershed Planning Process & the Goals of the Clean Water Act
 - Mike Bira, U.S. Environmental Protection Agency – Watershed Management Section
- Monitoring Approach Alternatives
 - Kelly McKnight, Trinity River Authority – Clean Rivers Program



Meeting Overview

- Proposed Steering Committee Members and Ground Rules
 - Aaron Hoff, Trinity River Authority – Watershed Coordinator
- Upcoming Events and Path Forward
 - Aaron Hoff, Trinity River Authority – Watershed Coordinator
- Open Discussion and Closing Comments



Introductions

- What's your name?
- Where do you live or work?
- What's your affiliation (landowner, city staff, agency, industry, etc.)?
- What do you expect to get out of the meeting today?



<http://www.trinityra.org/lakearlingtonvillagecreek>



TRINITY RIVER AUTHORITY OF TEXAS

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BUSINESS SERVICES

BASIN PLANNING

RECREATION

LAKE/RIVER DATA

Basin Planning

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Village Creek-Lake Arlington Watershed Protection

In the News

Next Public Stakeholder Meeting - 2/11/2016

Our next public meeting for the Village Creek-Lake Arlington Watershed Protection Partnership will take place on Thursday, February 11, at 6:30pm. The meeting will be held at the Everman City Hall Annex. We will be nominating members for the Steering Committee to be voted on at our March meeting, so if you have someone in mind that would be an asset to this decision-making group, you can nominate them at the meeting or through our [Stakeholder Survey](#).

February 11, 2016
6:30pm - 8:30pm
Everman City Hall Annex
213 North Race St
Everman, TX 76140
[See Map](#)

See you there!

Stakeholder Survey

Want to get involved in the watershed? Please take the Stakeholder Survey to let us know how you'd like to help out, or if you're already involved.

[Take the Stakeholder Survey](#)

Watershed Protection Plan Kickoff

Thanks to everyone who joined us in Burleson for the kickoff meeting on Thursday, December 10th. Presentations are now posted to the [Meeting](#) page for your reference.

At the meeting, the Watershed Protection group voted for an official logo. Here's the final design:

Basin Planning

[History of Water Quality](#)

[Clean Rivers Program](#)

[Reports](#)

[Region C Water Planning](#)

[Village Creek-Lake Arlington](#)

- [About](#)
- [Meetings](#)
- [Maps & Data](#)

Point of Interest



The Texas legislature established the Texas Clean Rivers Program in 1991 to provide a systematic, coordinated effort to evaluate and protect Texas' water resources.

<https://www.surveymonkey.com/r/KQ3PGHY>

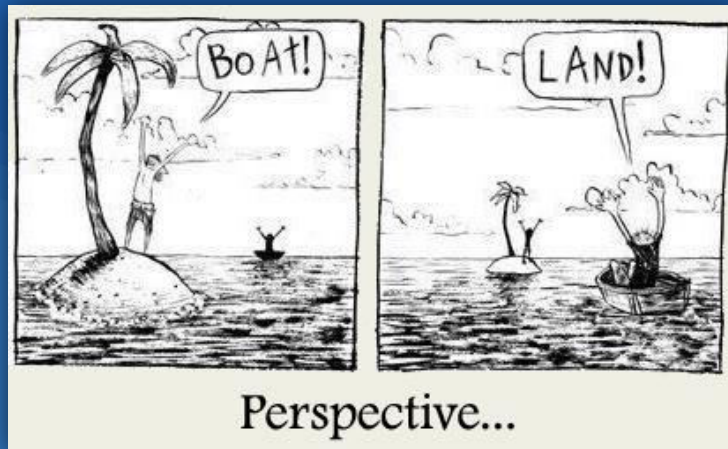
Funding Source

Funding provided by the Texas Commission on Environmental Quality through a Clean Water Act Section 319(h) grant from the U.S. Environmental Protection Agency, with match funding from the City of Arlington and in-kind contributions from TRA.



Ground Rules for Discussion Periods

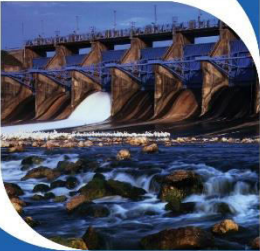
- Please save questions until after each presentation has been given
- Limit discussion to 5 minutes per person
- Any additional questions may be answered during the open discussion period at the end
- Please be respectful of others' time and points of view



Questions?

<http://www.trinityra.org/lakearlingtonvillagecreek>

Aaron Hoff
Trinity River Authority
hoffa@trinityra.org
817.493.5581

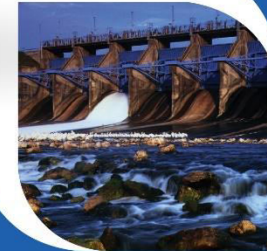


Village Creek-Lake Arlington Watershed Protection Plan - Review

Aaron Hoff

Trinity River Authority

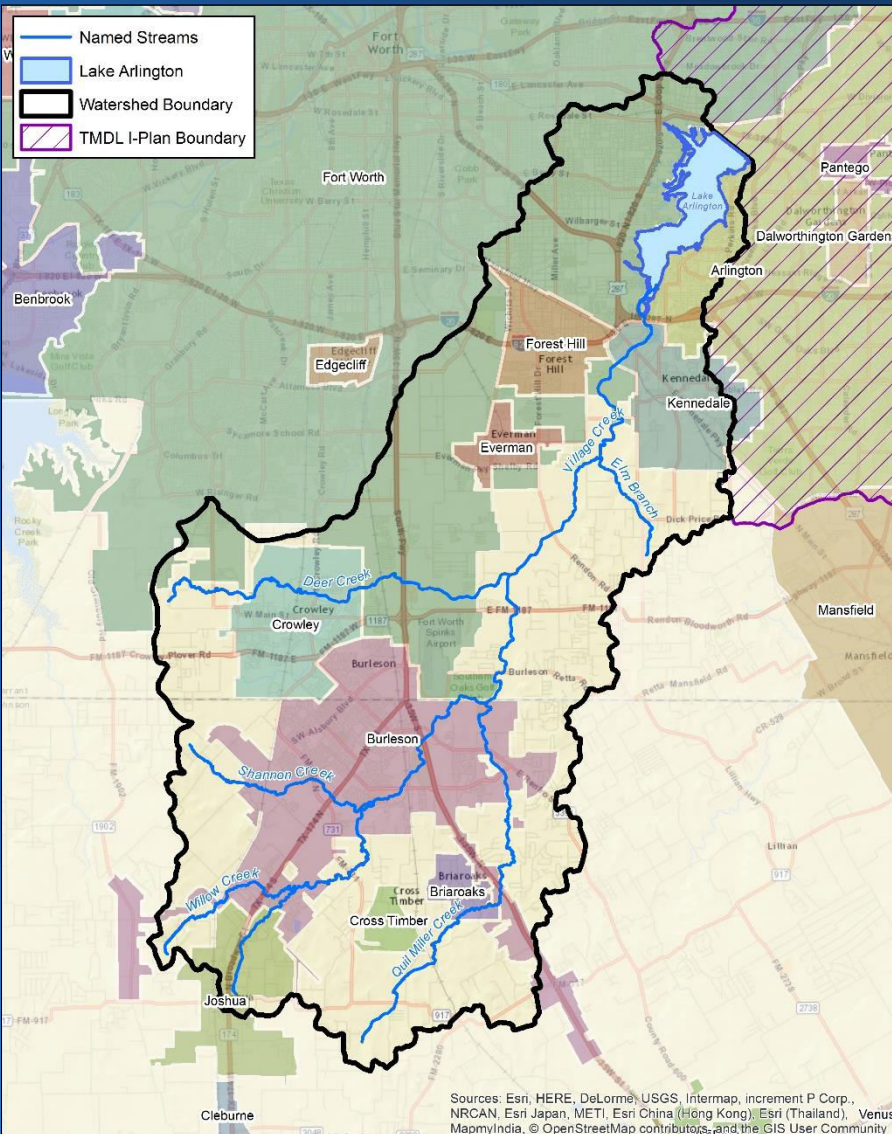
February 11, 2016



Watershed Characterization



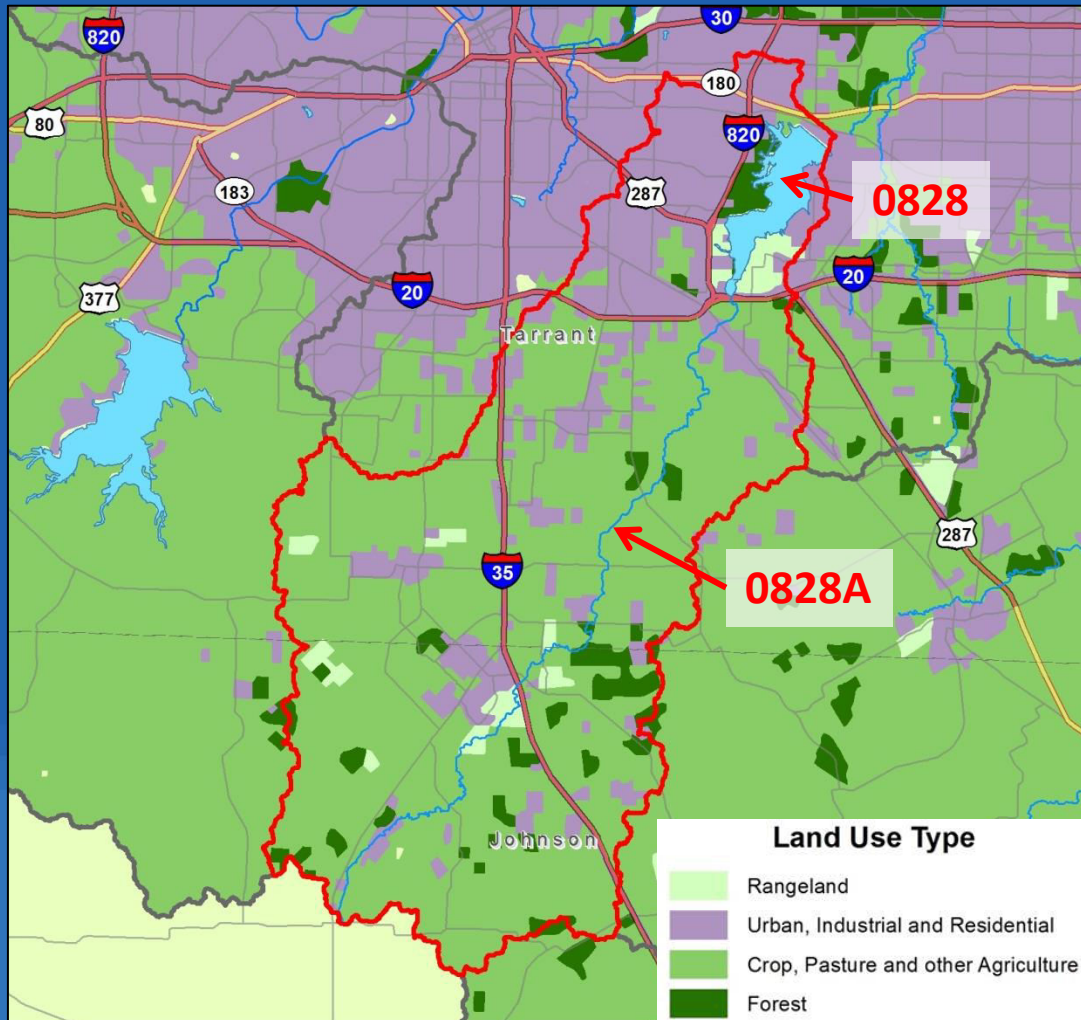
What's in the watershed?



