



Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project



Stakeholder Forums March, 2012

Prepared by:

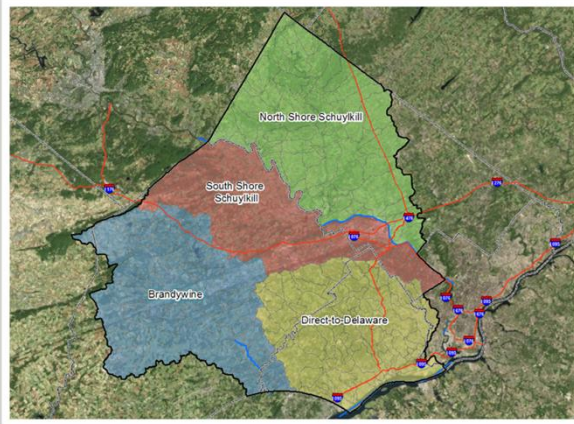
AECOM Technical Services, Inc.
1700 Market Street
Philadelphia, PA 19103



Delaware County Presentation Slides



Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project



STAKEHOLDER FORUM

Delaware County
March 28, 2012



Introductions



U.S. Army Corps of Engineers – Philadelphia District

- Tricia Aspinwall

Pennsylvania Department of Environmental Protection

- David Burke

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- Ross Gordon
- Suzanne Ciavola
- Erik Nerrie





Meeting Agenda



- Introductions and Goals for Meeting (10 min)
- Program & Project Overview (5 min)
- Review Prioritization & Decision Support Tool (5 min)
- Review Draft Prioritization Report (45 min)
- Overview of Future Steps (5 min)
- Question & Answer Session (20 min)
- Decision Support Tool Workshop (45 min)

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Goals for Meeting

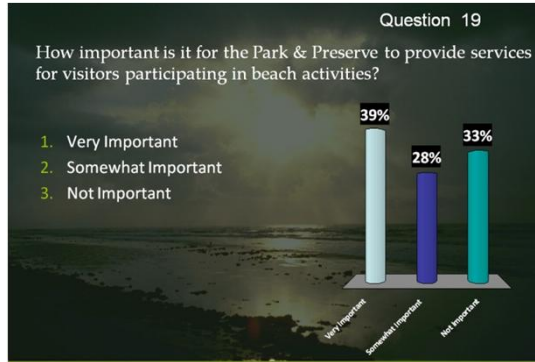


1. Confirm understanding of the Project/Program
2. Present Draft Prioritization Report and receive stakeholder feedback
3. Confirm understanding of future steps and upcoming Project schedule
4. Build support for addressing priority problems
5. Provide training on use of Decision Support Tool

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Turning Point Introduction



Please return your Turning Point Clicker on exiting

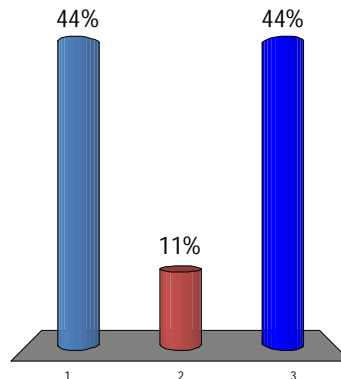


Sample Question



Will the Phillies win the World Series?

1. Yes, of course!
2. Maybe, we'll see...
3. Not a chance!

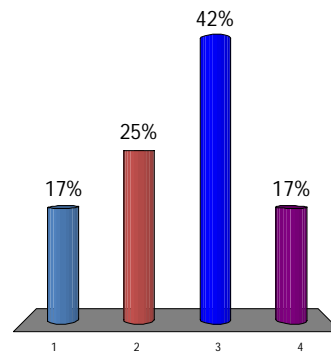




Have you attended a previous workshop?



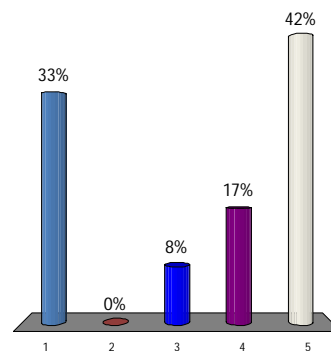
1. March 2011
2. January 2012
3. Both Workshops
4. No, I Have Not

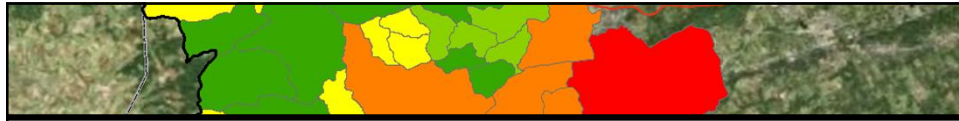




What is your affiliation?






1. County official/employee
2. Municipal official/employee
3. Consulting engineer
4. Environmental or Conservation group
5. Other





 Program & Project Overview 



 Program Overview 

Section 566 Program
Southeastern Pennsylvania Environmental Improvement Program

- Authorized by Section 566 of WRDA 1996, as amended
- Provides design and construction assistance to non-federal interests for water-related environmental infrastructure, resource protection, and development projects.
- All phases cost-shared 75% Federal / 25% Non-Federal

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Project Overview

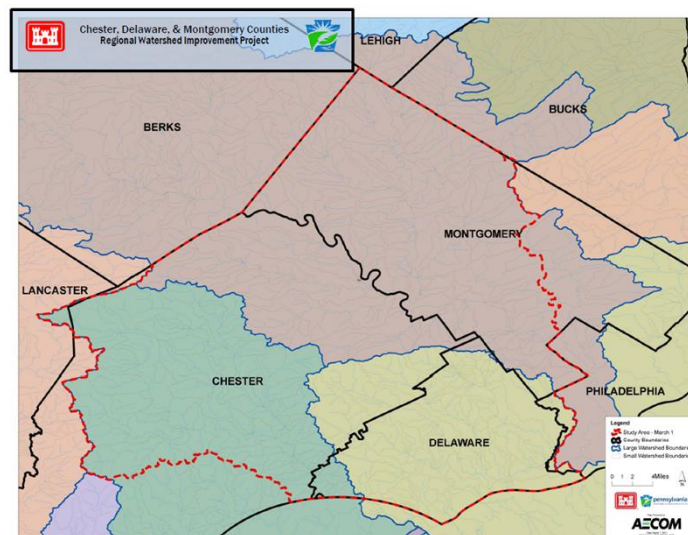


Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project

- Authorized and funded, via the 566 Program, through efforts of Congressional Representatives
- Collaboration of the U.S. Army Corp of Engineers (USACE) and the PA Department of Environmental Protection
- Created to accelerate implementation of priority regional watershed improvement projects addressing:
 - Flood risk management
 - Water quality improvement
 - Ecological restoration



Project Area



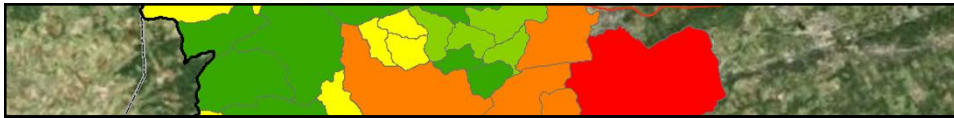


Project Phases

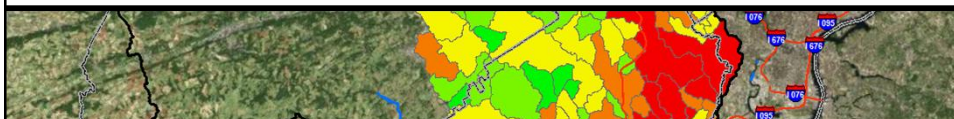


Phase 1	• Public Coordination and Involvement
Phase 2	• Data Collection, Organization, and Analysis
Phase 3	• Identify Priority Areas for Watershed Improvements (Decision Support Tool)
Phase 4	• Project Alternatives Development
Phase 5	• Preliminary Project Design
Phase 6	• Final Design and Permitting
Phase 7	• Construction

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Review of Prioritization & Decision Support Tool





Why Prioritization?



