



Evaluating Watershed Projects

How Will We Know If There is an
Impact?

Fact or Folk Lore?

- 80% of stakeholders with a pollutant producing enterprise are managing the enterprise in a water quality protective manner.
- Contrary examples
 - Fertilizer use, farmers are so cost conscious they will not apply more fertilizer than the crop needs.
 - NE KS Survey Results: many farmers
 - » Do not test soil frequently
 - » Use broadcast application
 - » Manure is not considered a nutrient
 - » Iowa case
 - Pesticide use
 - The label is the rule
 - In Kansas, we have no verifiable means of determining label compliance

More F & FL

- Your fate is in the hands of a few engaged in inappropriate behavior on small parcels of vulnerable land.
 - Pete Nowak, 6/17/2008
- Vulnerable land parcels may occur on land owned and managed by the majority.
 - Various, 6/17 & 18/2008
- Unless the positive actions of the majority are affirmed, the majority will not know of their positive contributions.
 - Don Snethen 6/19/2008

Still More F &FL

- Complex situations benefit from cutting edge scientific and technical knowledge. Scientific and technical experts want this and the public at large expects it. On the other hand, citizens want a meaningful voice in policy decisions that affect the quality of their lives.
 - Walker, Gregg b., Steven E. Daniels Natural Resource Policy and the Paradox of Public Involvement: Bringing Scientists and Citizens Together *Journal of Sustainable Forestry* Vol. 13, No. 1, 2001.

**“NEVER DOUBT THAT A SMALL GROUP OF
THOUGHTFUL COMMITTED, CITIZENS CAN
CHANGE THE WORLD , INDEED IT IS THE ONLY
THING THAT EVER HAS”**

Margaret Mead, Anthropologist 1901 - 1978

Mead brought the ideas of anthropology to a general audience and helped popularize the notion that there are many different ways of organizing human experience. In applying the principles and techniques of anthropology to global human problems, she acted as an engaged citizen-scientist on the world stage. Mead's work was pioneering in many respects but not without its critics.

Stakeholders

- Principals
 - Scholars, scientists, engineers, funding agencies, regulators, owners & managers implementing measures
- Consumers
 - Property owners / managers, drinking water producers & consumers, recreationists, service providers, advocates

No Watershed Management Plan

Current Outcomes

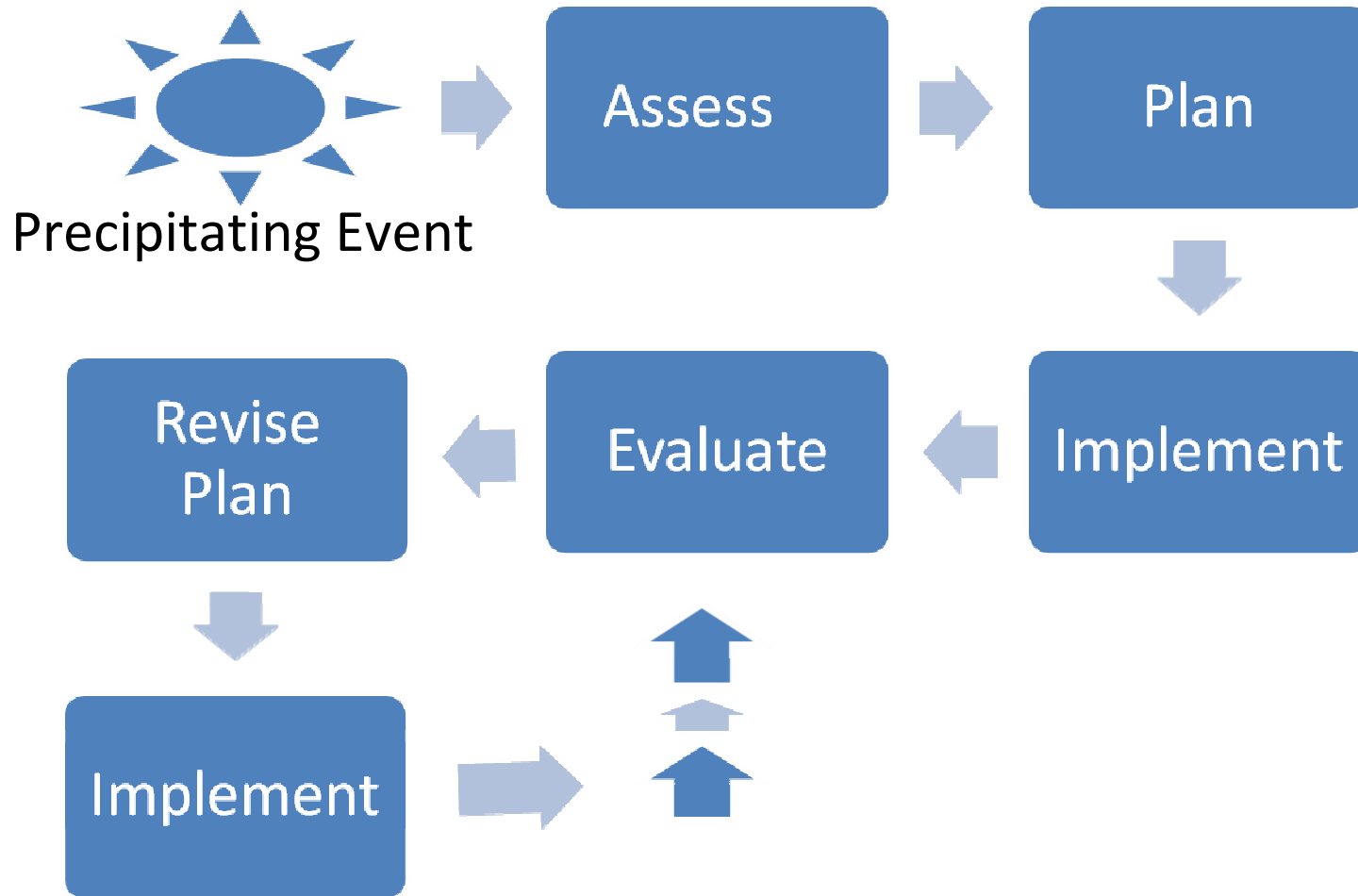
Watershed Management Plan

Future Outcomes

- **Polluted Water**
 - **TMDLS**
 - **Drinking Water Taste & Odor**

Clean Water Everywhere for Everything

Typical Watershed Process



Definitions

- Outcomes
 - The consequences of actions taken.
- Outputs
 - Work products
- Impacts
 - The extent to which planned or expected outcomes were achieved.
 - Expected
 - Unexpected
 - None
 - Negative
 - Positive

Adaptive Management

- A systematic process for reducing the uncertainties surrounding resource policies by implementing the policies experimentally and monitoring the results.
 - 1998 Provincial Science Forum – Linking Management and Science to Achieve Ecological Sustainability, Ontario Ministry of Natural Resources

Over Coming Barriers to Adaptive Management

1. Accept uncertainty and manage for it.
2. Support Adaptive Management at all levels.
3. Apply risk assessment.
4. Reconcile conflicting mandates.
5. Sponsor long term studies.
6. Change institutional structure and function from top down, hierarchical approach to a bottom-up process of policy development and refinement.
7. Emphasize teamwork, communication, education, and innovation.
8. Optimize trust through continuous stakeholder involvement.
9. Examine the real costs and benefits of traditional management
10. Ensure availability of appropriate technical support.