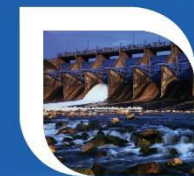
- 91,400 acres (143 mi²)
- Village Creek = 28 river miles
- Counties
 - Johnson • Tarrant
- Towns and Cities
 - Joshua • Cross Timber
 - Briaroaks • Burleson
 - Crowley • Everman
 - Forest Hill • Kennedale
 - Arlington • Ft. Worth
- Soil and Water Conservation Districts
 - Dalworth • Johnson



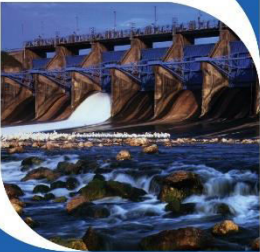
Water sources and uses



- Village Creek drains to Lake Arlington
- Headwaters in Joshua
- Supplies water to City of Arlington, portions of Tarrant County
- Imports from Cedar Creek and Richland-Chambers Reservoirs



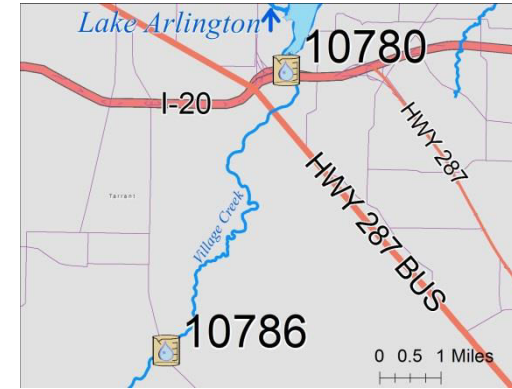
Data Collection



What are we looking for?

- Loadings!
- How do we get them?
 - Collecting flow and water quality samples
 - $\text{Parameter concentration} \times \text{Flow} = \text{Loading}$
- What are the parameters?
 - **Bacteria (*E. coli*)**
 - Total Suspended Solids (TSS)
 - Volatile Suspended Solids (VSS)
 - Total Dissolved Solids (TDS)
 - **Nitrite/Nitrate (NO_2/NO_3)**
 - Total Kjeldahl Nitrogen (TKN)
 - Total Phosphorus (TP)
 - Dissolved Orthophosphate (OP)
 - **Chlorophyll-a**

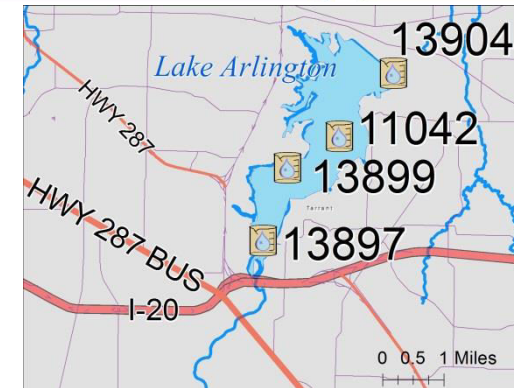
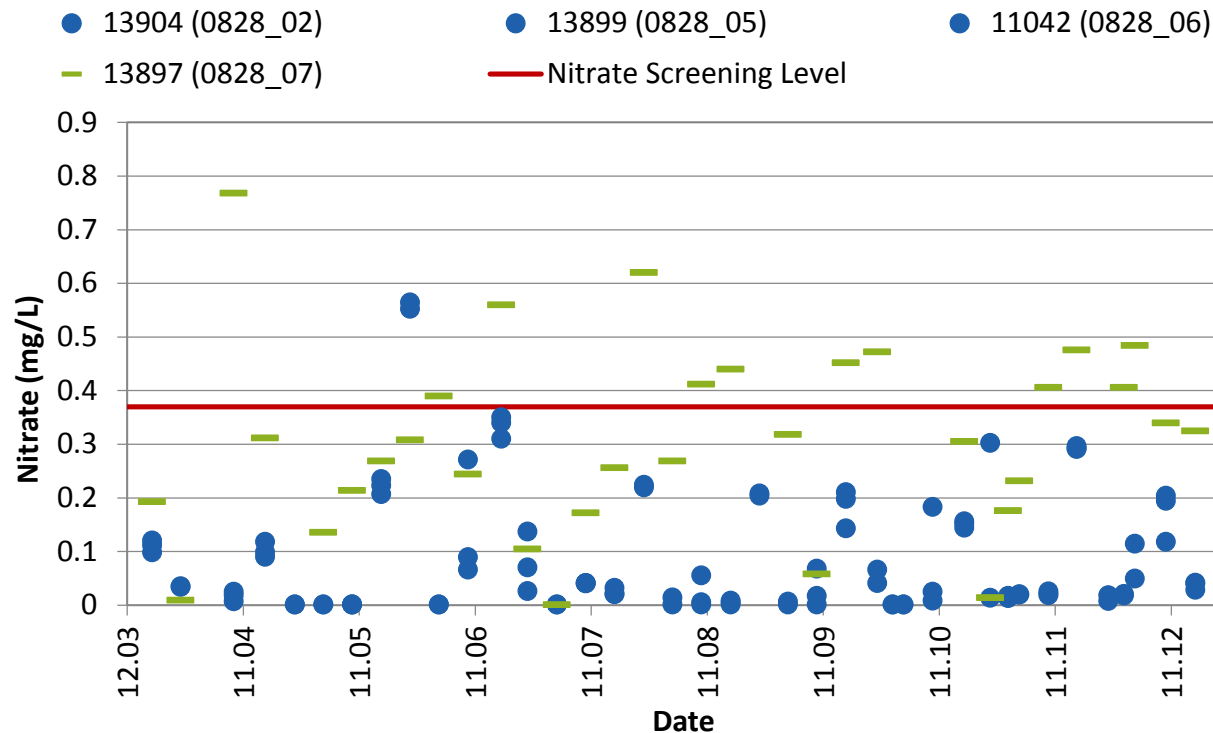




0828 Lake Arlington Nitrate



- Screening Level = 0.37 mg/L



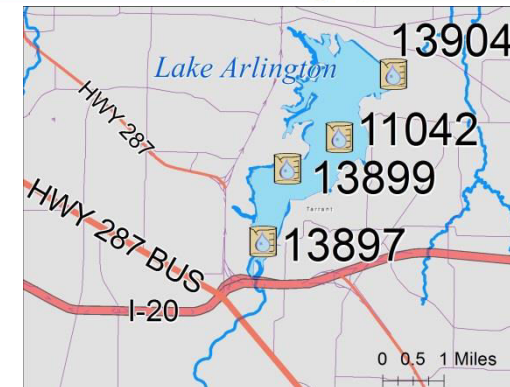
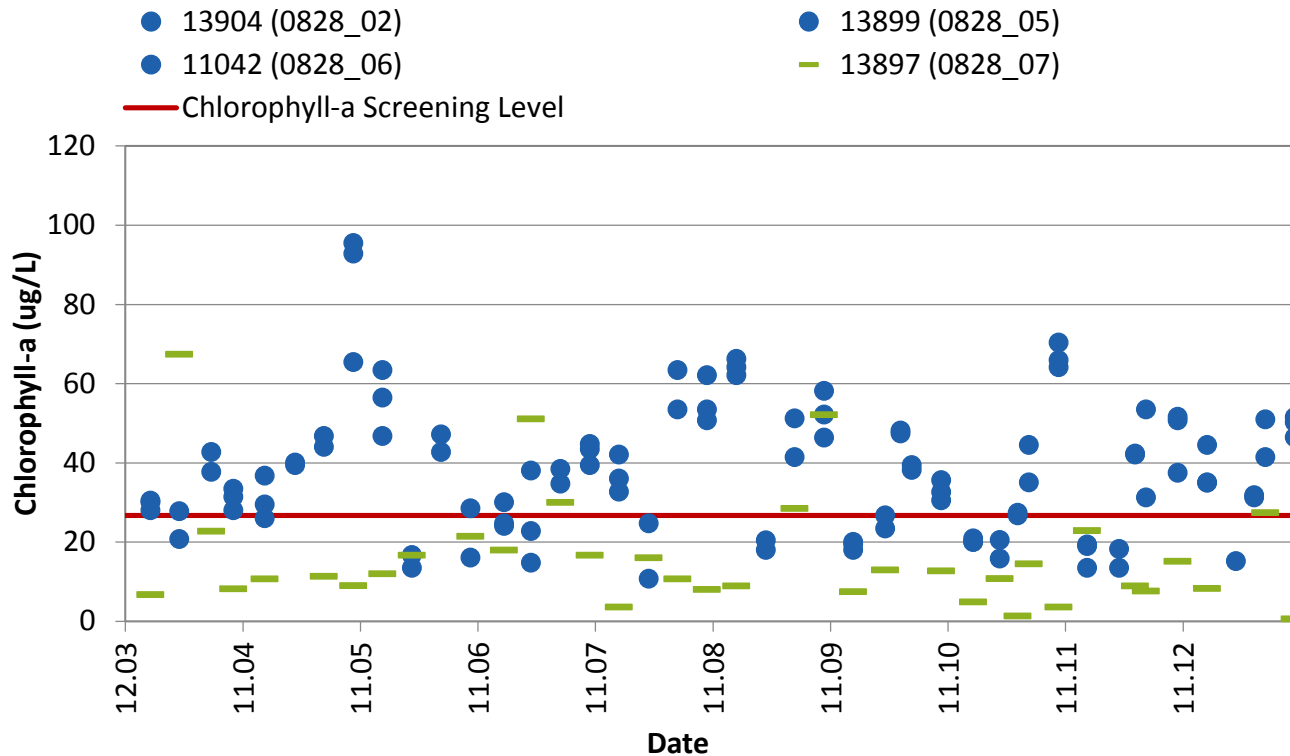
- Averages