- With limited funds, must prioritize where investment is most needed
- Prioritization is 1st step in leveraging USACE resources

Keys to Prioritization

- Provide objective assessment of existing conditions and issues facing the project area
- Provide consistent decision-making framework

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Prioritization Methodology

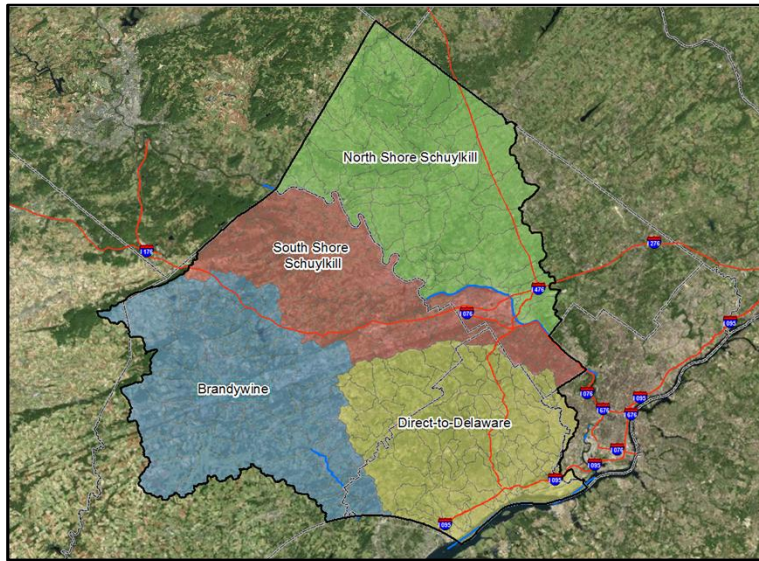


- Develop objective indicators to quantify key issues related to:
 - Flooding
 - Watershed Health
 - Water Quality
- Provide customizable weighting factors to account for differences in priorities and issues facing the watersheds
- Create unique prioritization lists for each major watershed area

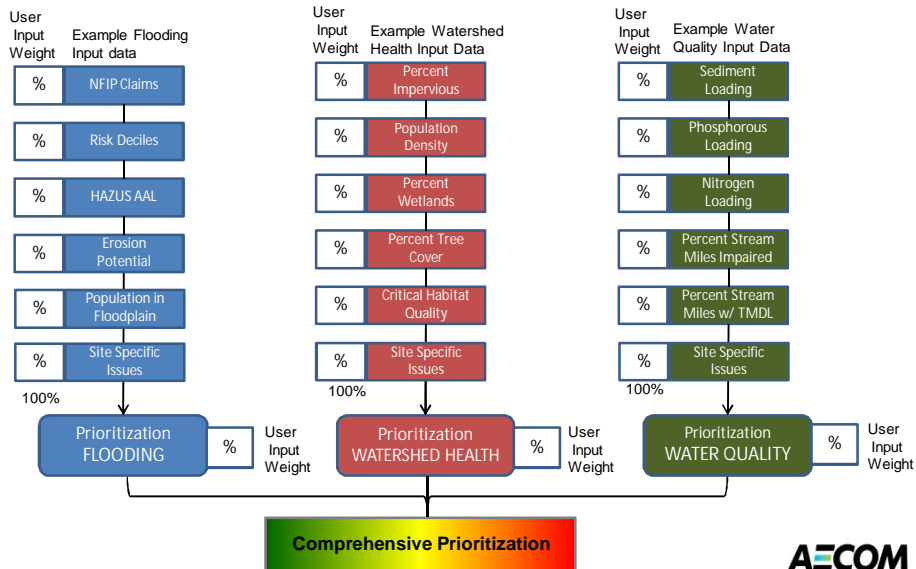
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Prioritization Areas



Example Prioritization Process





Decision Support Tool



DST Developed for Two Reasons:

1. Identify and prioritize areas where the USACE could assist in design and construction of priority regional watershed improvement projects
2. Provide useful planning tool to assist local entities in regional watershed planning

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Decision Support Tool



- Developed as an ArcGIS 10 extension
- ArcEditor and Spatial Analyst Licenses required for use
- Available for download from Project Website:
 - Installer for DST
 - Geodatabase for DST
 - Detailed User Manual

Indicator	Weight	Default Weight	Feature Layer
NPDES Discharges per Square Mile	10.0	10.0	NFP_Insurance_Claims_2009
FEMA Risk Decides	15.0	15.0	FEMA_Flood_Risk_CommunityGroup_Decides
Average Annualized Flood Loss (Per Capita)	25.0	25.0	HAZUS_Total_Annualized_Loss
Percent Population in Floodplain	5.0	5.0	Population_in_FEMA_Floodplain_JustWeighted
Percent Highly Erodeble Land	15.0	15.0	Soils_ErodebleLand
Repetitive Loss Properties per Square Mile	25.0	25.0	NFP_RepetitiveLoss_2009
Site Specific Flood Issues per Square Mile	5.0	5.0	Site_Specific_Issues_Flooding_Sample
Total	100.0		

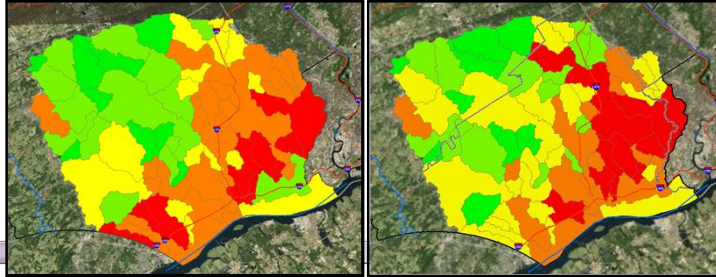
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DST Results



Tabular Results



PCTIMPUN	PCTIMPWD	PCTIMPWA	PCTIMPRS	POPDENSUN	POPDENSWD	POPDENSWA	POPDENSRS	PCTV
4.507389	9.1	9.1	1	316.824391	9.1	9.1	3	0.
1.170125	9.1	9.1	1	175.722971	9.1	9.1	2	1.
9.776408	9.1	9.1	2	659.071921	9.1	9.1	5	1.
3.431877	9.1	9.1	1	241.801784	9.1	9.1	2	1.
12.705718	9.1	9.1	3	1106.123478	9.1	9.1	6	1.
1.624801	9.1	9.1	1	227.285167	9.1	9.1	2	0.
2.194399	9.1	9.1	1	215.252756	9.1	9.1	2	1.
6.259643	9.1	9.1	2	347.014085	9.1	9.1	3	2.
5.367367	9.1	9.1	1	596.633358	9.1	9.1	4	16.
2.059939	9.1	9.1	1	221.086241	9.1	9.1	2	1.
2.391559	9.1	9.1	1	367.418588	9.1	9.1	3	1.
2.257768	9.1	9.1	1	207.864817	9.1	9.1	2	2.
1.313883	9.1	9.1	1	245.123024	9.1	9.1	2	0.
2.658879	9.1	9.1	1	177.60321	9.1	9.1	2	3.
1.160772	9.1	9.1	1	198.435357	9.1	9.1	2	0.

