



# Spokane River TMDL Implementation Plan Foundational Concepts

Spokane Collaboration  
Full Group Meeting  
July 12, 2006

# Background

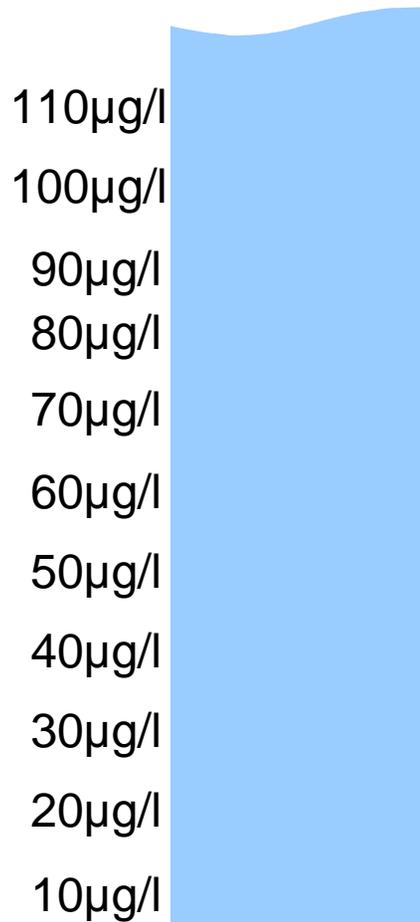


- State Water Quality Standards set a desired level of dissolved oxygen (DO)
- TMDL sets a limit on phosphorus (P) based on its relationship to DO; November 2004
- UAA defines attainable uses and criteria to protect uses; dischargers file *Petition for Rule Making*, December 2004
- Petitioners and Ecology agree to negotiate settlement over UAA and TMDL; February 2005
- Foundational Concepts represent agreement to implement several actions to reduce P and see how we do

# Foundational Concepts for a Managed Implementation Plan

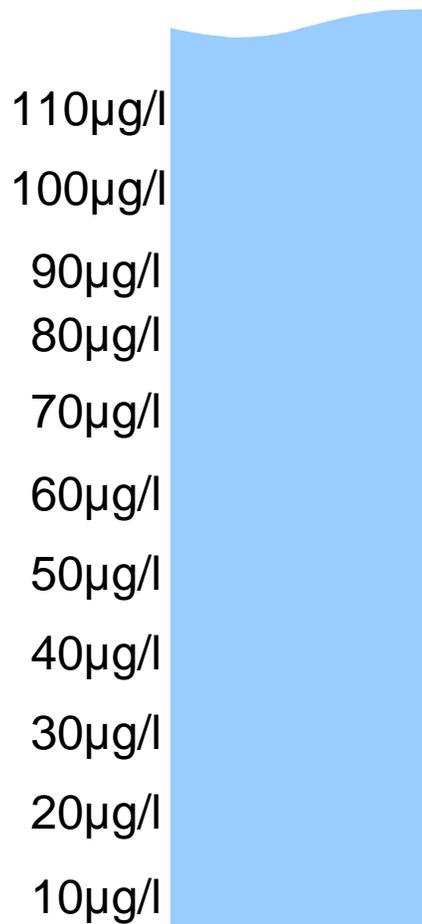
- The Draft TMDL will be updated based on the Collaboration's effort and go through public review and submittal to EPA
- The *Petition for Rule Making* will be “set aside” pending a 10<sup>th</sup> year review
- We have worked to set “foundational concepts” or principles that will guide creation of the TMDL Implementation Plan
- The “Managed Implementation Plan” is a 20-year program with a critical “10<sup>th</sup> Year Assessment”