Watershed Approaches

The Complete Plan

- Traditional “big dam solution”
 - Identify Everything Needed
 - Secure Financing
 - Implement Plan
- Challenges
 - Top down expert driven
 - Stakeholders are directed
 - Emphasis on monetized costs & benefits
 - Strive for certain outcomes
 - Maintaining stakeholder commitment
 - Funding commitment

The Adaptive Plan

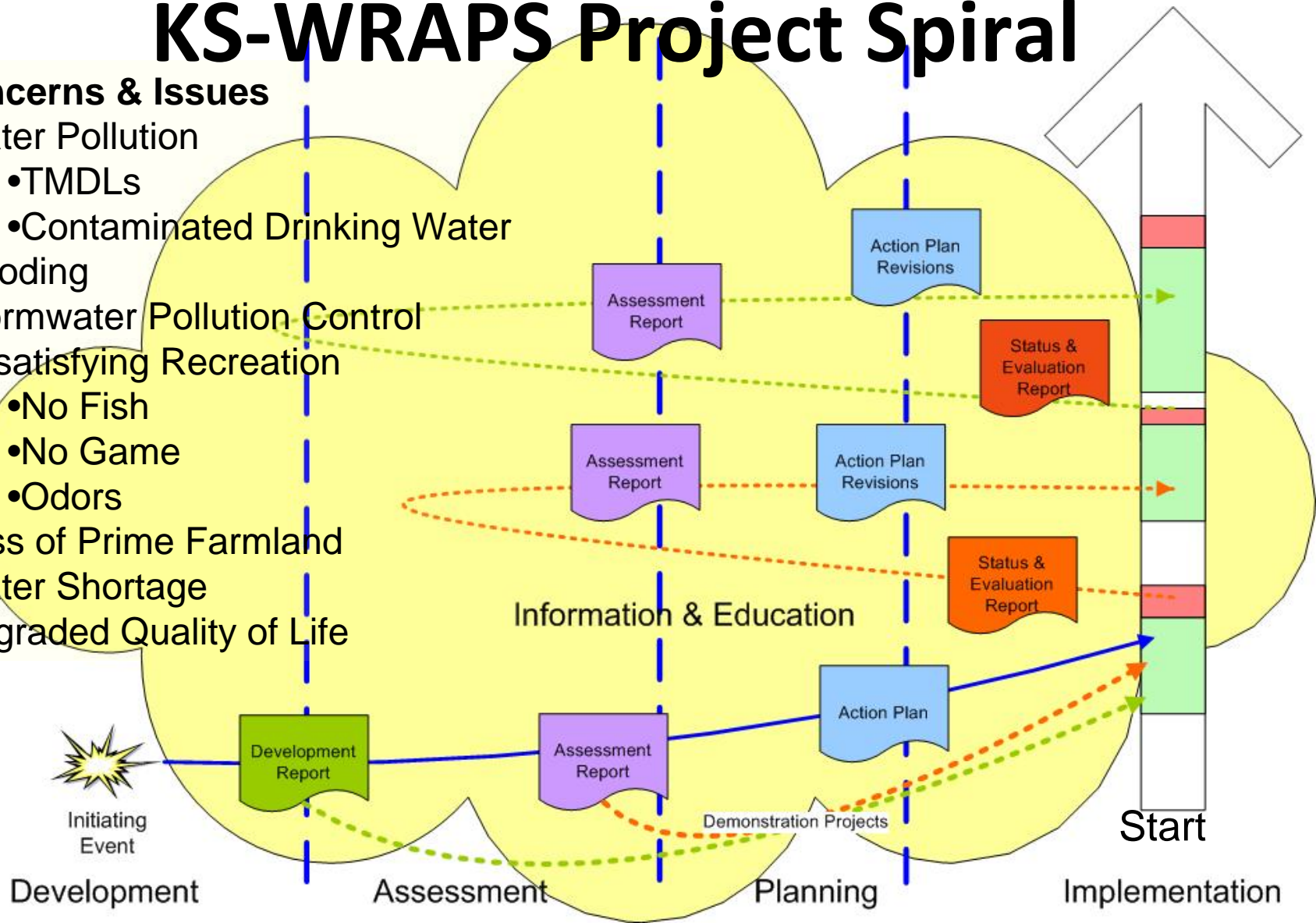
- Contemporary “water quality approach” KS-WRAPS
 - Identify Obvious Actions
 - Solve Easy Problems
 - Gain Confidence
 - Tackle More Complex Problems
- Challenges
 - It’s different
 - Stakeholder community investment required
 - Life time commitment
 - Sensitive communication
 - Less telling & more listening

KS-WRAPs Project Spiral

Concerns & Issues

- Water Pollution
 - TMDLs
 - Contaminated Drinking Water
- Flooding
- Stormwater Pollution Control
- Unsatisfying Recreation
 - No Fish
 - No Game
 - Odors
- Loss of Prime Farmland
- Water Shortage
- Degraded Quality of Life

Future



Precipitating Event

- Water Quality Standards Violation
 - TMDL
- Others
 - Flooding
 - Fish Kill
 - Drinking Water Tastes & Odors
 - Stream Bank Erosion

Watershed Advocate



Perceives an issue
Confers with others
Could be

- Private Citizen
- College / University
- Government Entity
 - City
 - Conservation District
 - County
 - State, Federal, Regional Agency
 - etc
- Non Government Organization
 - Trade Association
 - Environmental Group
 - Service Organization
 - etc

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WRAPS Development Project

Objectives

- Identify Stakeholders
- Interest & Willingness
- Compile “Known” Information
- Begin to identify issues
- Organize Leadership Team
- Train & Orient Leadership Team
- Secure “Commitments to Participate”