Graphical Results



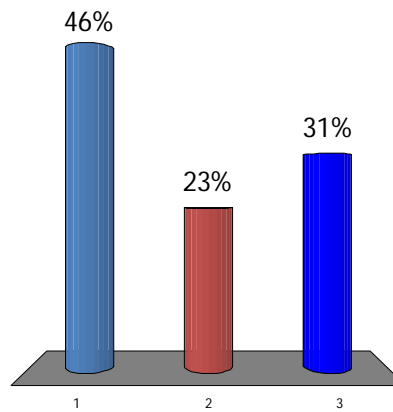
Simulated results for purposes of presentation only



Do you or your organization have the capability of running the DST?



1. Yes
2. No
3. Not Sure

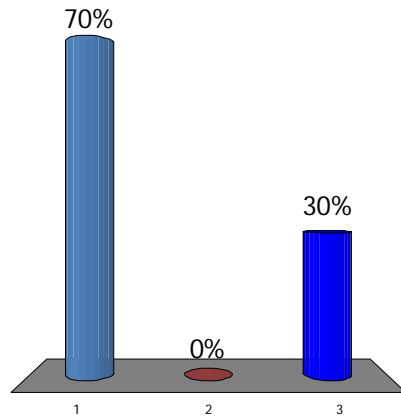




If you have the capability, do you or your organization plan on using/running the DST?



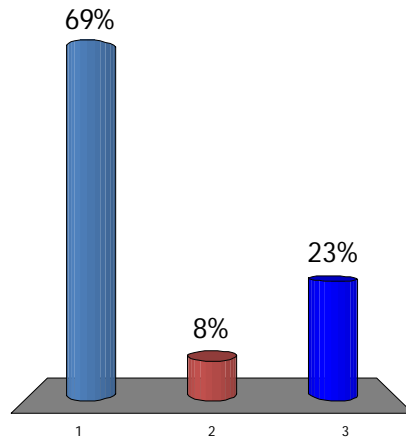
1. Yes
2. No
3. Maybe

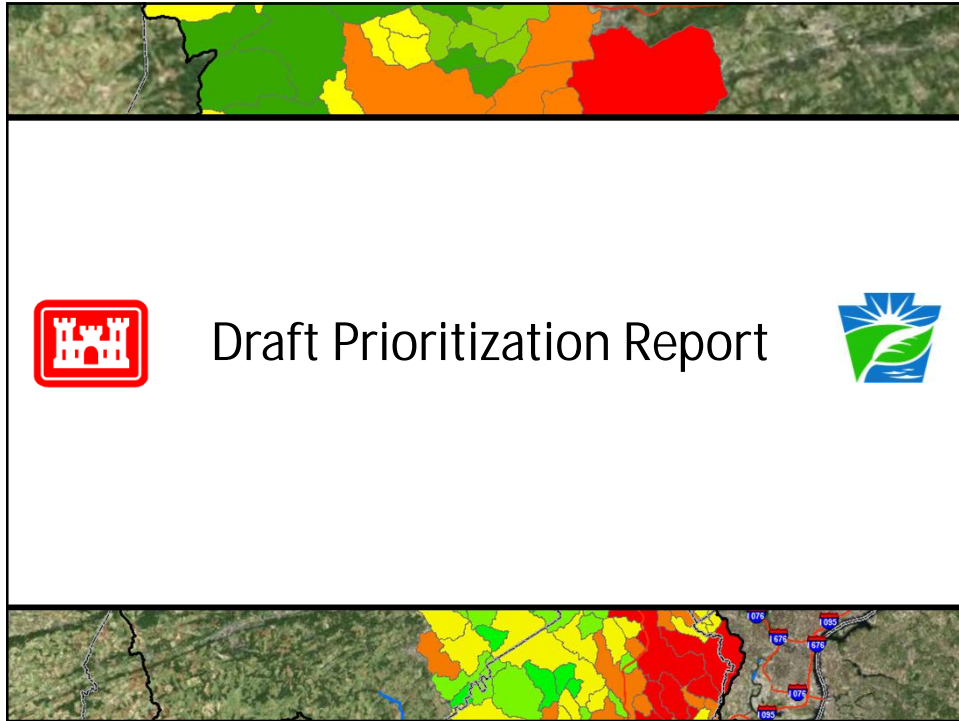



Are you planning on attending the hands-on Decision Support Tool Workshop?




1. Yes
2. No
3. Maybe









Key Considerations

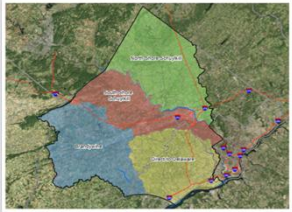


1. Watersheds classified as highest priority or high priority are preferred candidates for further consideration under the Project/Program
2. Exact ranking not as important funding and degree of local support
3. Solution may be located outside of identified priority analysis unit (i.e. upstream)



Chester, Delaware & Montgomery Counties
Regional Watershed Improvement Project






DRAFT

Prioritization Report

March, 2012

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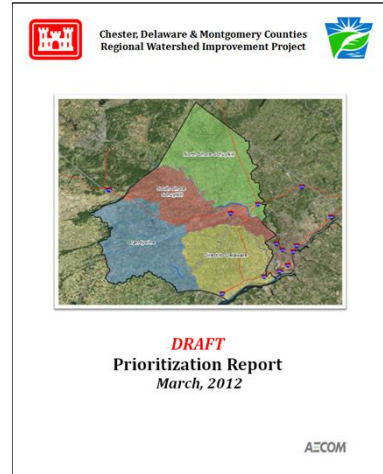




Key Considerations



1. Category and Indicator Weighting Factors play an important role in determining which areas are ranked highest
2. We will be adjusting Decision Support Tool based on comments prior to release of Final Prioritization Report
3. Future phases dependent on additional funding



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Direct-to-Delaware Tributaries Category Weighting Factors



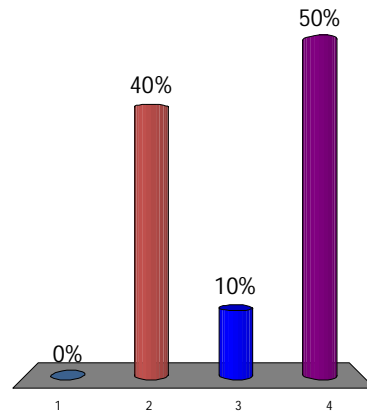
Category Name	Weighting Factor (%)
Flooding	55
Watershed Health	20
Water Quality	25



Which Direct-to-Delaware Tributaries
Category Weighting Factor
should be **increased**?



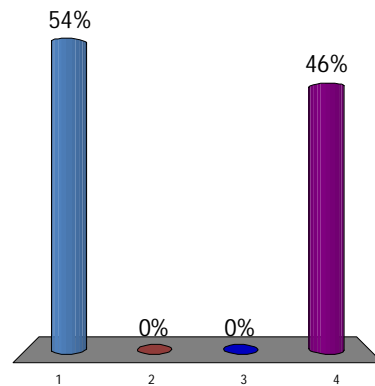
1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...



Which Direct-to-Delaware Tributaries
Category Weighting Factor
should be **decreased**?