- 13904 = 0.09 mg/L
- 13899 = 0.11 mg/L
- 11042 = 0.09 mg/L
- 13897 = 0.32 mg/L

0828 Lake Arlington Chlorophyll-a



- Screening Level = 26.7 ug/L



- Averages

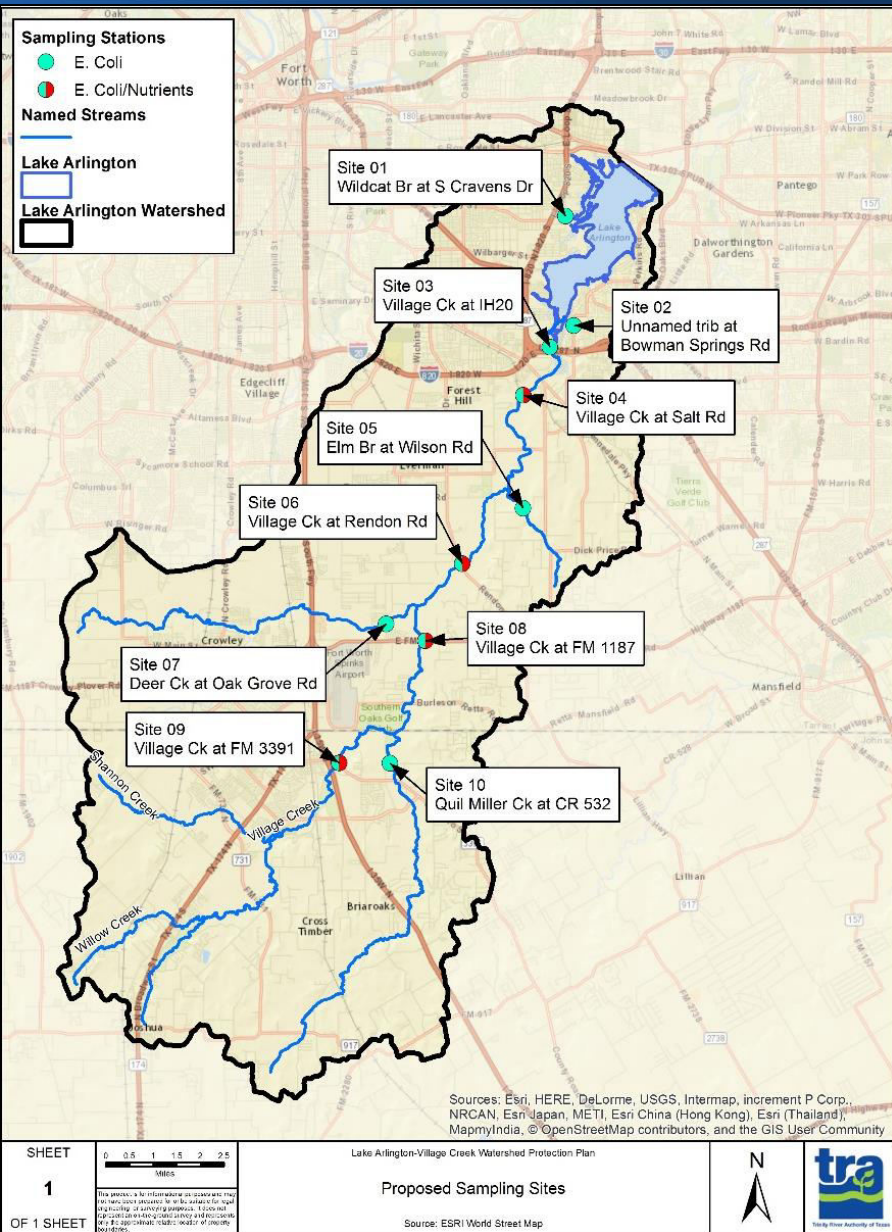
- 13904 = 36 ug/L
- 13899 = 41.5 ug/L
- 11042 = 38.1 ug/L
- 13897 = 16.4 ug/L

When are we sampling?

- Begin sampling in May 2016
- Schedule will incorporate different sampling techniques
 - Routine monitoring (regardless of flow)
 - Flow-biased samples (targeted to specific flow events)
- 6 sites monitored for bacteria only
- 4 sites monitored for bacteria and nutrients



Where are we sampling?

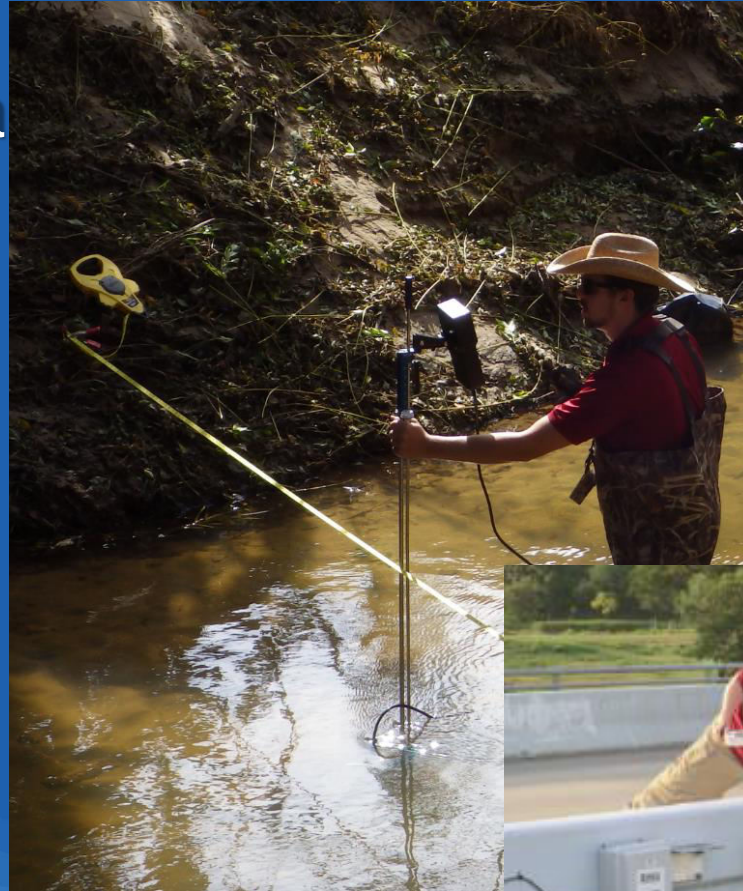


- One site west of Lake Arlington
- One Site east of Lake Arlington
- Five sites on the main stem of Village Creek
- Three sites on Village Creek Tributaries
 - Deer Creek
 - Elm Branch
 - Quil Miller Creek

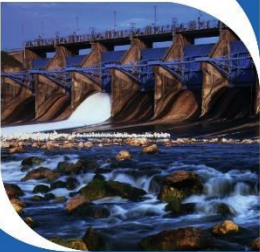


Why did we pick these sites?

- Two existing sites with historical data for comparison
- Public road crossings
- Even representation of land uses
- Includes main channel and tributaries



Data Uses



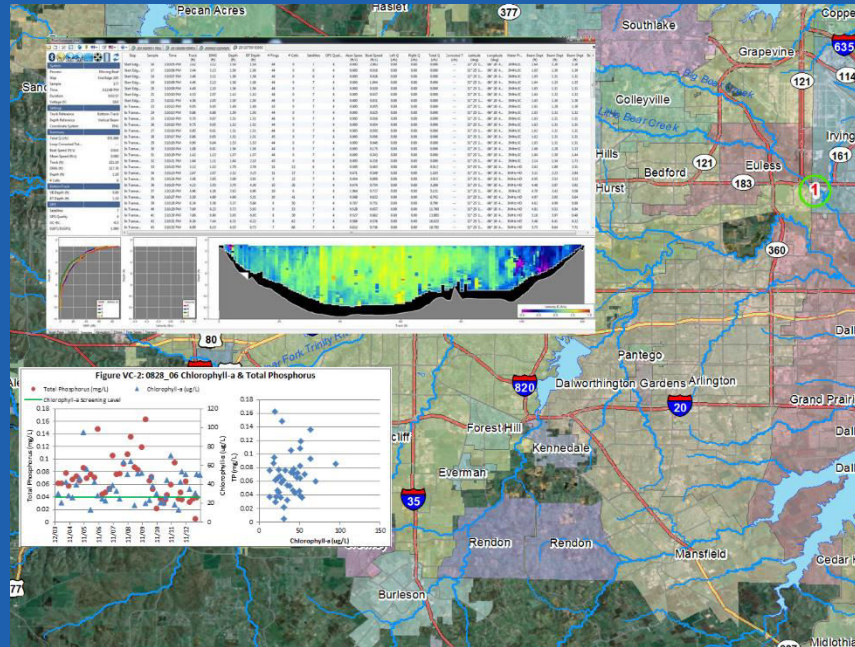
What will we learn from the data?

- Establishes baseline knowledge
- Monitoring results can show changes over time
 - Are there any trends?
 - Does the time of year matter?
- Data can show potential areas of concern
 - Is land use a major factor?
 - Are parameters highest in a particular tributary?
 - OR...is something else entirely different going on that we haven't considered?



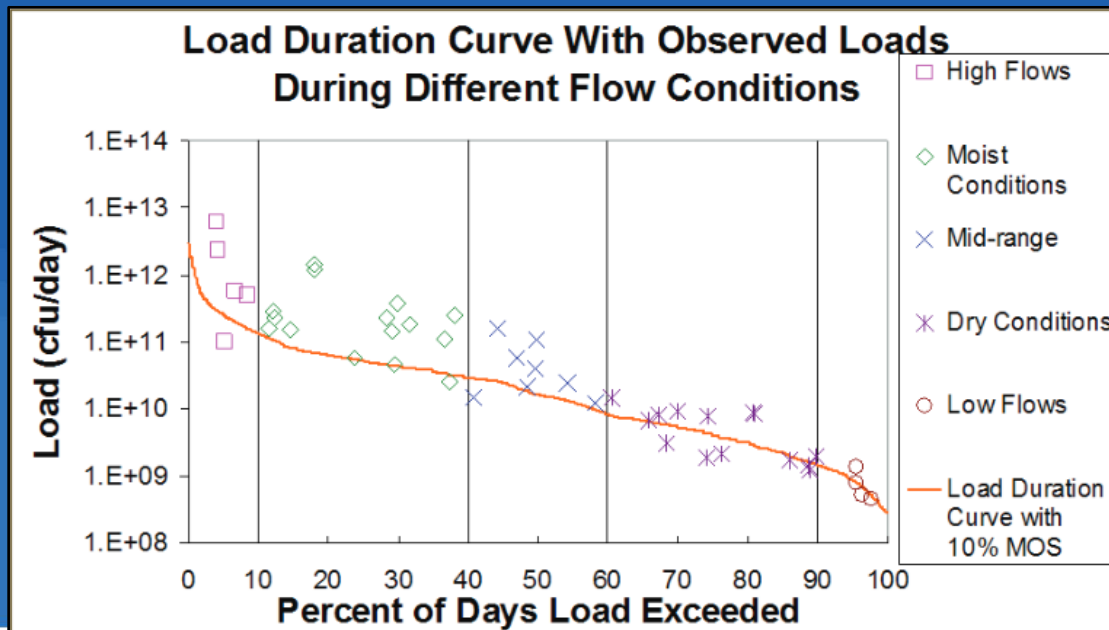
How will we use the data?