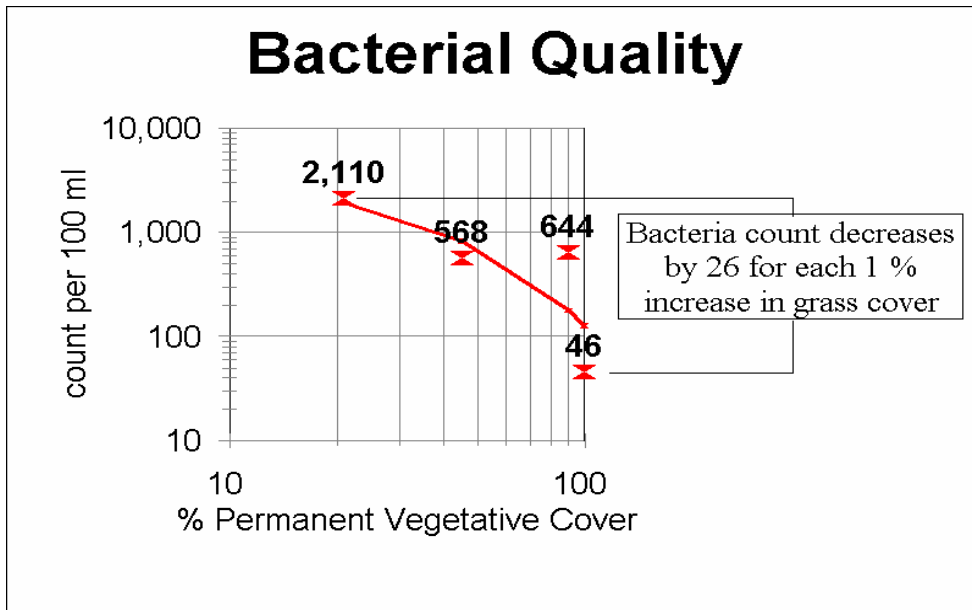
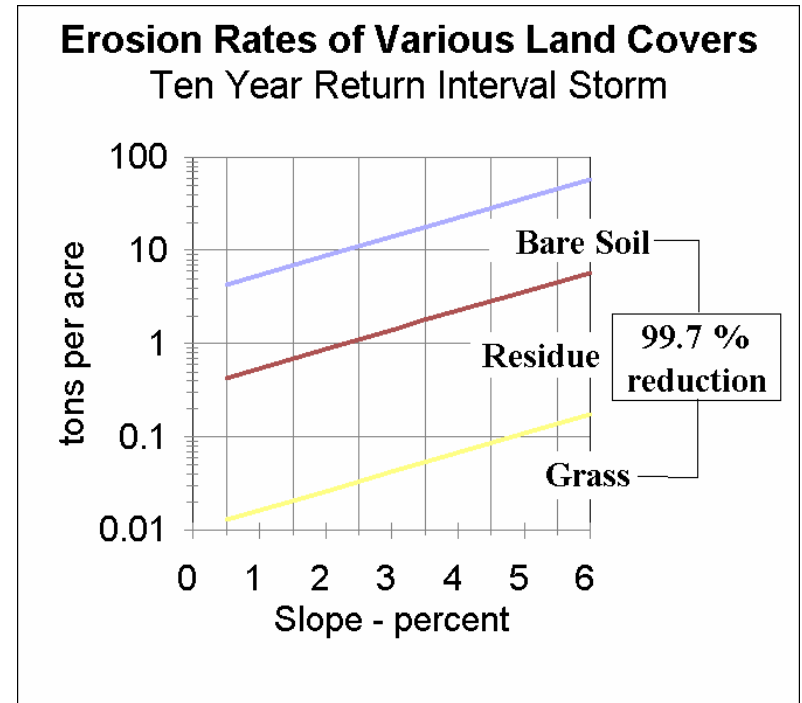
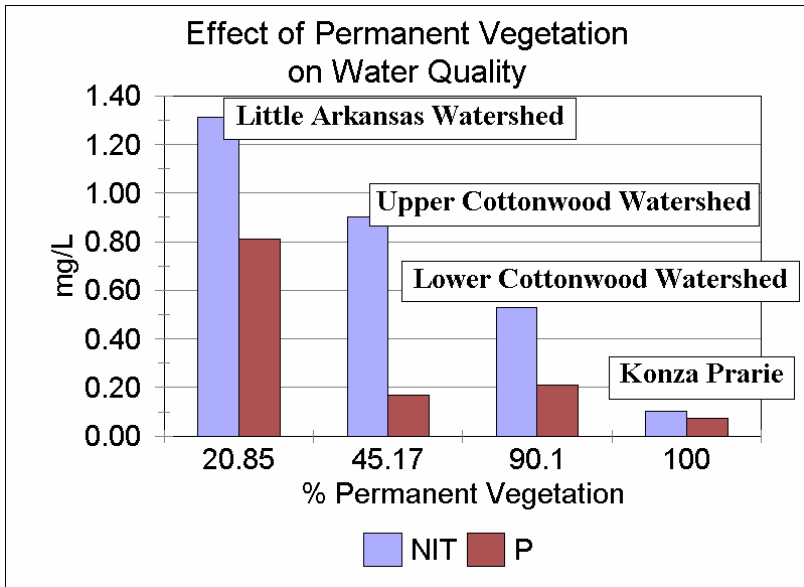
Work Products

- *Watershed Stakeholder Leadership Team*
- *Development Project Report*
- *Assessment Project Work Plan*

Assessment

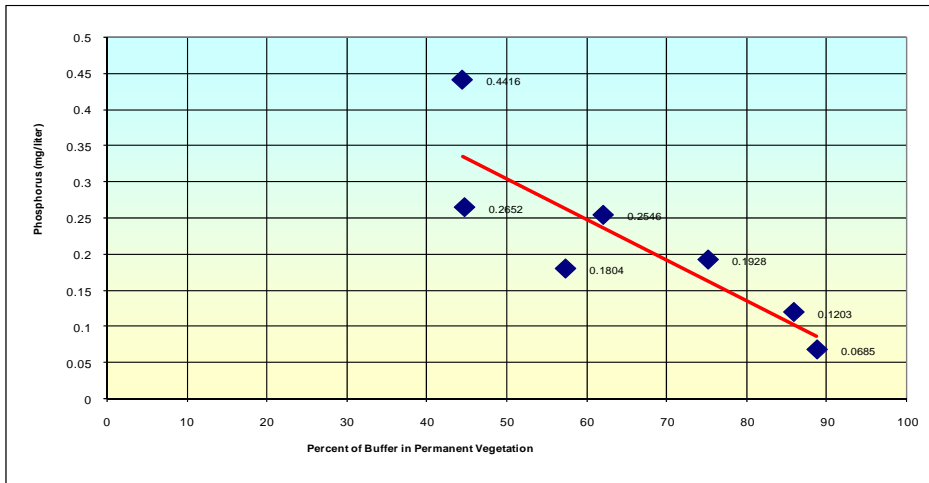


- Identify watershed conditions
 - Goods and services expected of the watershed
 - Restoration & Protection Needs
 - Trends
 - Watershed management practices in use
- Identify relationship between watershed actions & watershed conditions
- Assessment Report