# How Much “P” Is Involved?



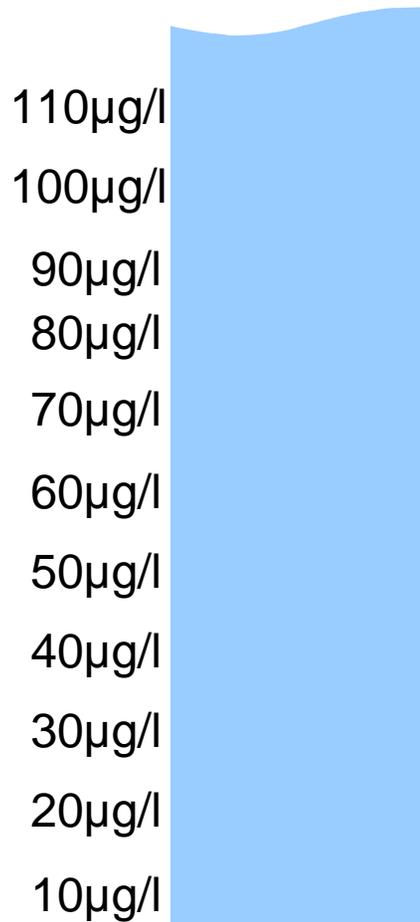
- We are working with ***millionths*** of a gram ( $\mu$ )
- The TMDL uses concentration of P in millionths of grams per liter ( $\mu\text{g/l}$ )

# How Much “P” Is Involved?



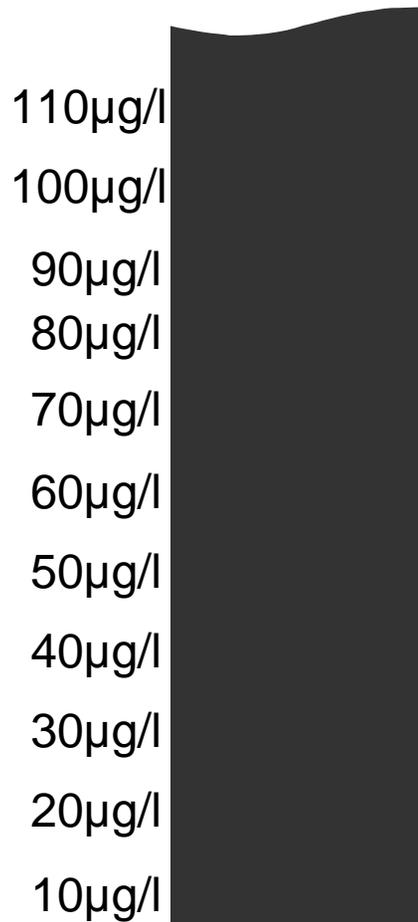
- We are working with ***millionths*** of a gram ( $\mu$ )
- The TMDL uses concentration of P in millionths of grams per liter ( $\mu\text{g/l}$ )
- The state Water Quality Standard we are working to achieve in the first 10 years of the MIP is 10  $\mu\text{g/l}$

# Today's P & Tomorrow's "Delta"



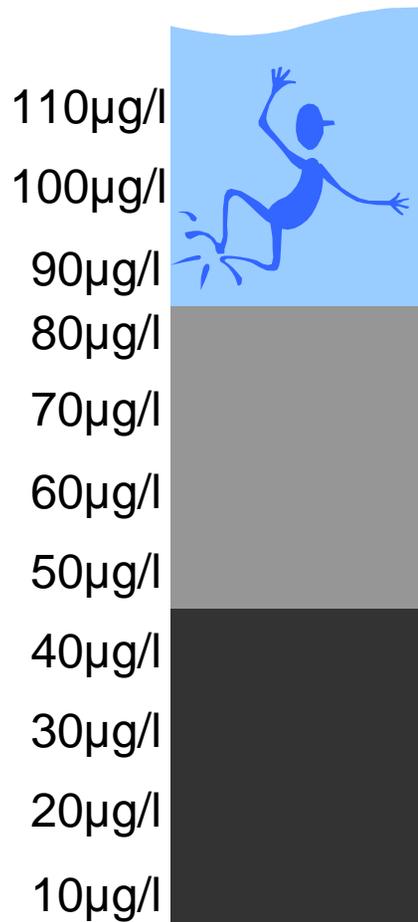
- Treatment plants (point sources) on the Spokane River do a good job, but not enough to get close to 10 µg/l