- Promotes group discussion and provides basis for informed decisions
- Used to calculate flow/load duration curves
- Denotes focus areas for specific BMPs
- Ultimately drives decisions that will become part of the WPP



Load Duration Curves (LDCs)

- LDCs use the collected field data to quantify pollutant loads
 - Parameter concentration x Flow = Loading
- LDC graphs are useful for interpreting gaps between allowable vs. actual loads
- Gaps represent the pollutant load reduction needed to reach the water quality goals of the WPP



Source: Buck
Creek Watershed
Protection Plan



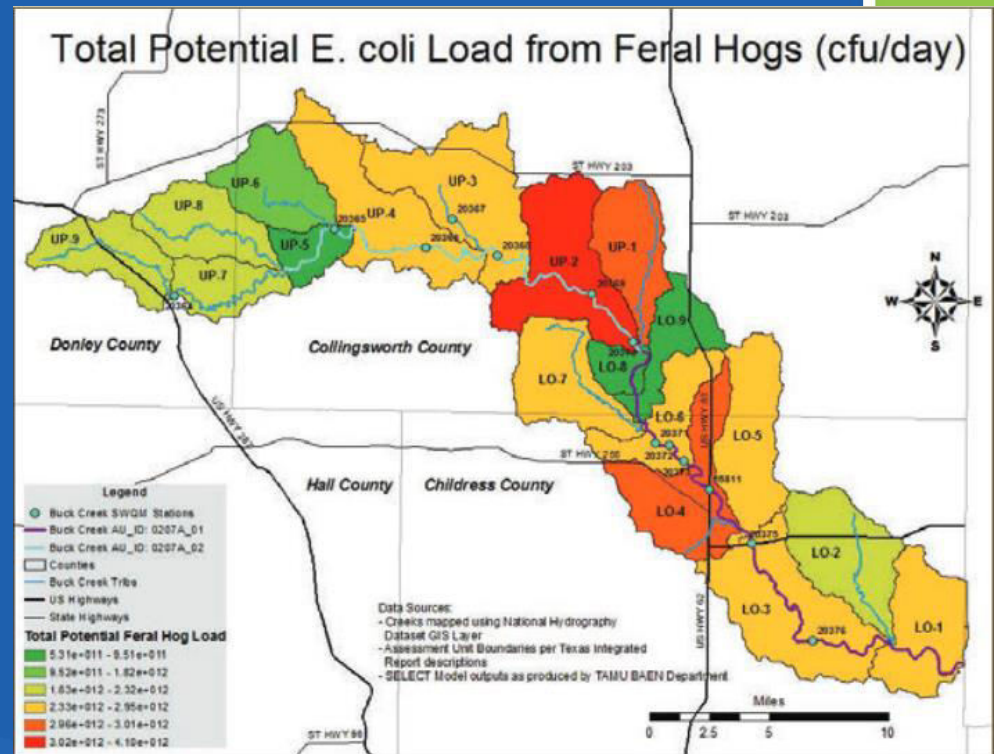
SELECT

- Spatially Explicit Load Enrichment Calculation Tool
- Analytical approach for determining potential bacterial loads in specific areas of a watershed
- Spatial data inputs
 - Land use data
 - Population data (human and animal)
- Literature values for fecal production rates
- **SELECT does *not* account for any natural or anthropogenic mitigation processes**
 - Results in an overestimation of potential sources
 - Provides a “worst-case scenario”



SELECT

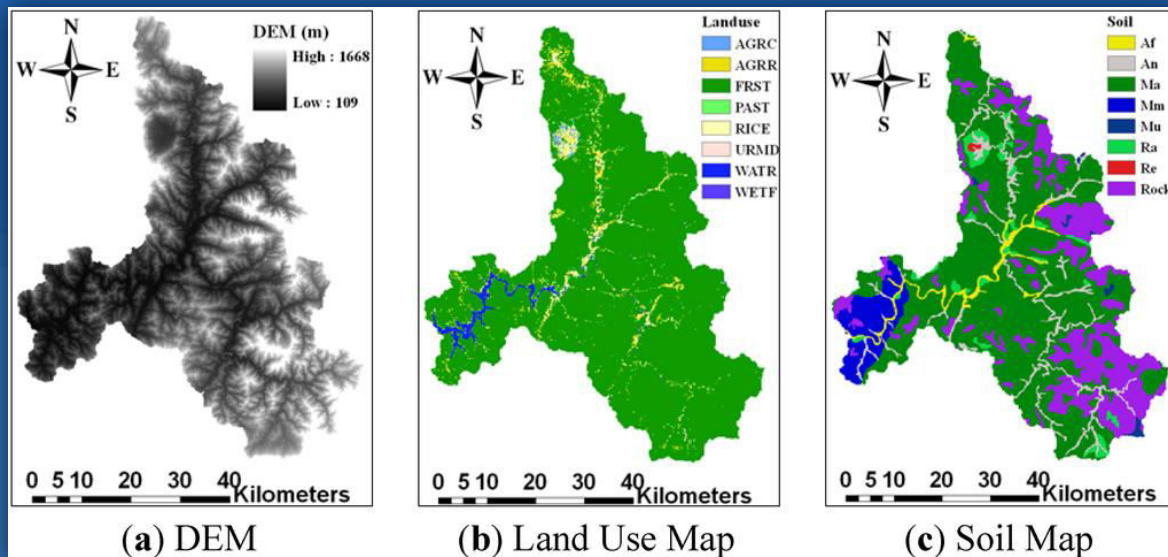
- Evaluates selected pollutant sources separately
- Determines which “catchments” have the greatest contribution to the overall pollutant load
- Targets areas for potential management practices



Source: Buck Creek Watershed Protection Plan

SWAT

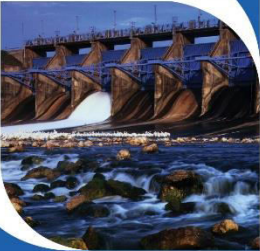
- If necessary, may utilize Soil and Water Assessment Tool (SWAT)
- Identifies contributing areas quantifies loadings for pollutants
- Used to quantify load reduction targets and appropriate placement of BMPs



Questions?

<http://www.trinityra.org/lakearlingtonvillagecreek>

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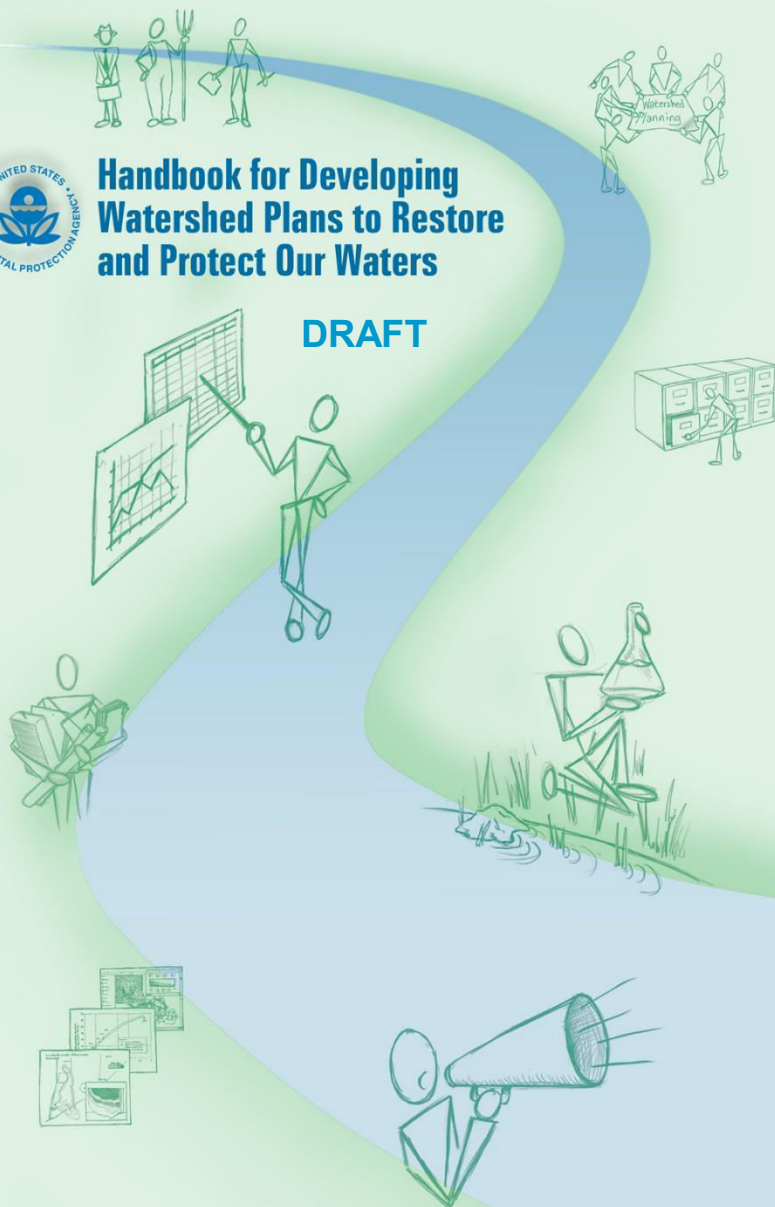