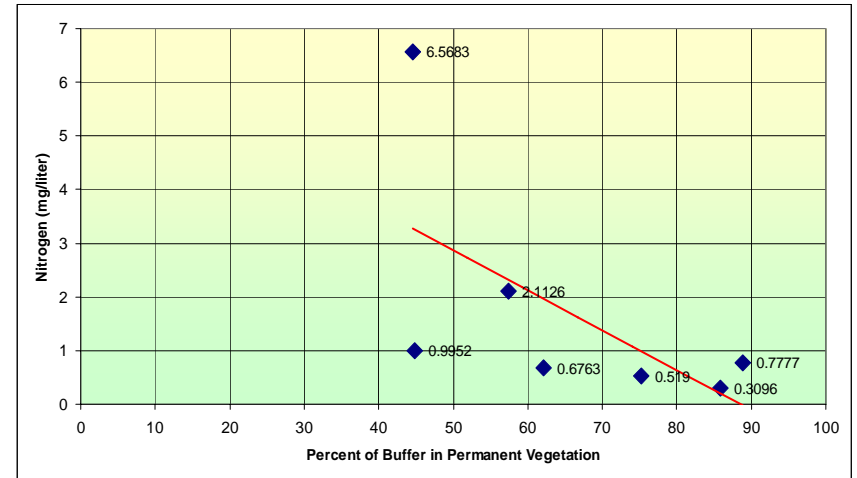
Apply what we know

Each 10% increase in permanent riparian vegetation area results in a 0.056 mg/l decrease in phosphorus concentration



Phosphorus

Nitrogen



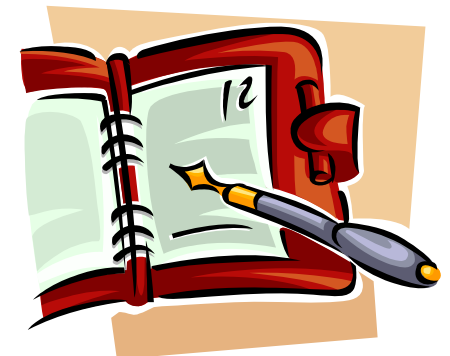
Each 10% increase in permanent riparian area vegetation results in a 0.744 mg/l decrease in nitrogen (ammonia plus nitrate)

Water quality improves with increased cover!

Planning



- Watershed Goals
- Actions that may achieve goals
- Test strategies against goals & identify cost effective strategies that equal or exceed goals
- Select preferred strategy
- Assign implementation responsibilities
- Leadership concurrence
- Document decisions



Evaluating Projects

- Under a traditional approach, project evaluation occurs at some future time after the plan is fully implemented.
- Under an adaptive approach, evaluation takes place concurrently with implementation.

Continuous Evaluation

- Start with the assessment
 - Identify criteria needed to determine watershed conditions
 - Inventory
 - » Watershed Conditions
 - » Current knowledge
 - Understand how the watershed will respond to management interventions
- Examine the Plan
 - Expected outcomes identified
 - Actions logically linked to outcomes
 - Outputs are associated with actions
- Evaluation Protocol
 - An element of the Action Plan

Assessment Elements

- Criteria / Expectations
 - Descriptions of desired watershed conditions, presented in a manner comprehensible by all stakeholders.
- Inventory
 - List of watershed attributes, including the extent and condition of these attributes.
- Estimates of Watershed Behavior
 - A simplified version of something complex used to solve problems or make predictions.

What are we thinking?

- **Assess**, *vt.* Judge – to examine **something** in order to judge or evaluate **it**.
- **Evaluate**, *vt.* Examine and judge - to consider or examine **something** in order to judge its value, quality, importance, extent or condition
- Key words – “*it*” & “*something*”
 - “*It*” refers to the watershed
 - “*Something*” refers to actions applied to the watershed

“It is astonishing, given the blood, sweat and tears spent by public sector decision-makers as they try to come up with winning new strategies to meet government targets, that so little attention is paid to ensuring that operational activities measure up and deliver against their own top level goals.”