# Today's P & Tomorrow's "Delta"



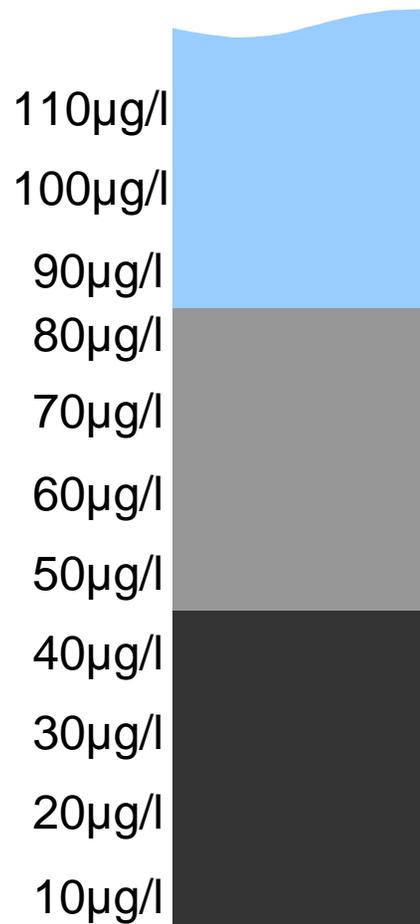
- Treatment plants (point sources) on the Spokane River do a good job, but not enough to get close to 10 µg/l
- Today's plants are discharging >200 µg/l

# Today's P & Tomorrow's "Delta"



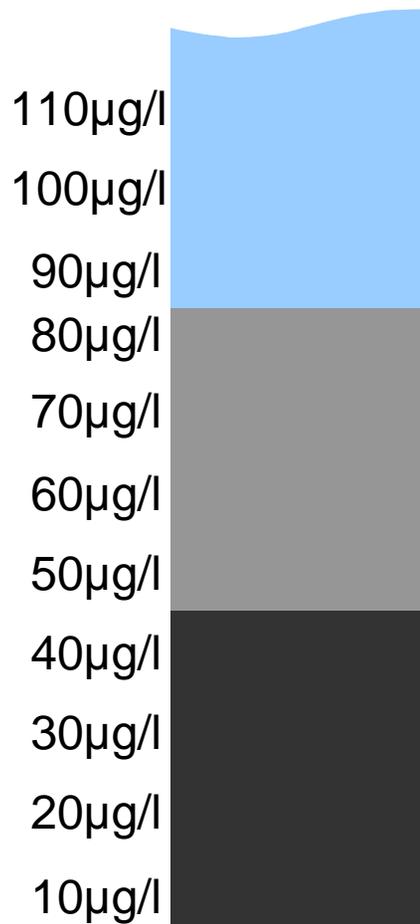
- Treatment plants (point sources) on the Spokane River do a good job, but not enough to get close to 10 µg/l
- Today's plants are discharging >200 µg/l
- Upgraded or new plants might achieve 75, 50, or fewer µg/l ...a huge improvement!

# Today's P & Tomorrow's "Delta"



- But technology improvements alone likely won't reach 10 µg/l
- The difference between 10 µg/l and whatever the best run feasible technology can do is called "The Delta"

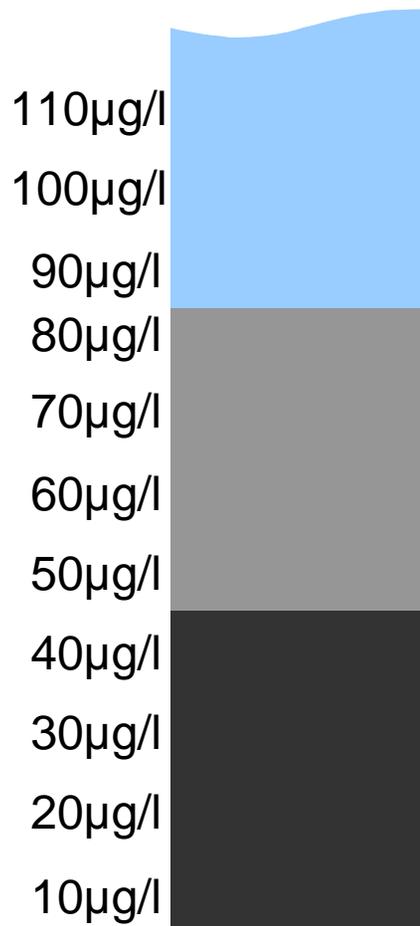
# Today's P & Tomorrow's "Delta"