1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...





Flooding Indicators



Flooding Indicators	Weighting Factor (%)
NFIP Claims per Square Mile	10
FEMA Risk Decile	15
Average Annualized Flood Loss per Square Mile	20
Percent Population in Floodplain	10
Percent Highly Erodible Land	15
Repetitive Loss Properties per Square Mile	25
Site Specific Flooding Issues per Square Mile	5



Watershed Health Indicators



Watershed Health Indicators	Weighting Factor (%)
Percent Impervious	30
Population Density	10
Percent Wetlands	5
Percent Hydric Soils	5
Riparian Buffer Quality	15
Percent Tree Cover	10
Critical Habitat Quality	5
Percent of Stream Miles that are High Quality or Exceptional Value	5
Percent Increase in Impervious Cover	5
Active Dams per Square Mile	5
Site Specific Watershed Health Issues per Square Mile	5





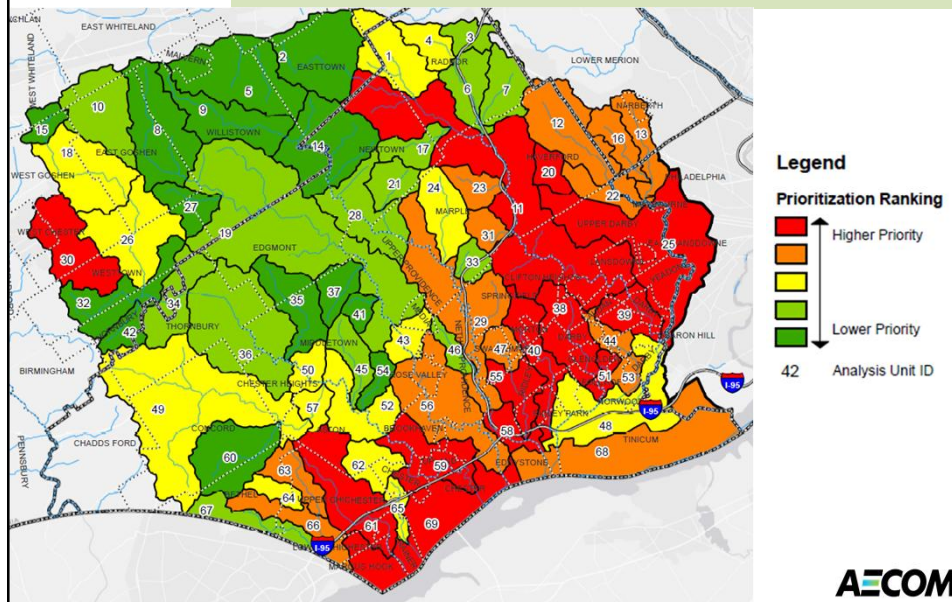
Water Quality Indicators



Water Quality Indicators	Weighting Factor (%)
Estimated Annual Sediment Loading per Square Mile	20
Estimated Annual Nitrogen Loading per Square Mile	10
Estimated Annual Phosphorus Loading per Square Mile	10
Percent of Stream Miles Impaired	25
Percent of Stream Miles with TMDL	5
Legacy Dams per Square Mile	7.5
Sanitary Sewer Overflows per Square Mile	7.5
Water Degradation Sources per Square Mile	10
Site Specific Water Quality Issues per Square Mile	5



Direct-to-Delaware Prioritization

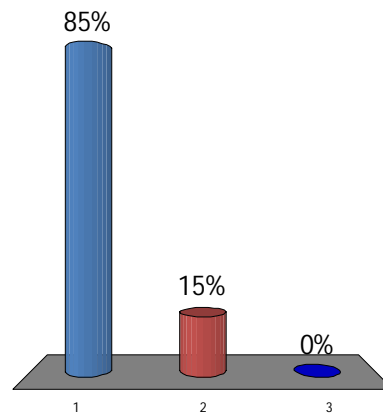




Direct-to-Delaware Tributaries Draft Prioritization



1. Looks accurate!
2. Would make minor changes
3. Would make major changes



Verification Procedure

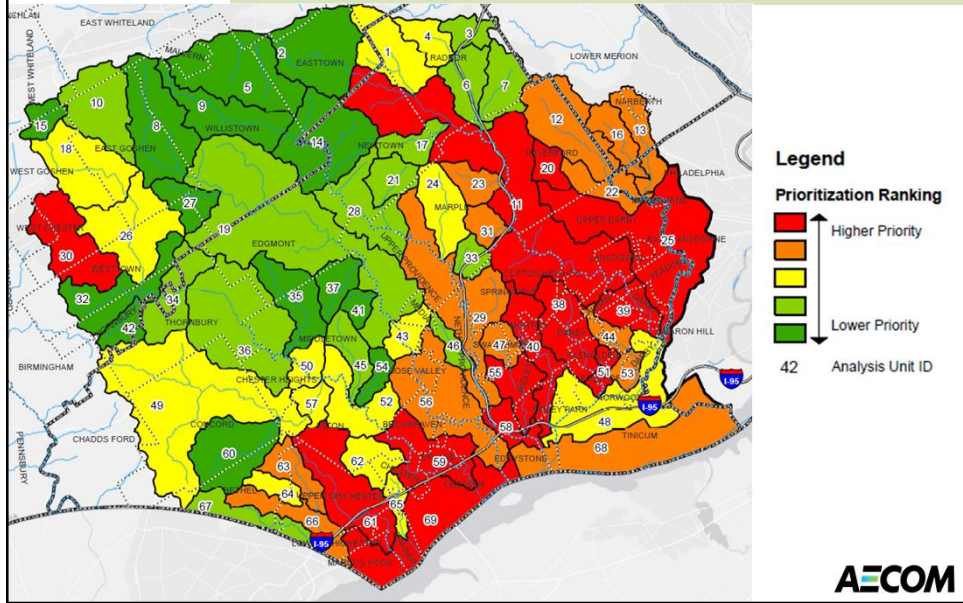



Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project Draft Prioritization Report Verification Summary

Instructions: Please write the Analysis Unit number of up to five Analysis Units, ranked in order of importance, which you believe should be of higher or lower priority


	Brandywine		Direct-to-Delaware		SS Schuylkill		NS Schuylkill	
	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority
1								
2								
3								
4								
5								

Direct-to-Delaware Prioritization





Future Steps





Future Steps



- The DST is a support tool designed to aid local, state and federal officials in the decision making process.
- Prioritizations should not be considered “final decision” for future work efforts, but rather a starting point at understanding the complex nature of the watershed network.
- Project Alternatives Development (Phase IV) analyzes priority areas in detail to develop a suite of feasible alternatives to address priority issues. Process recommends preferred option for Preliminary Project Design (Phase V).

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Future Considerations for Alternative Development



- Acceptability: Is there evidence of broad based public consensus and support for the alternative?
- Completeness: Does the alternative provide and account for all necessary investments or other actions needed to ensure the realization of the planned outputs?
- Efficiency: Is the alternative a cost effective means of addressing the problem or opportunity?
- Effectiveness: Does the alternative make a significant contribution to addressing the specified problems or opportunities?