STRATEGIC PERFORMANCE MANAGEMENT IN GOVERNMENT AND PUBLIC SECTOR ORGANISATIONS



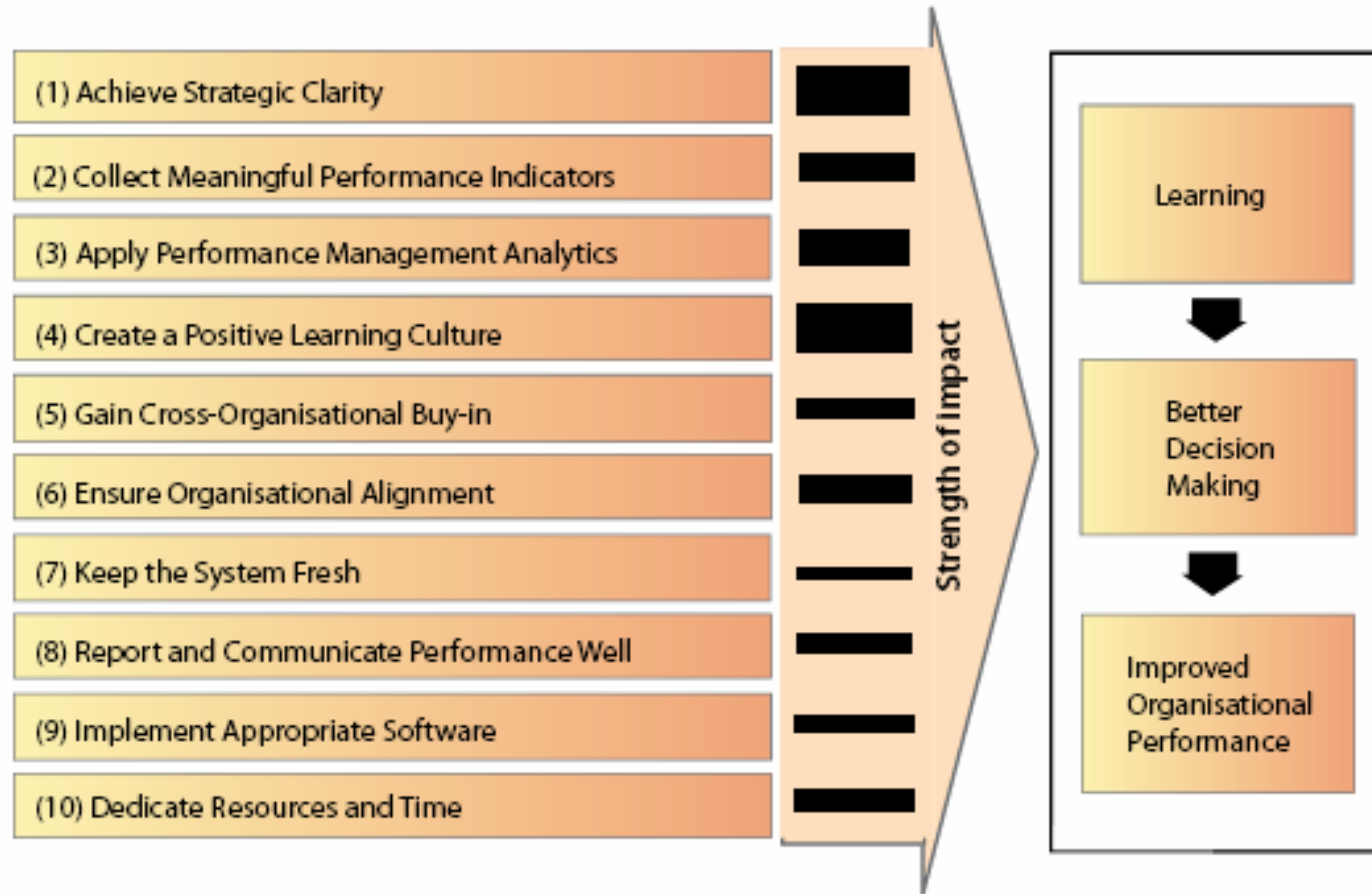
A Research Paper by Bernard Marr,
Advanced Performance Institute

Co-Sponsored by
CIPFA Performance Improvement Network
and Actuate

- Research conducted by the Advanced Performance Institute in collaboration with the CIPFA (the Chartered Institute of Public Finance and Accountancy), Performance Improvement Network, and Actuate Corporation.
- Online survey tool (www.ap-institute.com)
- Late 2007 – early 2008
- 1,104 substantial responses from 507 organizations

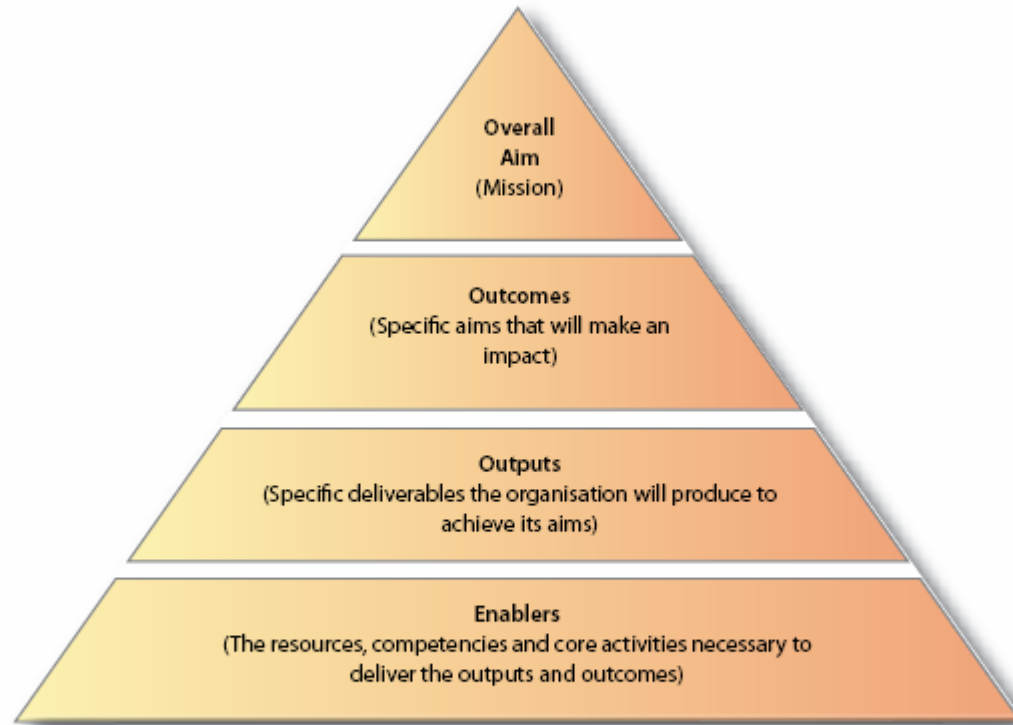
The 10 Principles of Good Performance Management and their Impact on Performance