- But technology improvements alone likely won't reach 10 µg/l
- The difference between 10 µg/l and whatever the best run feasible technology can do is called "The Delta"

**The Delta**

# Today's P & Tomorrow's "Delta"



- But technology improvements alone likely won't reach 10 µg/l
- The difference between 10 µg/l and whatever the best run feasible technology can do is called "The Delta"

## The Delta

- *Key concept:*

$$P - \text{Tech} - \text{Delta} = 10 \mu\text{g/l}$$



# “Delta” Will be #s of P

- The TMDL specifies a P allocation expressed in concentration (10 µg/l ) for each permitted discharger
- For the MIP we are using pounds of P to define the measurement for Delta-reducing efforts
- #P = Concentration x Flow Volume
- This is a ***seasonal*** effort to control P during the critical April-October months

<b>Discharger</b>	<b>Projected 2017 WWTP Influent (mgd) <sup>a</sup></b>	<b>2017 Target Phosphorus (lbs/day) <sup>b</sup></b>	<b>Projected 2027 WWTP Influent (mgd) <sup>a</sup></b>	<b>TMDL WLA Phosphorus (lbs/day) <sup>b c</sup></b>
<b>Liberty Lake</b>	1.41	0.12	1.51	0.13
<b>Kaiser Aluminum</b>	15.4	1.29	15.4	1.29
<b>Inland Empire Paper</b>	4.1	0.34	4.1	0.34
<b>City of Spokane:</b>				
- from City of Spokane	36		41.77	
- from Spokane County	5.76		9	
- from Airway Heights	0		0	
Total City of Spokane	41.76	3.49	50.77	4.24
<b>Spokane County (new plant)</b>	8	0.67	8	0.67

NOTES:

<sup>a</sup> Influent flow projections based upon data from Flow & Loading Work Group and dischargers

<sup>b</sup> lbs/day for point sources = Influent MGD x 10 µg/L P x 0.0083454

<sup>c</sup> MIP achieves Waste Load Allocation by 2027

# How Do We Do This?

- Choose, install and run the most effective feasible P technology for each treatment plant
- Choose and implement other actions to go after P from a variety of sources
  - Control non-point sources through “best management practices” along Little Spokane River and Latah Creek
  - Cut back on P-containing dishwasher detergent and fertilizers, further reduce septics, conserve and send less water to treatment plants
  - Re-use highly treated water instead of discharging
- Assess after 10<sup>th</sup> year and make some decisions
  - Continue current program
  - Additional efforts (point and non-point)
  - Revise standards

# P-Removing Technology

- The “***Target Pursuit Actions***” section lists a set of “Required Actions”
- These include:
  - Use an open process (perhaps including pilot testing) to find a technology that aims to achieve a seasonal average objective of 50 µg/l P or lower
  - Develop a “start now” Delta elimination plan including other actions to eliminate Delta
    - Conservation
    - Water re-use
    - Source control
    - Non-point plan
  - Ecology reviews and acts expeditiously
  - Prepare an Engineering Report with refined Delta plan
  - Ecology reviews and acts expeditiously