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Funding Considerations



- Additional federal and non-federal funding is required to proceed with all future phases, including:
 - Phase 4 – Alternatives Development
 - Phase 5 – Preliminary Design
- Alternate Paths Forward
 - USACE will conduct in-depth analysis of the prioritization areas and evaluate other means to complete Phases 4-5 (i.e. utilization of existing studies or other funding authorities).
 - Communities and organizations utilize the decision support tool to further develop existing planning efforts and pursue funding opportunities outside of the USACE

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Upcoming Schedule



- April – Comment period for Draft Final Prioritizations
 - Visit website for comment submission instructions
 - <http://www.nap.usace.army.mil/Projects/spe/>
- May – Release Final Prioritization Report via website

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Project Website



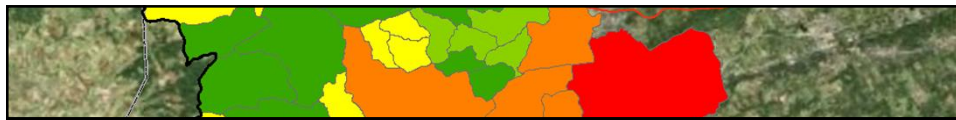
Website currently includes:

- Download link for Decision Support Tool & User Manual
- Draft Prioritization Report (PDF)
- Comment submission instructions

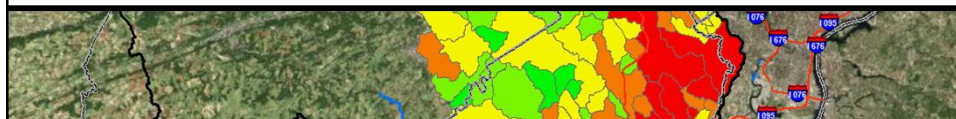
After May release of Final Prioritizations, website to include:

- Download link for Decision Support Tool & User Manual
- Final Prioritization Report including maps and tables
- Link to web-based ArcServer to view digital version of final prioritizations

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Question & Answer





Question & Answer



- Program / Project Overview
- Draft Prioritization Report
- Future Steps

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Question & Answer



- Program / Project Overview
- Draft Prioritization Report
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Question & Answer



- Program / Project Overview
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THANK YOU

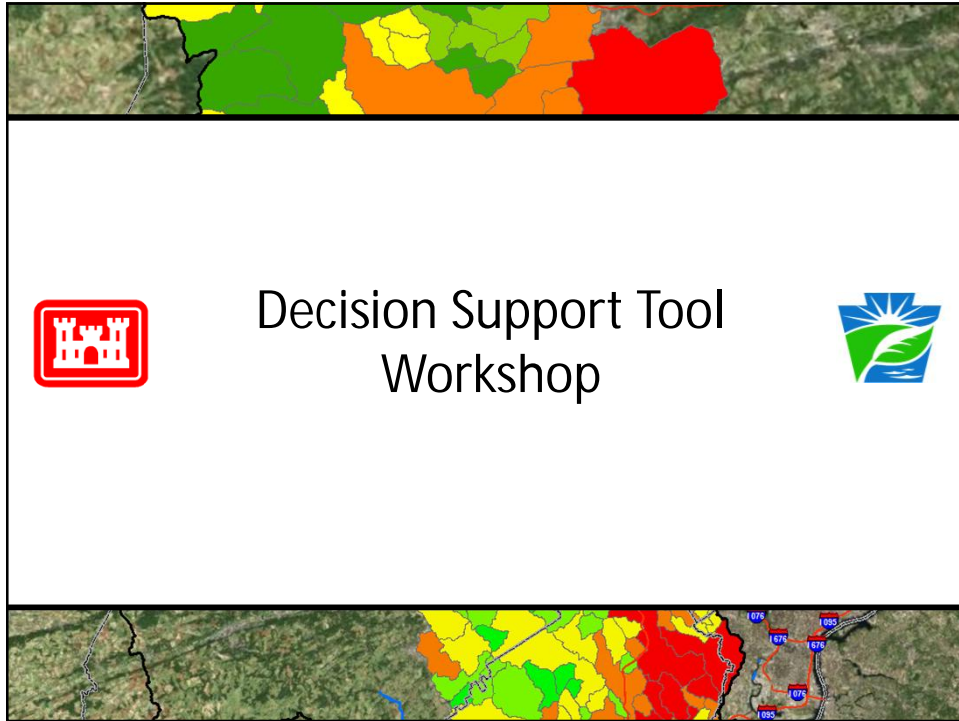



Indicator Selection and Weighting	Weight	Default	Indicator
Indicator Score 0%	14.3	14.3	2002 Assessment Class 2005
2005 Risk Score	14.3	14.3	2005 Risk_Score_ContributedScore_Score
Percent Population Flood Free (No-Catch)	14.3	14.3	2005 Risk_Score_ContributedScore_Score
Percent Population on Foundation	14.3	14.3	2005 Risk_Score_ContributedScore_Score
Percent High Quality Land	14.3	14.3	2005 Risk_Score_ContributedScore_Score
Population Loss Potential per Square Mile	14.3	14.3	2005 Risk_Score_ContributedScore_Score
Top Soils (Percent) per Square Mile	14.3	14.3	2005 Risk_Score_ContributedScore_Score
Total	100.0	100.0	

Stay up to date at our website
<http://www.nap.usace.army.mil/Projects/spe/>


Please turn in your Turning Point Clicker







Where to Download?

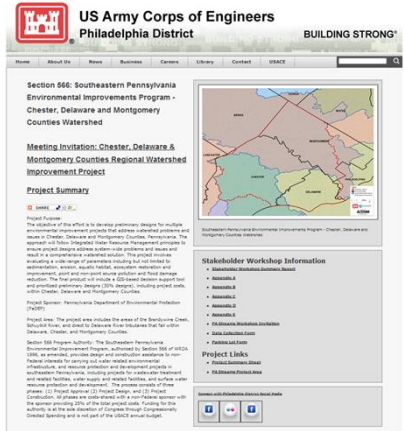



Project Website

<http://www.nap.usace.army.mil/Projects/spe/>

Documents Available:

- Draft Prioritization Report (PDF)
- DST User Manual (PDF)
- DST Installer (MSI)
- DST File Geodatabase (GDB)







Software/Hardware Requirements



- Hardware:
 - PC Desktop or Laptop
 - Windows XP, Windows Vista or Windows 7
(Check compatibility with ArcGIS)
 - 1+ GB of Available Memory
- Software:
 - Version 10 ArcMap, "Standard" (ArcEditor)
 - ArcGIS Spatial Analyst Extension