Figure 6



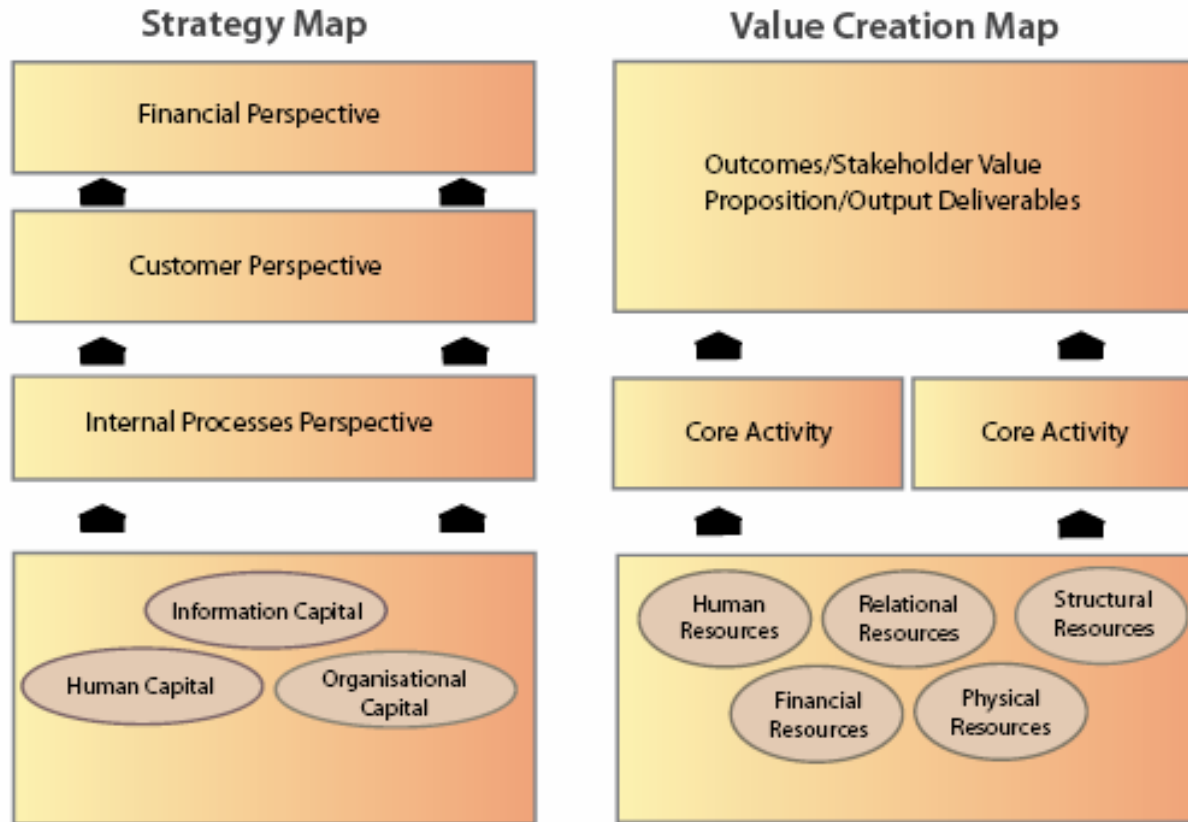
Components of Strategy

Figure 7



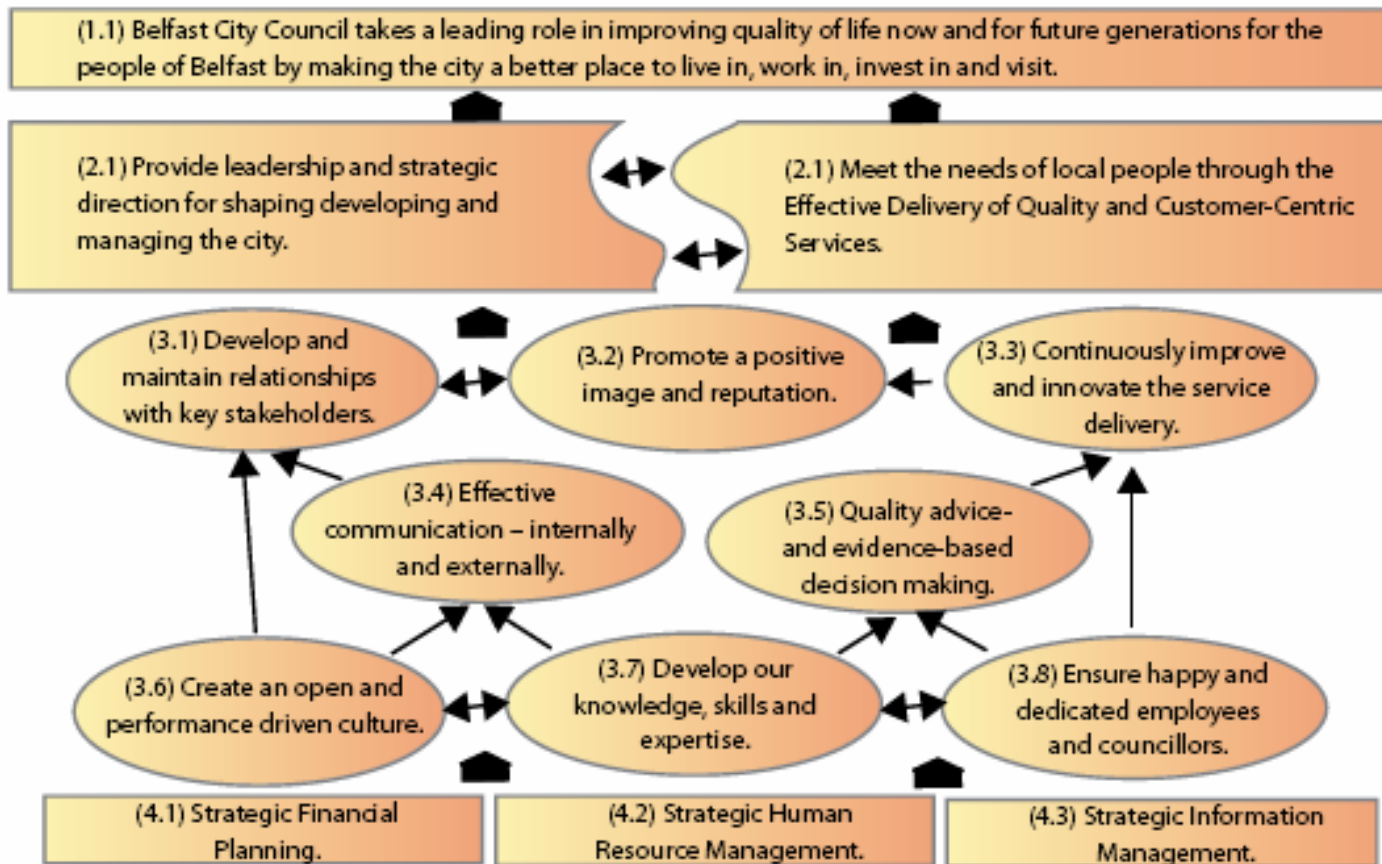
Strategic Mapping Template

Figure 8



Value Creation Map for Belfast City Council

Figure 9



Scenario

- 1999: Watersheds R Us, LLC receives grant to prepare and implement a watershed management plan for Good Creek Watershed.
 - Goal: Eliminate atrazine, nutrient & sediment TMDLs
 - Actions:
 - All atrazine applied in compliance with label
 - All cropland has maximum residue levels
 - All crop nutrients applied in amounts needed to achieve realistic yield goals.
 - All riparian land has appropriate permanent vegetation.
 - Steeply sloped lands have permanent vegetation.
 - Wetlands are maintained or restored.
 - Schedule: Goal to be achieved in 10 years.
- 2010: Grant funds have been fully expended, did executed project activities achieve plan goal?