# “Required Actions” Particulars

- 50 µg/l P or lower is a seasonal average technology objective
  - 50 µg/l P or lower is an objective
  - Actual performance may vary
- Interim limits based on engineering report (pilot tests)
- Final discharge permit limits will take into account
  - Lack of general experience with P-removal technology and probable start-up issues (two years at full scale)
  - Actual experience-based capability of plants
- Technology investment is respected for 20 years
  - Modifications may be based on “best available data” and cost effectiveness test
- Indoor water use reduction (conservation)
- Treated water will meet current “Class A” reclaimed water standards to allow re-use

# Delta Elimination

- The “***Target Pursuit Actions***” section lists a set of “Available Actions” for Delta elimination plans
- These include:
  - Re-using “Class A” reclaimed water instead of sending it to the River
  - P “source control” opportunities like limiting urban fertilizer and dishwashing detergent use
  - Septic tank elimination program
  - Proving a P discharge is not “bio-available”
  - Regional non-point source reduction program

# “Available Actions” Particulars

- Regional non-point source program:
  - Based on an initial study that identifies most productive non-point source efforts
  - Ecology is a financial partner and implementation participant, too
  - Program jointly funded at \$2.0 million/year
  - Regional “Oversight and Coordination” group will manage the program
  - Aim is to **both** meet TMDL allocation for non-point source P **and** provide Delta #s P
- If a discharger has “extra” eliminated #s, they can be exchanged per EPA “trading” guidelines

# “Oversight & Coordination”

- The “***Target Pursuit Actions***” section lists a set of “Oversight & Coordination” actions
- These include:
  - Formation of a regional “Oversight & Coordination” group
  - The group manages the non-point source program and other regional elements of MIP
  - The group implements a river monitoring and research program to measure and help steer DO enhancing efforts
  - Ecology will prepare annual reports on target pursuit actions
  - Ecology and the Oversight & Coordination group will present major river status reports every two years