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Downloads



File Geodatabase

USACE_DecisionSupportTool_Data.gdb

Installer

USACE_DstSetup.2012XXXXXXXXX.msi

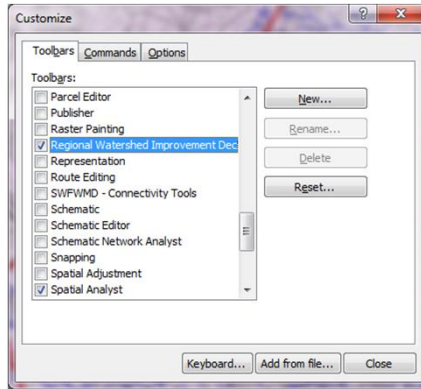
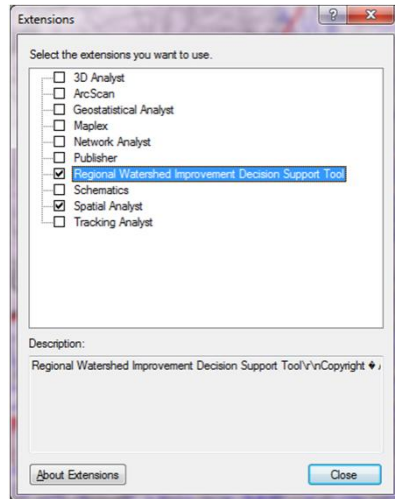
FLOODING	File Geodatabase Feature Dataset
GENERAL_DATA	File Geodatabase Feature Dataset
RESULTS	File Geodatabase Feature Dataset
WATER_QUALITY	File Geodatabase Feature Dataset
WATERSHED_HEALTH	File Geodatabase Feature Dataset
AnalysisFeatureClass	File Geodatabase Table
CategoryWeighting	File Geodatabase Table
D_Category	File Geodatabase Table
D_GeneralData	File Geodatabase Table
D_Indicator	File Geodatabase Table
D_Weighting	File Geodatabase Table
DefaultFeatureClassGeneral	File Geodatabase Table
DefaultFeatureClassIndicator	File Geodatabase Table
IndicatorWeighting	File Geodatabase Table
Normalization	File Geodatabase Table
WaterQuality_Annual_tn	File Geodatabase Raster Dataset
WaterQuality_Annual_tp	File Geodatabase Raster Dataset
WaterQuality_Sediment_lbsyr	File Geodatabase Raster Dataset
Watershed_Health_Critical_Hab...	File Geodatabase Raster Dataset
Watershed_Health_Impervious2...	File Geodatabase Raster Dataset
Watershed_Health_Impervious...	File Geodatabase Raster Dataset
Watershed_Health_RiparianBuff...	File Geodatabase Raster Dataset
Watershed_Health_TreeCover	File Geodatabase Raster Dataset



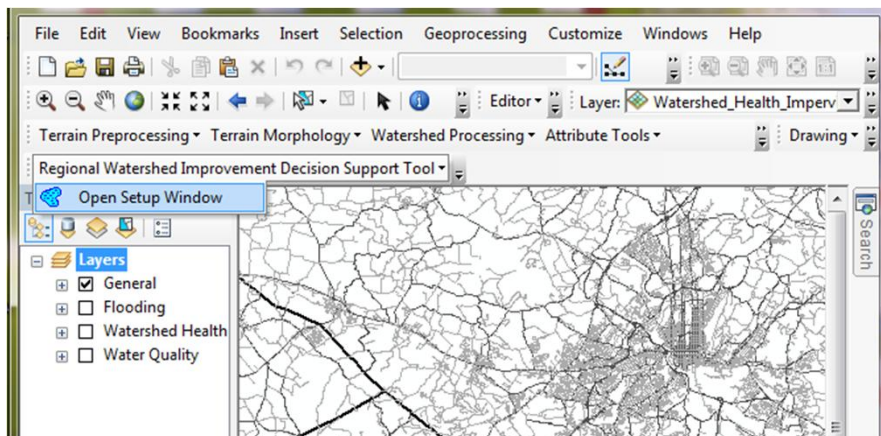
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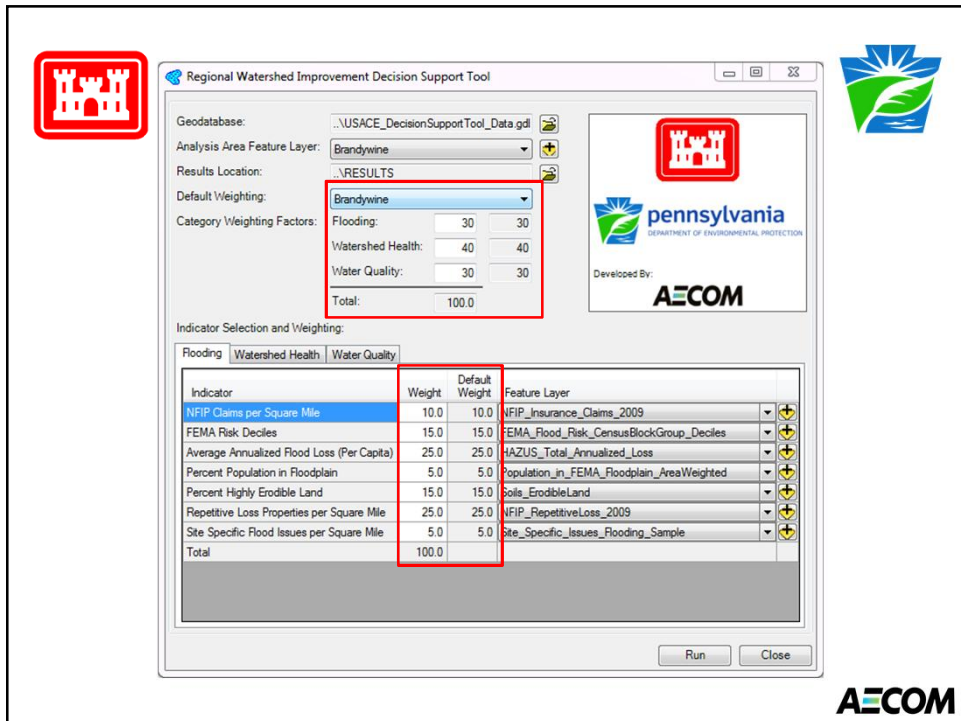
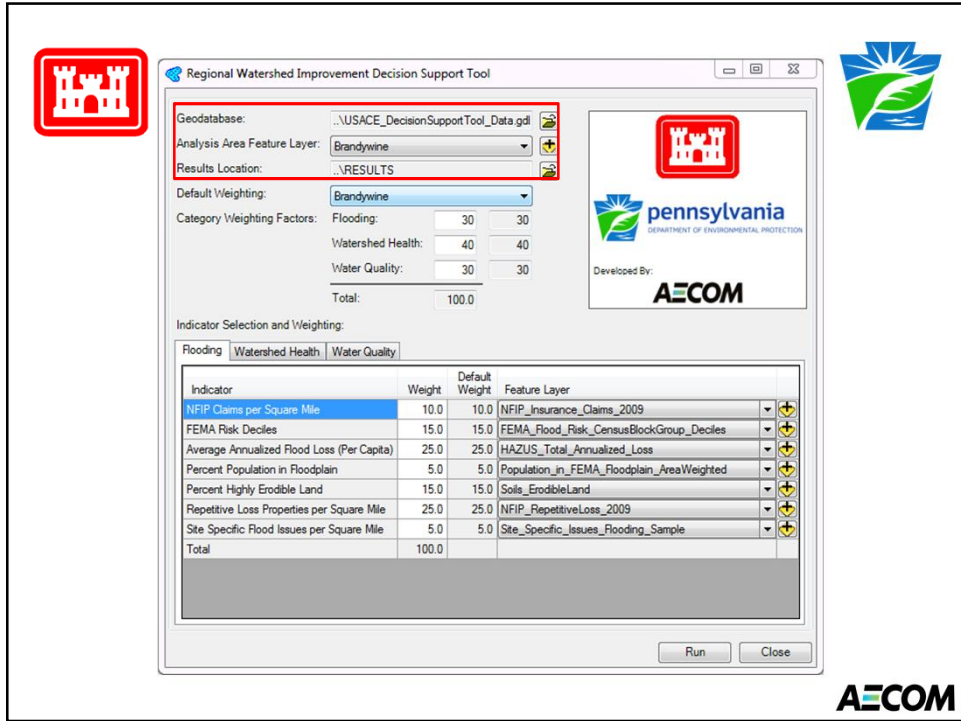