Kanopolis Lake Goals

Water Quality Indicator	Action	Performance Measure
Atrazine	Protect	No increase in detection frequency or concentration
Bacteria	Protect	No increase in concentration
Total Nitrogen – ppm	Restore (1)	In lake concentration <0.62 ppm, ~ 48 % reduction from current condition
Total Phosphorus – ppm & load	Restore (1)	In lake concentration =< 0.43 ppm, ~ 46 % reduction from current condition, 80% reduction in total annual load, current load ~ 371,000 lb/year
Chlorophyll a - ppb	Restore (1)	< 12 ppb, ~50 % reduction from current condition

(1) KDHE, 2003 Smoky Hill - Smoky – Hill Saline River Basin Total Maximum Daily Load

Authoritative Testimonial

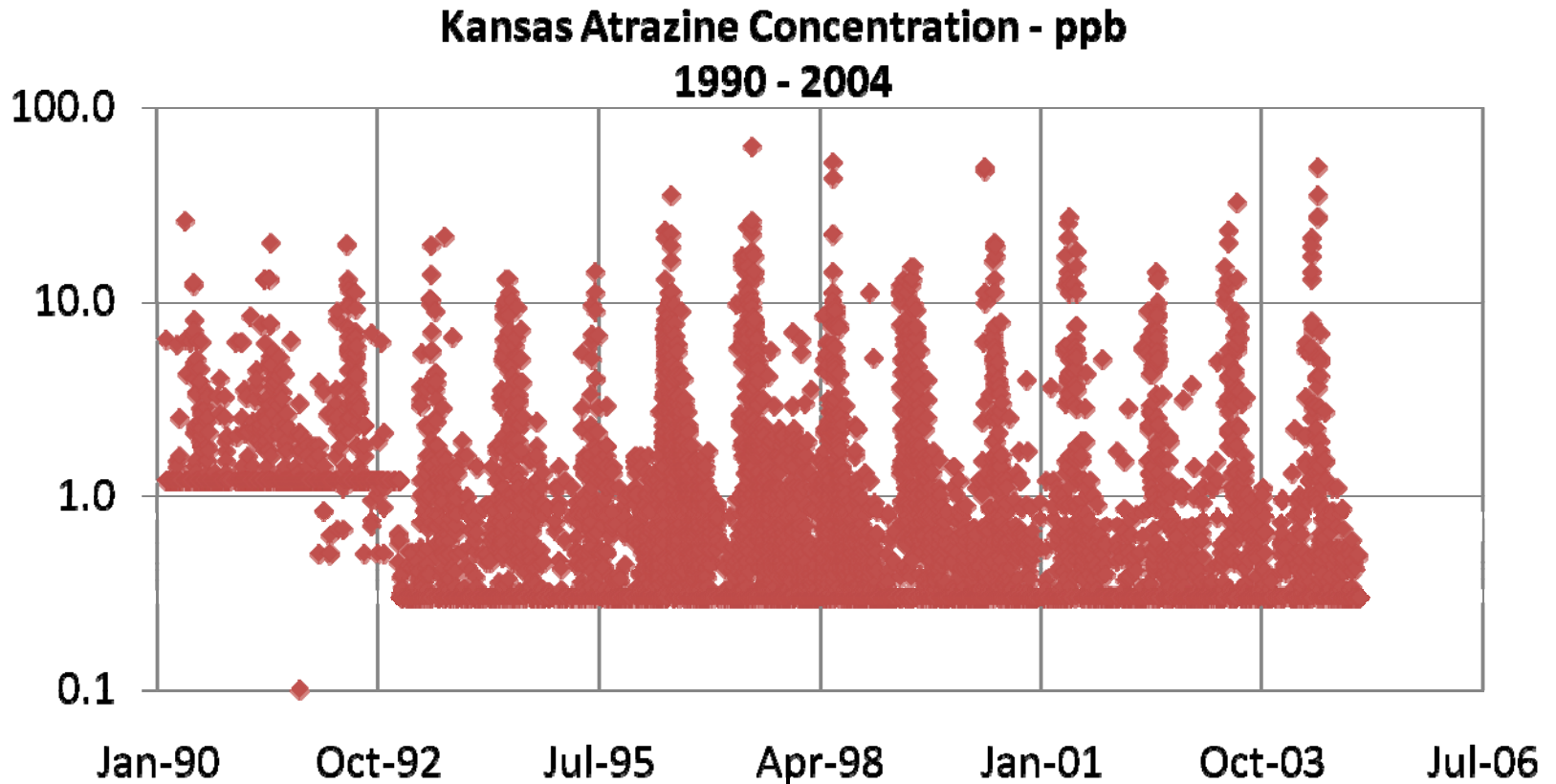
Henry Luke, Heartland Visioning adviser, has overseen the visioning process in more than 60 cities since pioneering the process in 1983.

Here are excerpts from his appearance Monday on "Jim Cates@ CJOnline."