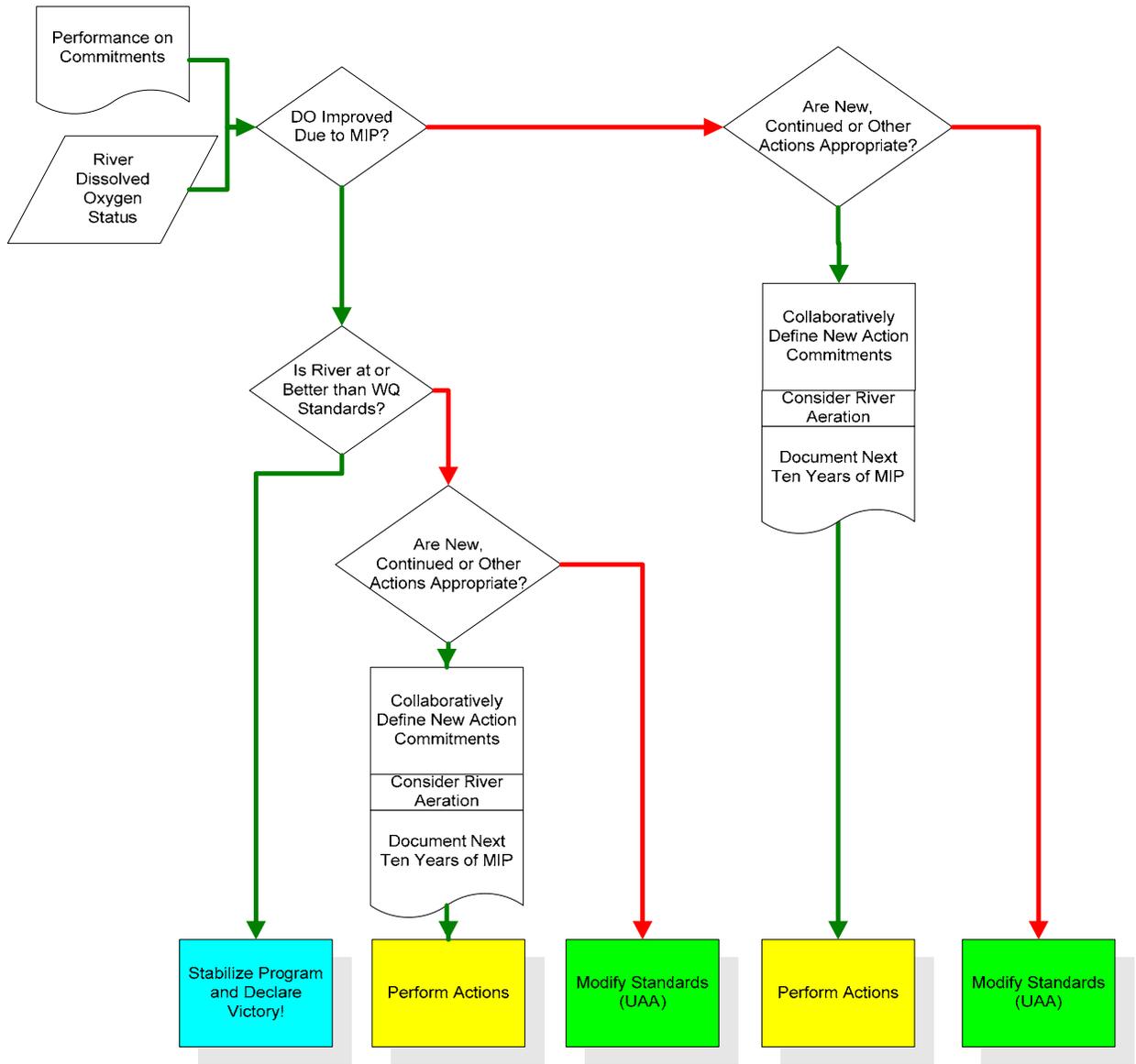
# New Spokane County Plant

- New county plant will be constructed to meet TMDL phosphorus target through a combination of treatment and offsets as the plant begins routine operations
- Plant will provide modern P removal technology and capacity for
  - More septic tank conversions
  - Creating more Class A reclaimed water for re-use during critical season
- County plant built to meet its TMDL allocation
  - Plant and actions meet 10 µg/l P expressed in pounds following routine start-up
  - This means...
    - Built with best treatment technology
    - Septic tank elimination program moves forward and documented P removal counts as offset
    - Other target pursuit actions as needed
    - Achieves TMDL allocation of pounds of P when start-up is complete

# 10<sup>th</sup> Year Assessment

- Using best available data, the River's DO status is assessed
- Assess which actions have been productive and which have not
- Consider completed research on sediment oxygen demand and episodic events (summer storms), river oxygenation, etc.
- Determine if standards can be met with further action or if they need to be modified
- Using collaborative approach, set actions for the time remaining until 2027

# MIP Tenth Year Decision Diagram



# More Particulars

- First 10 years:
  - Implementation of Actions is required
  - Specific outcome from Actions is monitored
  - We work hard and assess
- Second 10 years:
  - Make adjustments according to results
  - Continue to pursue improved DO
- After 20 years we meet the Water Quality Standards/TMDL Allocation in effect at that time
- NPDES permits issued in 5-year cycles

# Next Steps

- Entities act to accept Foundational Concepts and notify Ecology
- Ecology completes TMDL incorporating Managed Implementation Plan
- Ecology Transmits TMDL to EPA for approval (MIP is not subject to EPA approval)
- Oversight and Coordination Group formed
- Each jurisdiction prepares and submits technology selection protocol and initial Delta elimination plan to Ecology

# Next Steps cont'd

- Ecology expeditiously reviews and acts on protocol and plan
- NPDES permits re-issued and first MIP permit cycle begins\*
- Each jurisdiction completes technology selection and submits Engineering Report with updated Delta elimination plan
- Phosphorus removal treatment technology constructed (upgraded) following interim limits

\* Note: county plant permit cycle begins following submittal and approval of engineering report

# Where Are We?

- We have built a full and complex set of “foundational concepts”
- We are now ready to accept those understandings through approval steps appropriate to each entity
- This is a “*Commencement*” of 20 years of serious hard work
- We have earned a moment of recognition and perhaps...