Loading the DST



Loading the DST





Regional Watershed Improvement Decision Support Tool

Geodatabase: ..\USACE_DecisionSupportTool_Data.gdb

Analysis Area Feature Layer: Brandywine

Results Location: ..\RESULTS

Default Weighting: Brandywine

Category Weighting Factors:

Flooding:	30	30
Watershed Health:	40	40
Water Quality:	30	30
Total:	100.0	

Indicator Selection and Weighting:

Indicator	Weight	Default Weight	Feature Layer
NFIP Claims per Square Mile	10.0	10.0	NFIP_Insurance_Claims_2009
FEMA Risk Deciles	15.0	15.0	FEMA_Flood_Risk_CensusBlockGroup_Deciles
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Run Close

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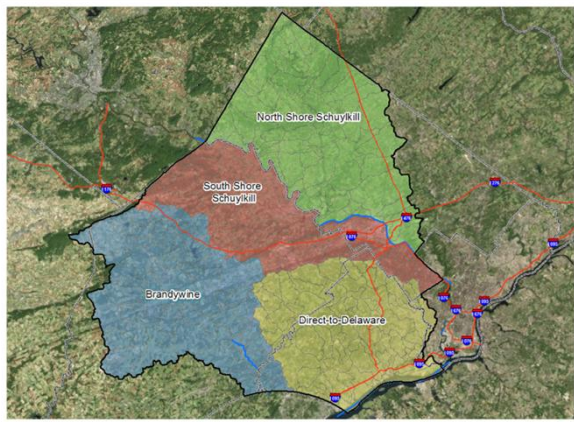
Hands-on Experimentation
(3 Computers)

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Montgomery County Presentation Slides



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STAKEHOLDER FORUM

Montgomery County
March 28, 2012



Introductions



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Pennsylvania Department of Environmental Protection

- Jay Braund
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- Erik Nerrie





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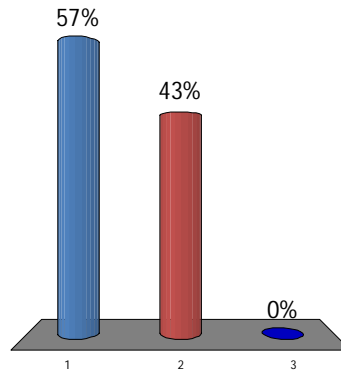


Sample Question



Will the Phillies win the World Series?

1. Yes, of course!
2. Maybe, we'll see...
3. Not a chance!

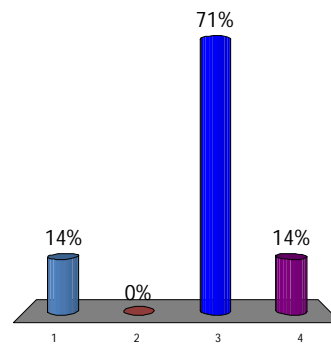




Have you attended a previous workshop?



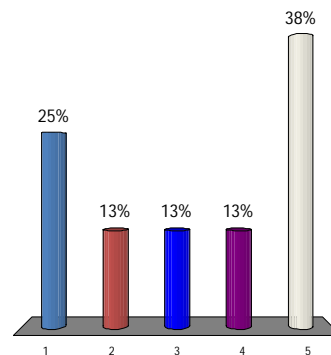
1. March 2011
2. January 2012
3. Both Workshops
4. No, I Have Not

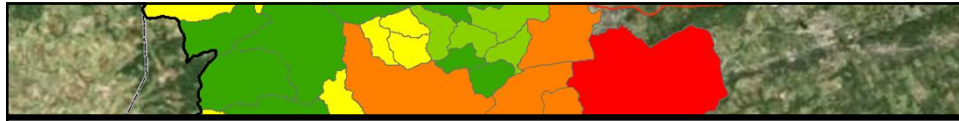




What is your affiliation?






1. County official/employee
2. Municipal official/employee
3. Consulting engineer
4. Environmental or Conservation group
5. Other





 Program & Project Overview 



 Program Overview 

Section 566 Program
Southeastern Pennsylvania Environmental Improvement Program

- Authorized by Section 566 of WRDA 1996, as amended
- Provides design and construction assistance to non-federal interests for water-related environmental infrastructure, resource protection, and development projects.
- All phases cost-shared 75% Federal / 25% Non-Federal

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Project Overview

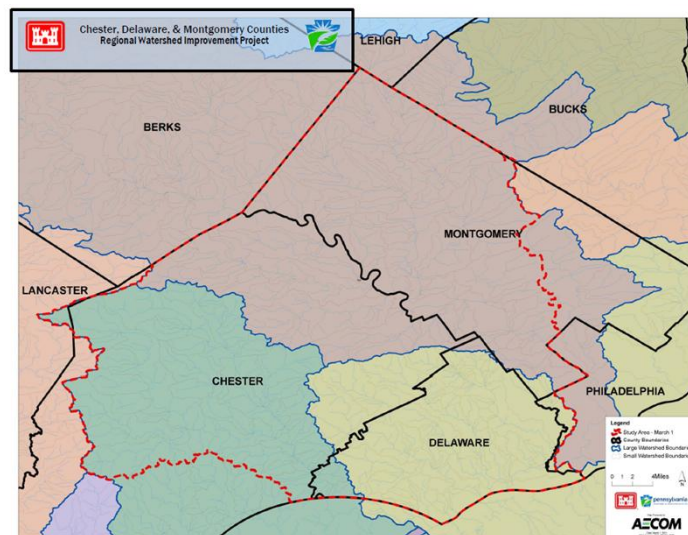


Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project

- Authorized and funded, via the 566 Program, through efforts of Congressional Representatives
- Collaboration of the U.S. Army Corp of Engineers (USACE) and the PA Department of Environmental Protection
- Created to accelerate implementation of priority regional watershed improvement projects addressing:
 - Flood risk management
 - Water quality improvement
 - Ecological restoration



Project Area



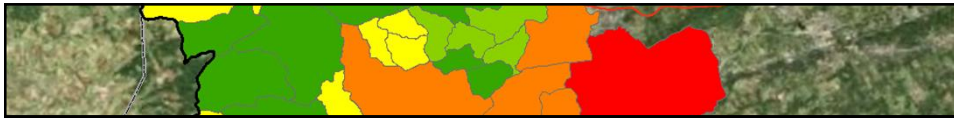


Project Phases

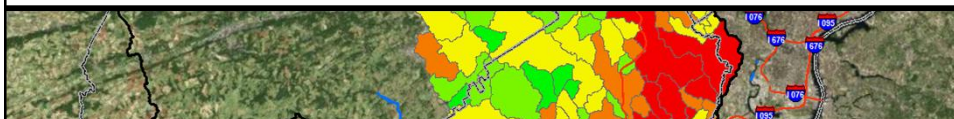


Phase 1	• Public Coordination and Involvement
Phase 2	• Data Collection, Organization, and Analysis
Phase 3	• Identify Priority Areas for Watershed Improvements (Decision Support Tool)
Phase 4	• Project Alternatives Development
Phase 5	• Preliminary Project Design
Phase 6	• Final Design and Permitting
Phase 7	• Construction

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Review of Prioritization & Decision Support Tool





Why Prioritization?