The Watershed Academy



Handbook for Developing Watershed Plans to Restore and Protect Our Waters

DRAFT



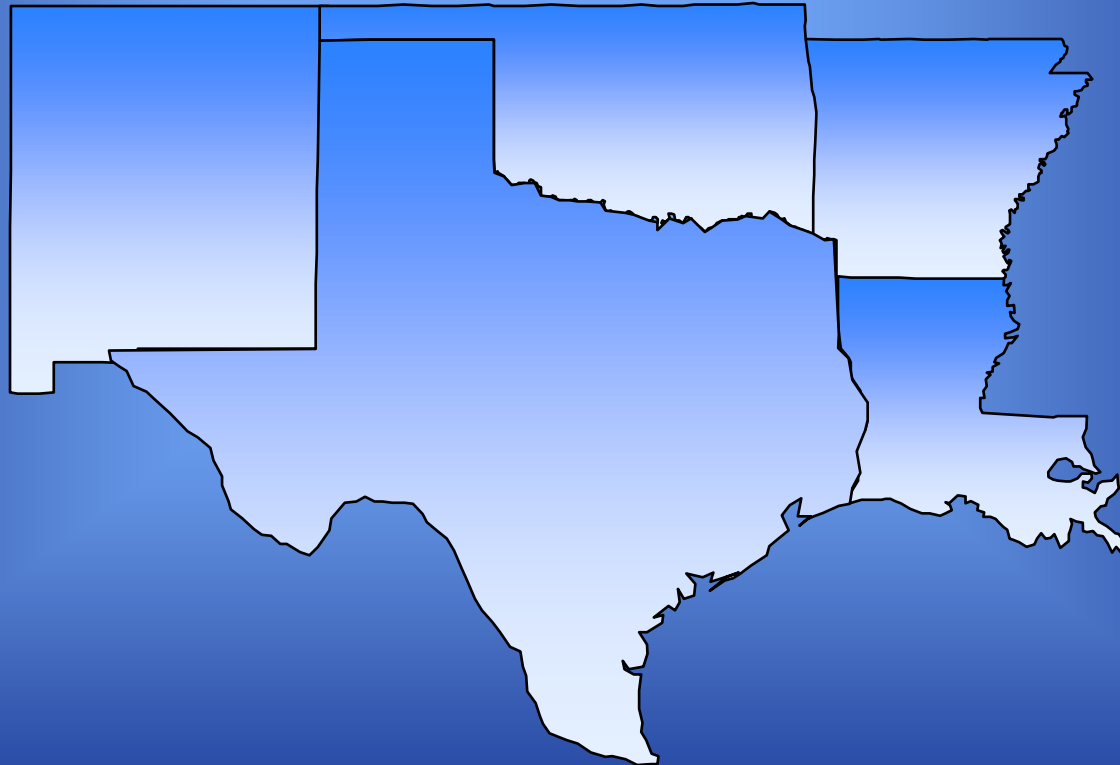
EPA Perspectives In Watershed Planning

Mike Bira

EPA Region 6 NPS Program



EPA Region 6 Dallas, Texas





What can watershed plans provide?

- **Clear Purpose & a Roadmap** - needed to coordinate complex scientific, social, and economic activities
 - **Accountability** – What indicators are we going to count and why are they important to watershed resources?
 - **Program Integration thru Partnerships** - TMDLs, 319, NPDES, Source Water Protection, wetlands, Farm Bill Programs, local planning, private investment
-
- **COMMUNITY – BASED**
 - **WATER QUALITY RESTORATION**
 - **WATER QUALITY PROTECTION**

Clean Water Act (CWA)

Federal law promulgated in 1972. Applies to surface water – lakes, rivers, streams, coastal areas

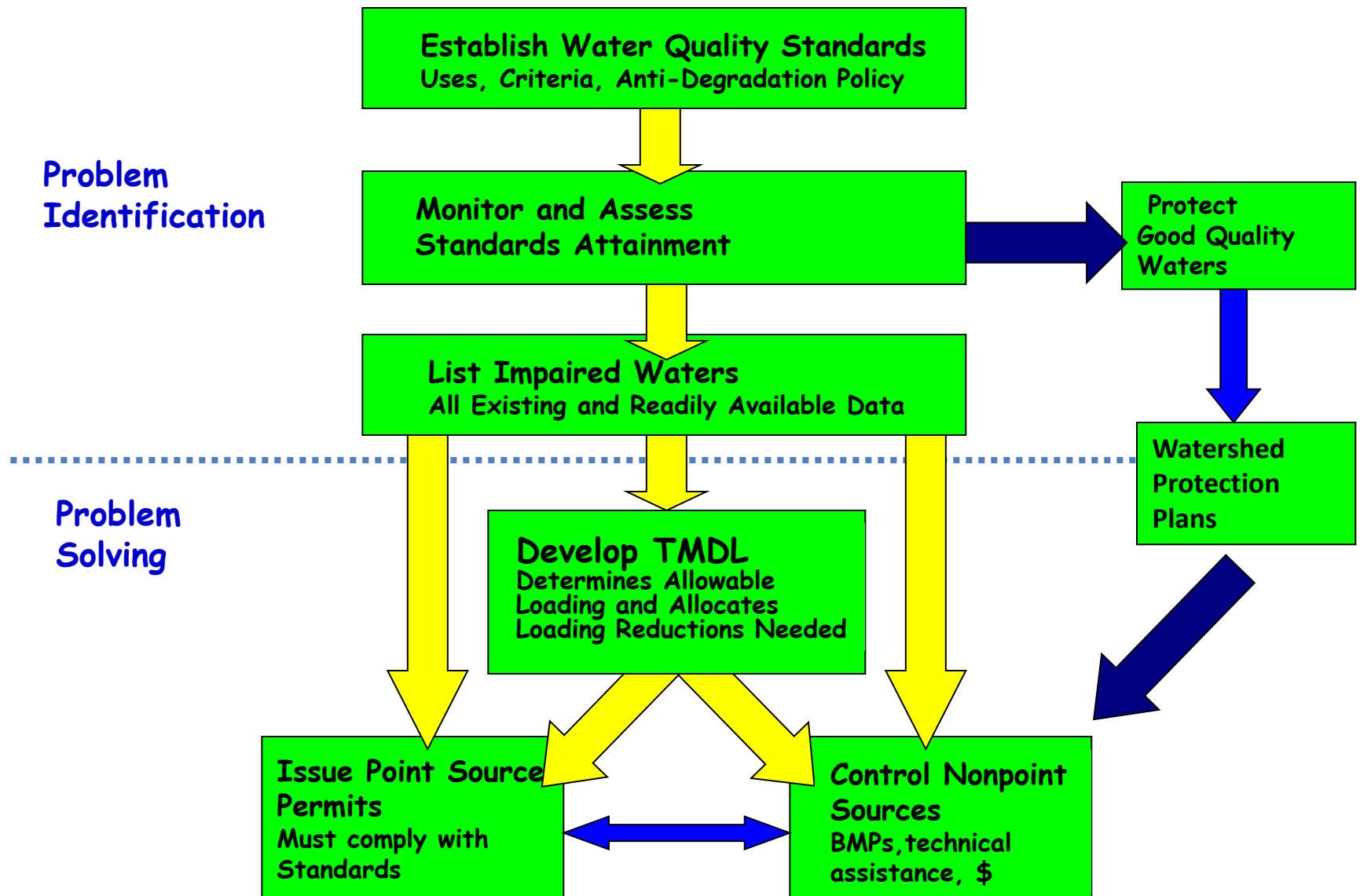
Uses regulatory and non-regulatory tools to protect and restore the nation's waters

Goals:

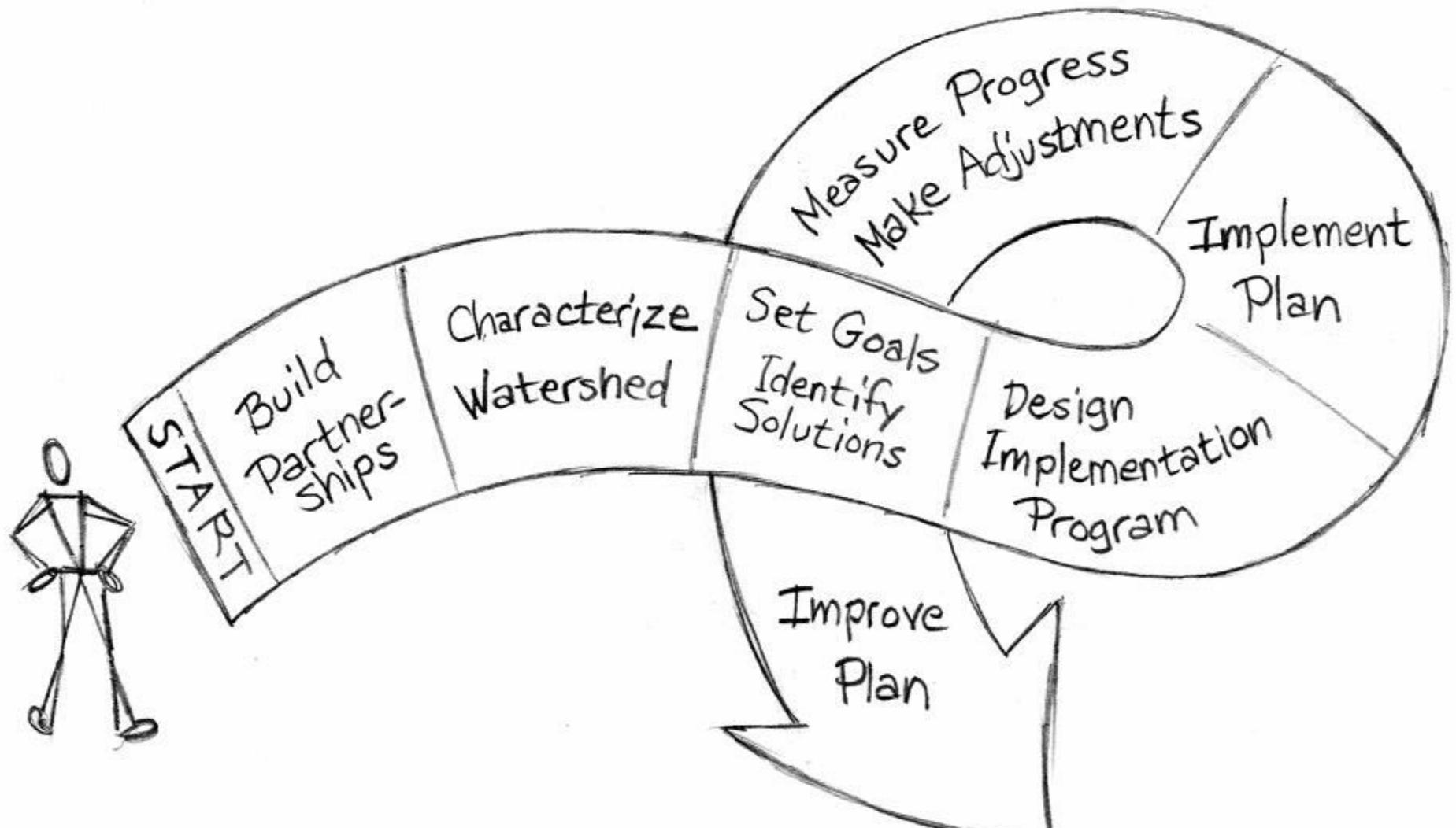
- reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff