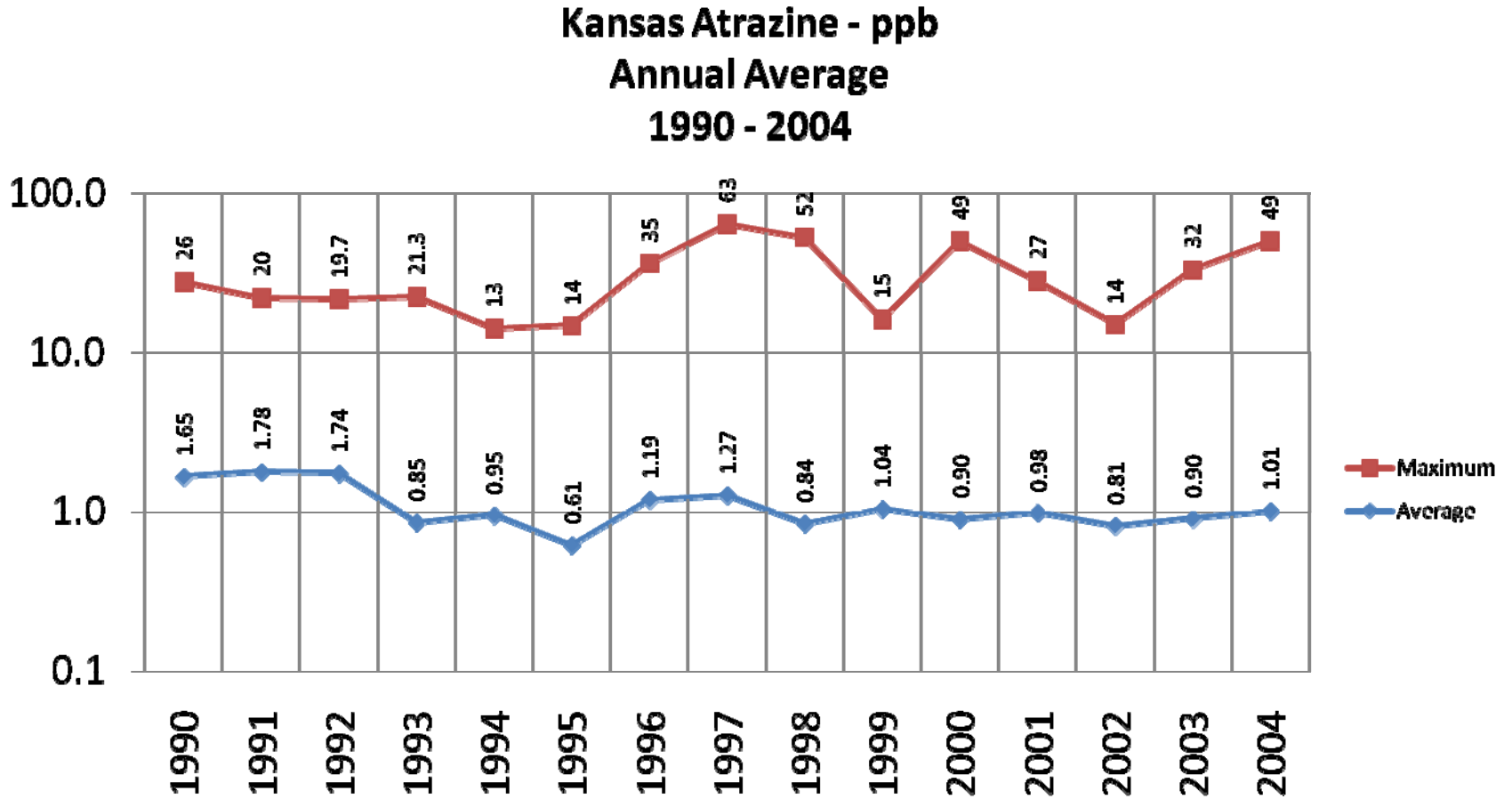
Jim Cates: Let's take a look at these 60-plus communities you've worked with — Jacksonville, Fla., being the first. What were the results of Jacksonville's visioning process?

Henry Luke: In 1983 Jacksonville had a very large inferiority complex. Part of it was deserved — we stunk because we have large paper mills. We had a variety of problems that made us not feel good about ourselves, and over the years that has gone away. I think that's a great accomplishment. There have been a lot of accomplishments — the Mayo Clinic is there with over 5,000 employees, the Jaguars NFL team, the Super Bowl, all kinds of accomplishments.

Overwhelm With Data

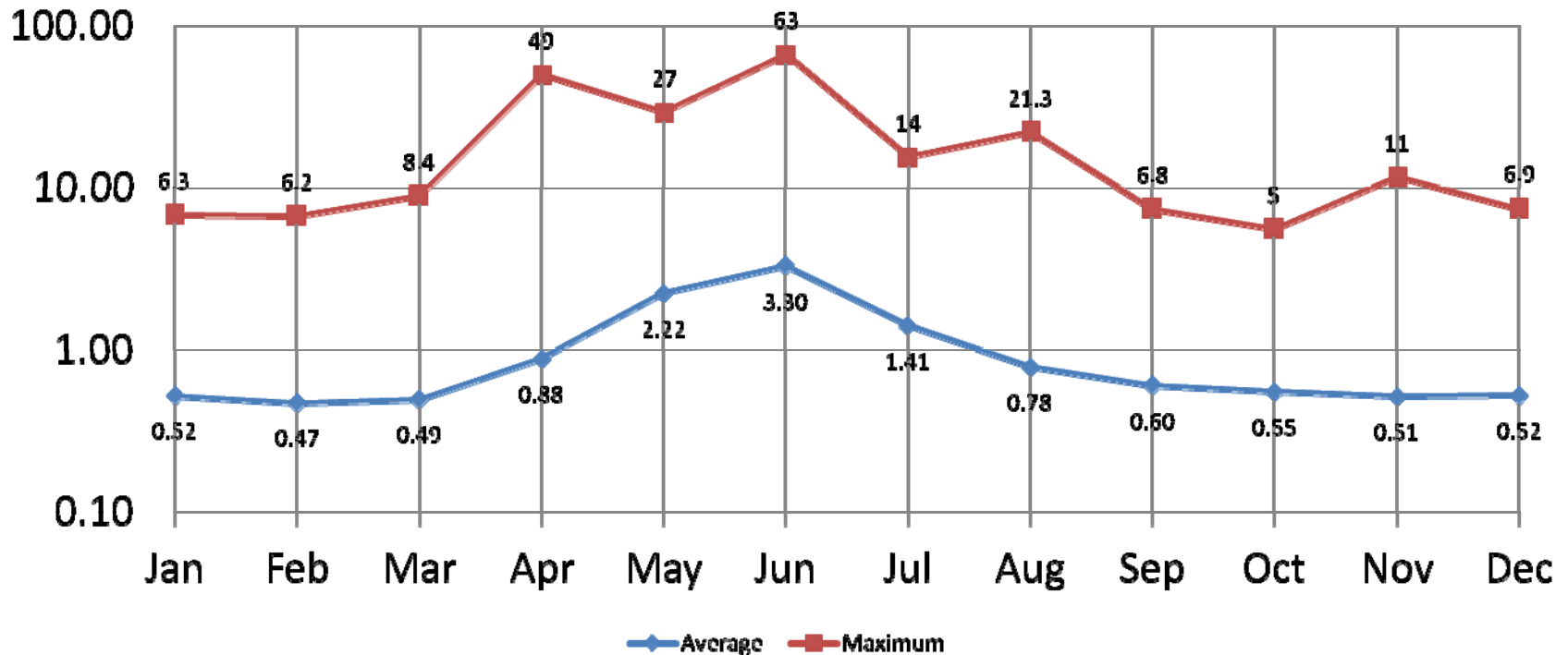


Ordinary Person Might Discern Trend



Ordinary Person Can Discern Months' of Concern

**Kansas Atrazine - ppb
Monthly Average
1990 - 2004**



Evaluation Challenges

- Pilot Projects to full scale
- Selecting the Correct Metrics
- Budgeting for Evaluation
- Timeliness
- Acting on Findings
- Effective Communication