- restore and maintain the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

Restoring Polluted Waters: Within a CWA Water Quality Management Framework



Six Steps in Watershed Planning



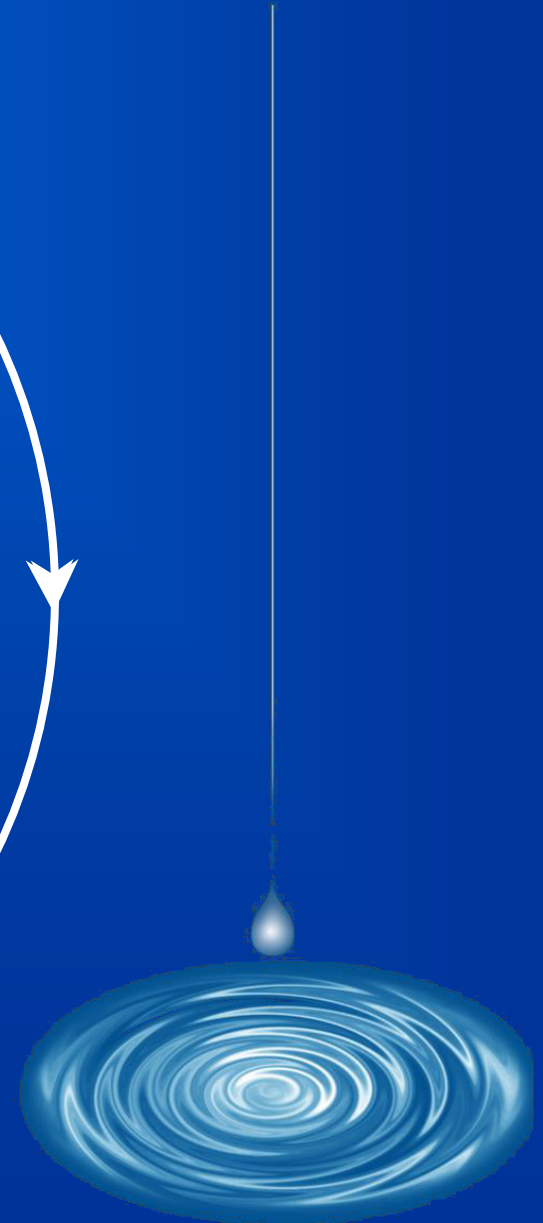
The Nine Elements that Must Be Included in a 319 Watershed Plan

1. Identify causes & sources of pollution – *TMDL feature*
2. Estimate load reductions expected – *TMDL feature*
3. Describe mgmt measures & targeted critical areas – *TMDL feature*
4. Estimate technical and financial assistance needed
5. Develop education component
6. Develop schedule – *TMDL option*
7. Describe interim, measurable milestones – *TMDL option*
8. Identify indicators to measure progress
9. Develop a monitoring component – *TMDL option*

EPA Watershed Tools

- www.epa.gov
- www.epa.gov/healthywatersheds
- www.epa.gov/owow/watershedplanning
- Surf Your Watershed
- Watershed Academy
- Watershed Plan Builder

Key Elements of the CWA



WATERSHEDS

Are like belly
buttons and
opinions -

EVERYBODY
HAS ONE!!



Questions?

Mike Bira
USEPA Region 6
bira.mike@epa.gov



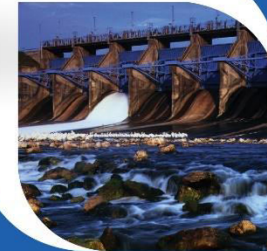
www.epa.gov/owow/nps/watershed_handbook/

Proposed Steering Committee Members and Ground Rules

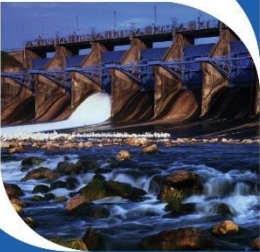
Aaron Hoff

Trinity River Authority

February 11, 2016



Stakeholder Participation



Who is a stakeholder?

- A stakeholder is anyone who:
 - Makes and implements decisions
 - Is affected by those decisions
 - Participates in the planning process
 - Assisting with implementation
 - Impeding the process
- **Don't have to live here to be a stakeholder!**



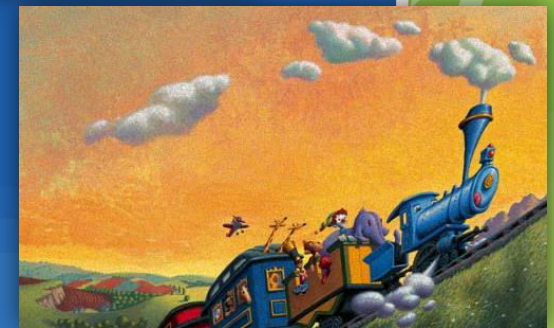
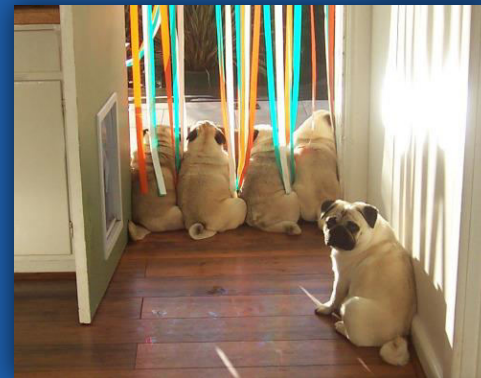
Why is stakeholder involvement important?

- It's the key to developing an effective WPP
- Stakeholder representation must be well-distributed
 - Amongst multiple users with varying needs
 - Throughout the entire watershed
- Local knowledge
 - Know the watershed
 - Know what works, what doesn't



What are the challenges of a stakeholder group?

- Lots of different perspectives, not a lot of time to discuss them
 - Specific groups (i.e., “focus groups”) may get left out
 - Others may worry they’re going to be ignored
- Keeping everyone engaged throughout the process – don’t start losing steam!



Building the Stakeholder Group

- Increase awareness of the watershed, issues, and planning process
 - Start off with informational meetings
 - Provide informative outreach materials
- Encourage participation
 - Group meetings
 - Steering committees
 - Public feedback
- **GOAL – develop a plan that will drive implementation**
 - Locally-driven and stakeholder supported
 - Improve water quality in Village Creek
 - Protect water quality in Lake Arlington

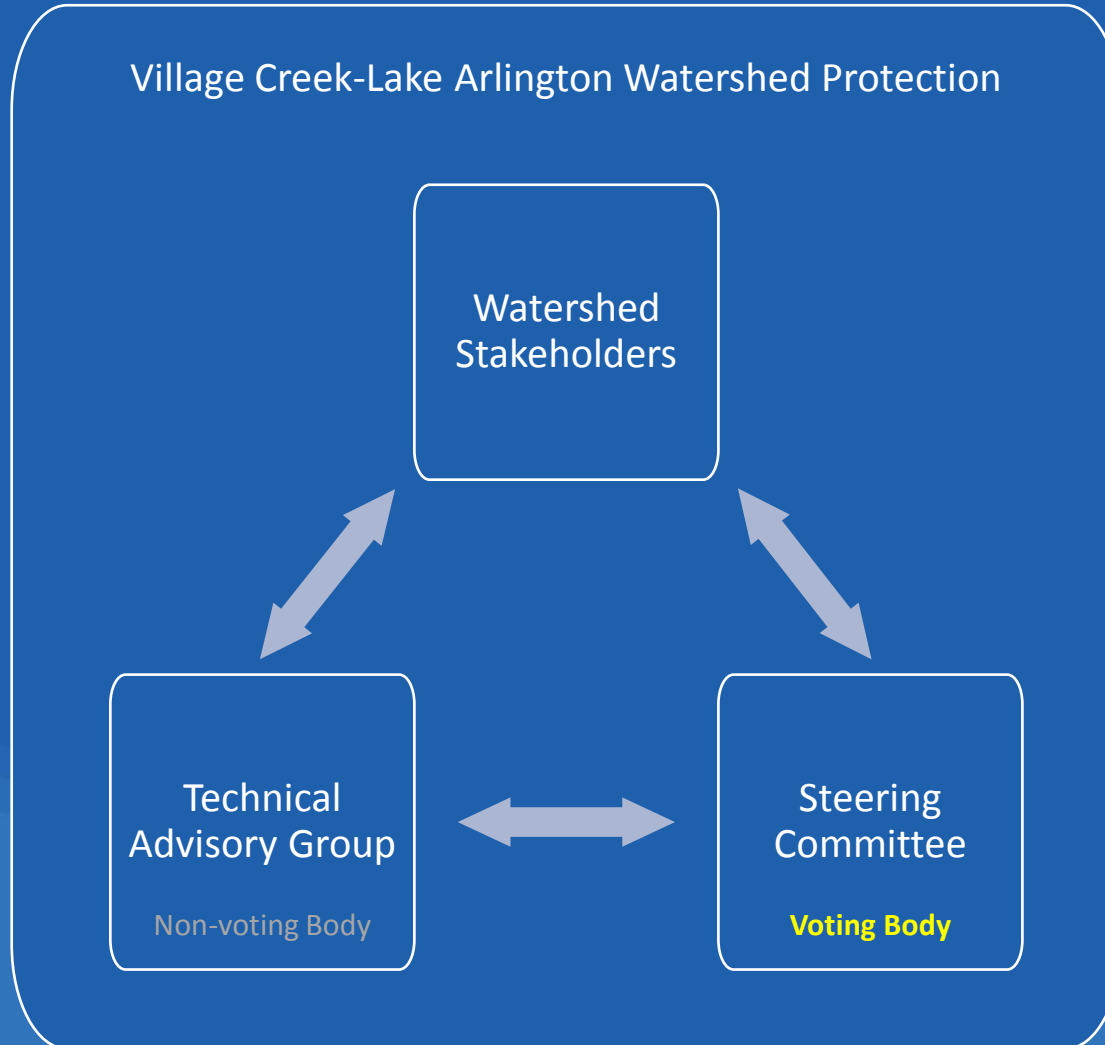


Proposed Group Structure

- Watershed Stakeholders
 - Anyone that is part of the group, regardless of activity level
- Technical Advisory Group (TAG)
 - State/Federal Agency staff that provide technical guidance, information, and funding opportunities
- Steering Committee (SC)
 - Decision makers and voting body
 - Will need to establish a consensus set of ground rules



Proposed Partnership Structure



TAG Members

- TCEQ
- EPA
- USGS
- TPWD
- TRA-PES
- RRC
- TIAER
- NRCS
- USFWS
- Texas AgriLife
- TRWD
- NCTCOG



TRA Roles

- TRA will act as the project facilitator
- Schedule and facilitate meetings
- Incorporate stakeholder decisions and comments into the WPP
- Coordinate with TAG to provide technical guidance to stakeholders during WPP development
- Ensure success of WPP by verifying compatibility with EPA's nine elements for successful WPPs



Funding Agency Roles

- TCEQ & EPA
 - Provide technical assistance with WPP development
 - Implementation as an endpoint
 - Provide federal funding
 - Review WPP for compatibility with nine key elements for successful WPPs
- City of Arlington
 - Provide non-federal match funds
 - Provide insight to ensure WPP fulfills the needs of local stakeholders



How can I get involved?

- Attend and participate at public meetings
- Provide feedback during the WPP's public comment period
- Serve as Steering Committee member
 - Vote on important watershed issues
 - Vote on WPP components



Obligations

- Partnership meetings held semi-annually
 - Schedule set by the group
 - No formal membership
- Steering Committee may meet more frequently
 - Semi-annually, offset with partnership meetings
 - At the recommendation of the Partnership
 - If Partnership cannot reach consensus
 - Committee participation is expected for all Committee meetings throughout project duration, planned for August 2018



Steering Committee Ground Rules



The Steering Committee

- Decides what is included in the plan
 - What solutions go into the WPP
 - What components are most likely to achieve those solutions
- Will be asked to agree to and abide by a set of ground rules
- **GOAL – develop a plan that will drive implementation**
- Time Frame
 - Planning, data collection, and reporting - through August 2018
 - Implementation - beyond 2018
- Committee will continue to function after the WPP has been developed to assist with implementation of the Plan



Steering Committee Formation

- Will use a 'Focus Group' perspective for member selection
 - Organizations
 - Individual landowners
 - Businesses
 - Local agencies
- Focus Groups will nominate members to represent their interests on the Steering Committee
- Initial Committee meeting
 - Set ground rules
 - Assess membership
 - determine if additional participation is required



Steering Committee Functions

- Members will provide a community perspective on a number of interests
 - Environmental
 - Public health
 - Business
- Members will strive for consensus in decisions
- Needs to be of practical size to function
- Ad hoc workgroups
 - Created at Committee's discretion
 - Address specific tasks or issues
- Members will sign and adopt the final WPP document



Changes to Committee Membership

- Vacancy Created
 - Member is unable to continue serving
 - Committee may choose to add a new member
- New Focus Groups
 - Stakeholder interests not previously taken into consideration
 - Focus Group recommends representative(s)
 - Committee evaluates recommended representative(s) and makes selections
- New member must be approved by majority of existing Committee members



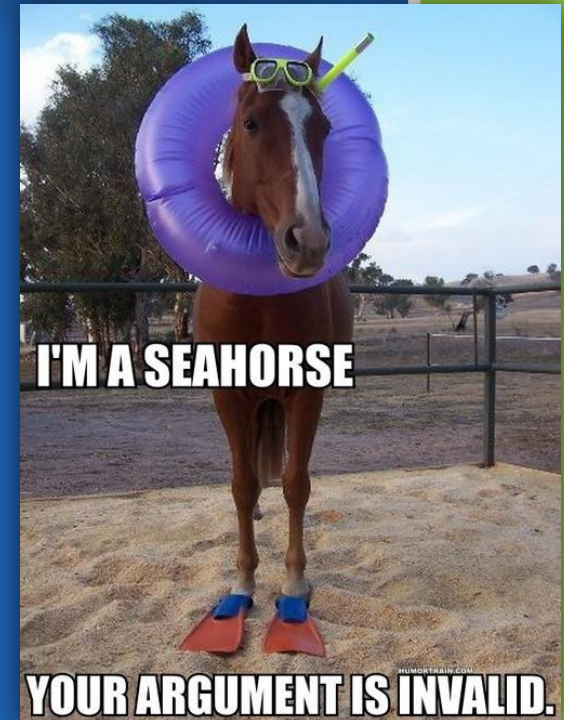
Alternates & Absences

- Alternates
 - Committee member may send an alternate if unable to attend a meeting
 - Requires advance notification to the watershed coordinator
- Absentee representation
 - Committee member may select a sitting member to speak for them and provide input
 - May also communicate directly with watershed coordinator beforehand
- Three consecutive absences may result in removal from the Committee if:
 - No prior notification given
 - No alternate in attendance



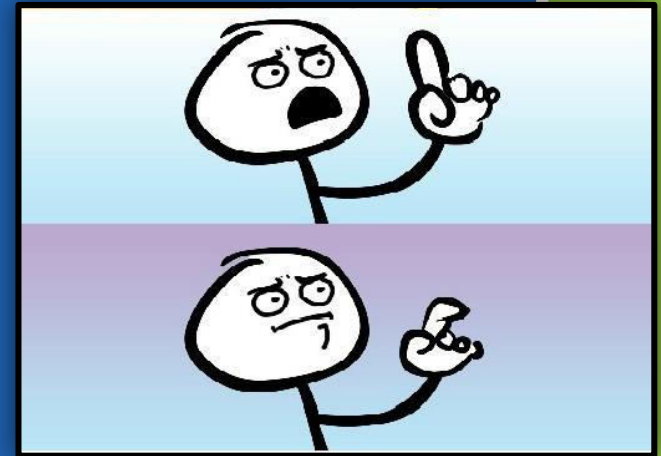
Making Decisions

- Quorum will not be a requirement
- No need to elect a chairperson
- Decision making process
 - Committee will agree by consensus whenever possible
 - If no consensus, decision made by majority vote
- Facilitator from TRA must be present
- TCEQ representative must receive prior notification of the meeting
 - May choose to attend meeting at their own discretion



Public Representation

- Speaking on behalf of the Committee
 - Members do not speak for the Committee by default
 - May be authorized to do so by the Committee as a spokesperson
- Committee members do not speak for:
 - TRA • TCEQ
 - EPA • City of Arlington



Ground Rules Coordination & Revision

- Discussion of amendments
 - During today's meeting
 - Through direct communication with watershed coordinator afterwards
- Once adopted, Committee may choose to:
 - Amend existing ground rules
 - Adopt additional rules
- Ground rule changes require a two-thirds majority vote



What's next?

- Comment on draft ground rules and proposed Steering Committee members
- Make changes
 - In live session held at meeting
 - Through written comments to watershed coordinator
- Approve ground rules and Steering Committee members list at next meeting (late March)



Stakeholder Feedback

- Please fill out survey provided and turn it in prior to leaving today OR return it to the address provided at the bottom of the survey
- Survey will help us identify additional watershed stakeholders to engage for steering committee participation
- Take additional copies to hand out to friends/neighbors that may be interested in protecting the watershed



Proposed Steering Committee Members



Proposed Steering Committee Members (15)

- **Municipalities (4)**

- Rep #1 (Lake Arlington)
- Rep #2 (Village Creek)
- Rep #3 (at large)
- Rep #4 (at large)

- **Regional Authorities (2)**

- TCWSP
- TRWD

- **Industry (2)**

- Industry Rep #1
- Industry Rep #2

- **Private Landowners (4)**

- Rep #1 (Lake Arlington)
- Rep #2 (Village Creek)
- Rep #3 (Agriculture)
- Rep # 4 (Agriculture)

- **Local Resource Agencies (2)**

- SWCDs
- Texas AgriLife Extension

- **Counties (1)**

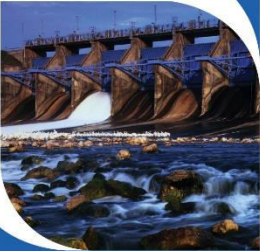
- Tarrant or Johnson



Open Discussion Period

<http://www.trinityra.org/lakearlingtonvillagecreek>

Aaron Hoff
Trinity River Authority
hoffa@trinityra.org
817.493.5581

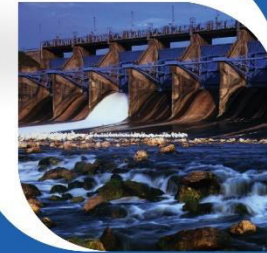


Monitoring Approach Alternatives for Lake Arlington and Village Creek

Kelly McKnight

Trinity River Authority

February 11, 2016



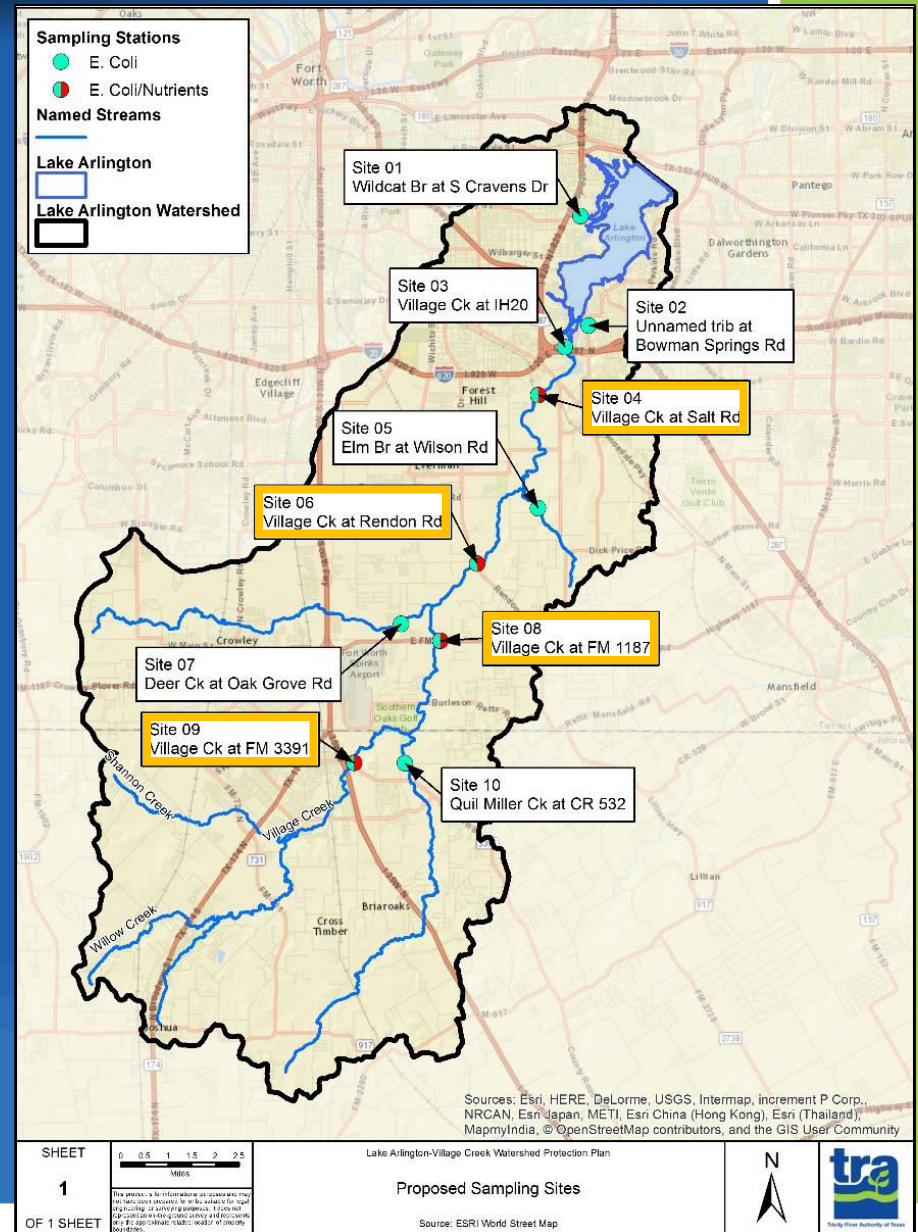
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 - Total Dissolved Solids (TDS)
 - **Nitrite/Nitrate (NO_2/NO_3)**
 - Total Kjeldahl Nitrogen (TKN)
 - Total Phosphorus (TP)
 - Dissolved Orthophosphate (OP)
 - **Chlorophyll-a**



Initial Monitoring Schedule

- Begin sampling in May 2016
- One year of routine monthly sampling, regardless of flow
- Maximum of four additional flow-biased samples
- 5 sites monitored for bacteria only
- 4 sites monitored for bacteria and nutrients with flow-biased samples
- Elected to add one additional bacteria station in expectation of dry sample events



Consultation with TAG Members

- Current monitoring strategy may not provide sufficient information to quantify bacteria and nutrient loadings
 - May not capture a wide range of flows
 - Additional inputs to consider
- Recommended several options that would provide additional flexibility to add additional sampling points
 - Alter monitoring strategy
 - Move stations
 - Remove parameters



Alternatives for Improving the Monitoring Approach



Constraints

- Funding
- QAPP approval and deadlines for the WPP
- Staff time
- Safety

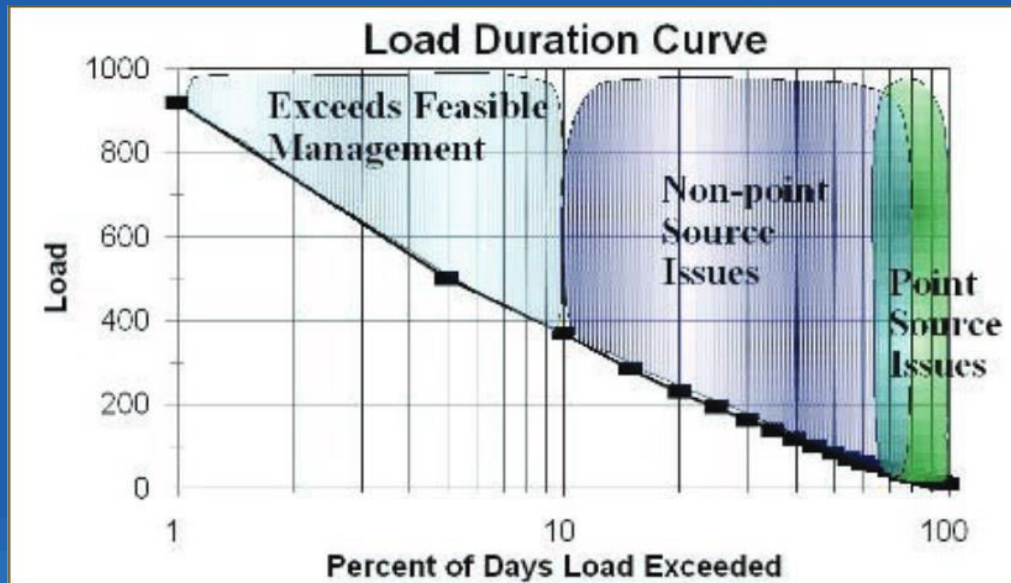


DECISIONS

Can be difficult

Alteration of Monitoring Strategy

- Goal: Best represent loadings in system



Alteration of Monitoring Strategy

- Routine sampling
- Bi-monthly (6 events)
 - Collected on set schedule, regardless of flow
- “Wild Card” sampling
 - One additional flow-biased sample taken bi-monthly (6 events)
 - Provides more opportunities to target flows
 - Allows for characterization of a broader range of flows to better estimate parameter loadings
- Two samples taken every two-month period



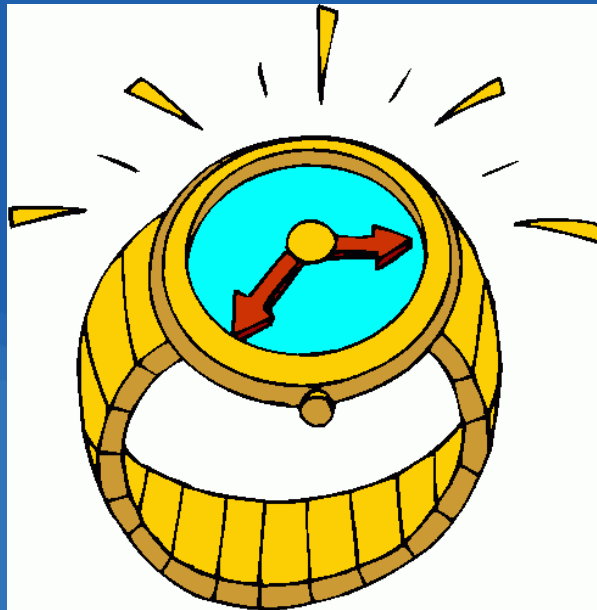
Options

- Move sites
- Removal of parameters
 - Water quality parameters that may not be directly related to pollutant load calculations or modeling efforts
- Additional flexibility by “swatting” SWAT
 - SWAT may not provide significant benefit to justify cost
 - Project may be better served by re-allocating SWAT funding to expanded nutrient monitoring



Proposed Path of Action

- TRA proposes that the Partnership delegate the finalization of the monitoring strategy to the TAG
- TAG will finalize and present the monitoring strategy in March

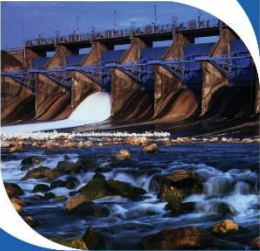


Questions?

<http://www.trinityra.org/lakearlingtonvillagecreek>

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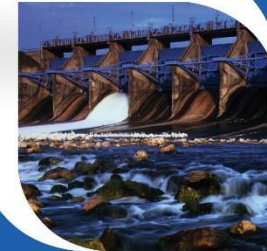


Upcoming Events and Path Forward

Aaron Hoff

Trinity River Authority

February 11, 2016



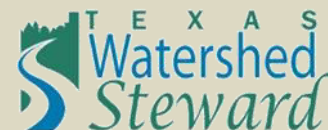
Trinity River Authority of Texas
Enriching the Trinity basin as a resource for Texans

Texas Watershed Steward Program



TEXAS WATERSHED STEWARD PROGRAM

- No-cost introductory training in the fundamentals of watersheds and watershed management.
- Target audience: individuals representing all stakeholder groups...
 - Agriculture
 - Urban
 - Business/industry
 - City/county officials and personnel
 - Landowners, homeowners



TWS PROGRAM GOALS

1. Increase citizen awareness, understanding, and knowledge of the nature and function of watersheds, potential impairments, and watershed protection strategies.
2. Empower and inspire individuals to take leadership roles involving community water issues.
3. Enhance stakeholder involvement in local watershed protection planning initiatives (WPP/TMDL).



TWS PROGRAM CURRICULUM

5



Community-Driven Watershed Protection and Management

4



Managing To Improve Watershed Function

3



An Overview of Watershed Impairments

2



An Overview of Watershed Functions

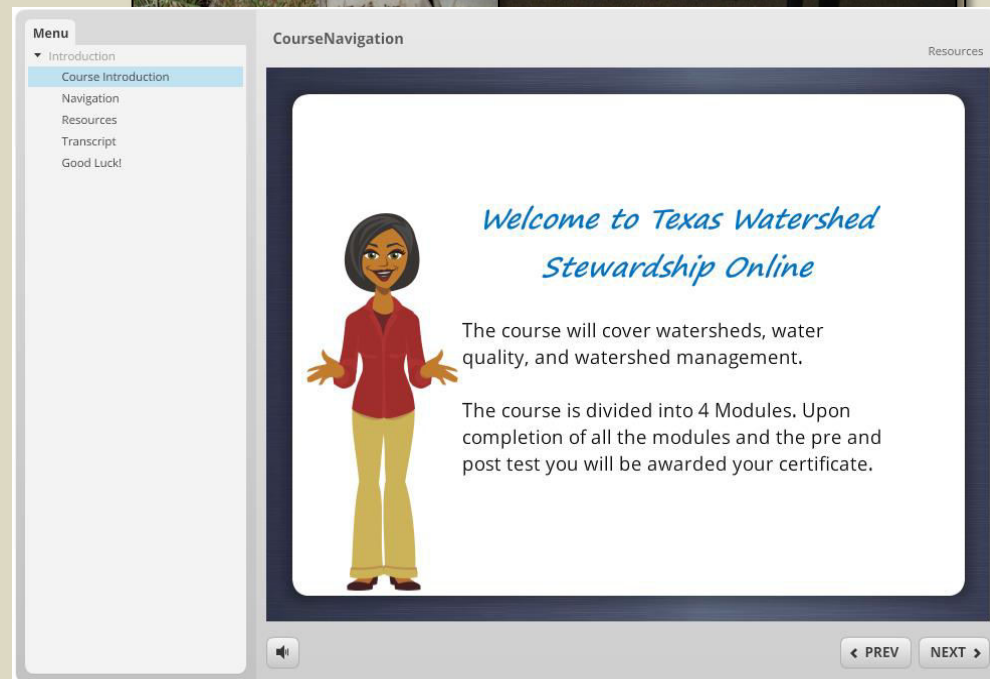
1



Program Introduction

TWS EDUCATIONAL TRAINING

- Full day (8 hour) and half day (4 hour) programs available
 - Reach a broader audience
 - Stimulate interest & involvement
 - Earn continuing education credits (ex: P.E., P.G., CCA, TCEQ, Certified Planner, etc.)
- Online version of TWS
<http://tws.tamu.edu>



THE TEXAS WATERSHED STEWARD PROGRAM

<http://tw.s.tamu.edu>

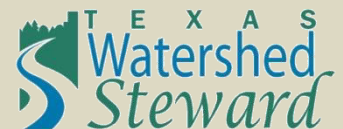


Michael Kuitu

Texas A&M AgriLife Extension Service

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Future Meetings and General Timeline



What's next?

- Texas Watershed Stewards Workshop
 - March 10, 2016, 1:00 pm
 - Doors open at noon for lunch
- Next Group Meeting
 - Tentative for Thursday, March 24th
 - Meeting time: afternoon or evening?
 - Tentative Topics for meeting
 - Approve list of Steering Committee Members
 - Review revised Committee Ground Rules
 - Load Duration Curves
 - Load Calculation methods overview



What's next?

- Approve Monitoring Plan
 - Finalize by end of February 2016
- Begin sampling in May 2016
 - Duration = 1 year
- Texas Riparian & Streams Ecosystem Workshop
 - Tentative for May 24th
 - TRA General Office - Arlington
- Load Calculations & BMP evaluation
 - Baseline data retrieval underway
 - Analysis completed by mid-2017



Open Comment Period

If you have additional concerns or comments, please send them to:

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<http://www.trinityra.org/lakearlingtonvillagecreek>