- With limited funds, must prioritize where investment is most needed
- Prioritization is 1st step in leveraging USACE resources

Keys to Prioritization

- Provide objective assessment of existing conditions and issues facing the project area
- Provide consistent decision-making framework

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Prioritization Methodology

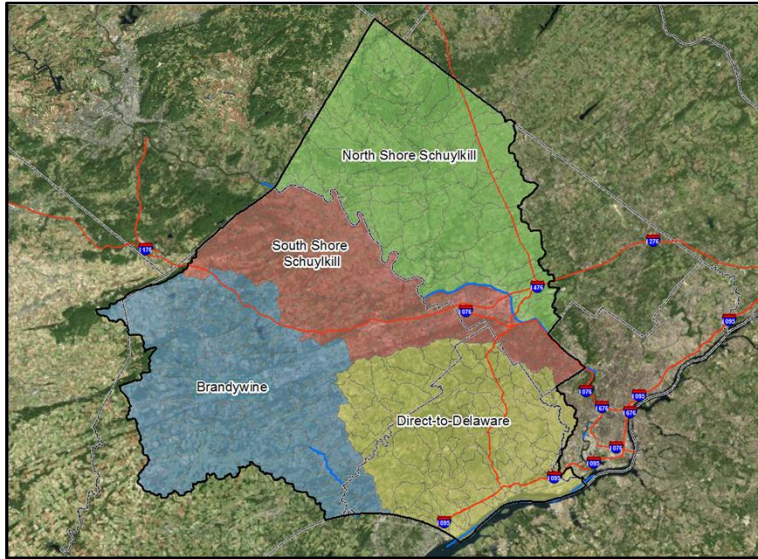


- Develop objective indicators to quantify key issues related to:
 - Flooding
 - Watershed Health
 - Water Quality
- Provide customizable weighting factors to account for differences in priorities and issues facing the watersheds
- Create unique prioritization lists for each major watershed area

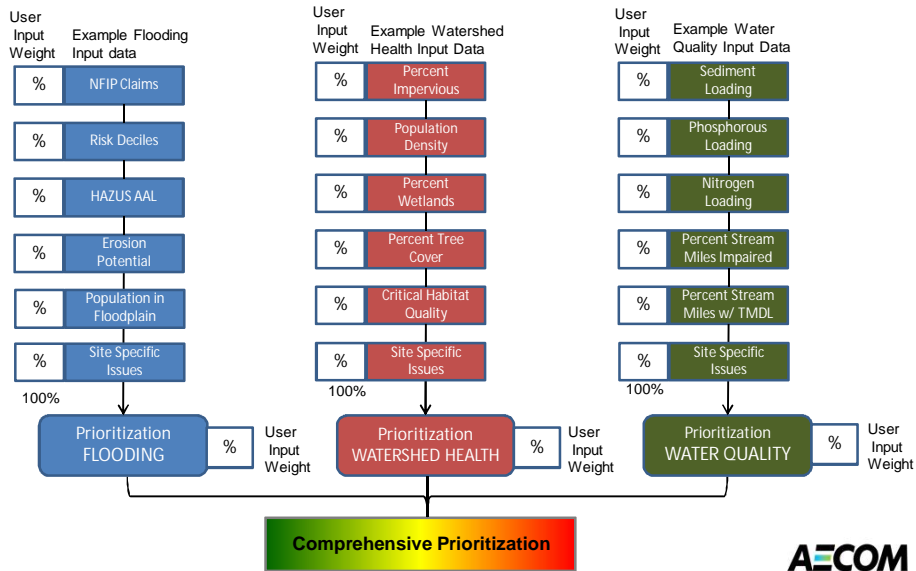
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Prioritization Areas



Example Prioritization Process





Decision Support Tool



DST Developed for Two Reasons:

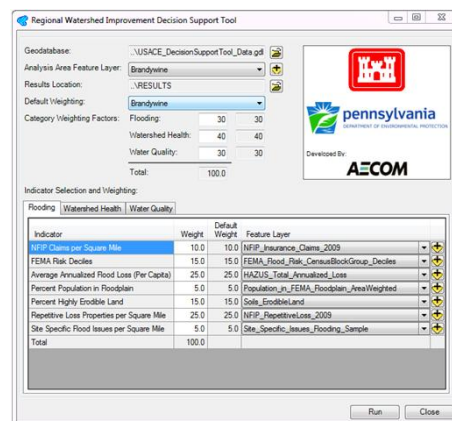
1. Identify and prioritize areas where the USACE could assist in design and construction of priority regional watershed improvement projects
2. Provide useful planning tool to assist local entities in regional watershed planning



Decision Support Tool



- Developed as an ArcGIS 10 extension
- ArcEditor and Spatial Analyst Licenses required for use
- Available for download from Project Website:
 - Installer for DST
 - Geodatabase for DST
 - Detailed User Manual





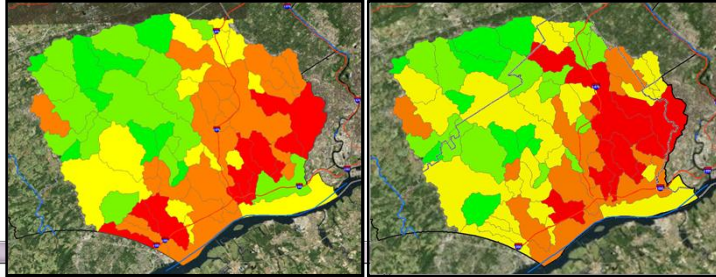
DST Results



Tabular Results



PCTIMPUN	PCTIMPWD	PCTIMPWA	PCTIMPRS	POPDENSUN	POPDENSWD	POPDENSWA	POPDENSRS	PCTV
4.507389	9.1	9.1	1	316.824391	9.1	9.1	3	0.
1.170125	9.1	9.1	1	175.722971	9.1	9.1	2	0.
9.776408	9.1	9.1	2	659.071921	9.1	9.1	5	1.
3.431877	9.1	9.1	1	241.801784	9.1	9.1	2	0.
12.705718	9.1	9.1	3	1106.123478	9.1	9.1	6	0.
1.624801	9.1	9.1	1	227.285167	9.1	9.1	2	0.
2.194399	9.1	9.1	1	215.252756	9.1	9.1	2	1.
6.259643	9.1	9.1	2	347.014085	9.1	9.1	3	2.
5.367367	9.1	9.1	1	596.633358	9.1	9.1	4	16.
2.059939	9.1	9.1	1	221.086241	9.1	9.1	2	1.
2.391559	9.1	9.1	1	367.418588	9.1	9.1	3	1.
2.257768	9.1	9.1	1	207.864817	9.1	9.1	2	2.
1.313883	9.1	9.1	1	245.123024	9.1	9.1	2	0.
2.658879	9.1	9.1	1	177.60321	9.1	9.1	2	3.
1.160772	9.1	9.1	1	198.435357	9.1	9.1	2	0.



Graphical Results



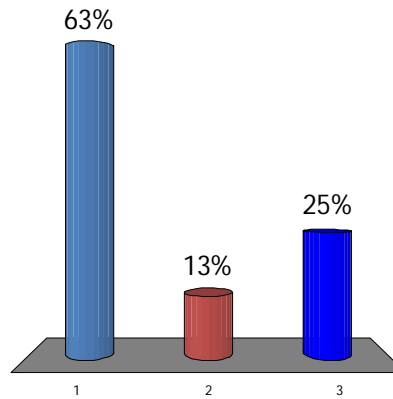
Simulated results
for purposes of
presentation only



Do you or your organization have the capability of running the DST?



- 1. Yes
- 2. No
- 3. Not Sure

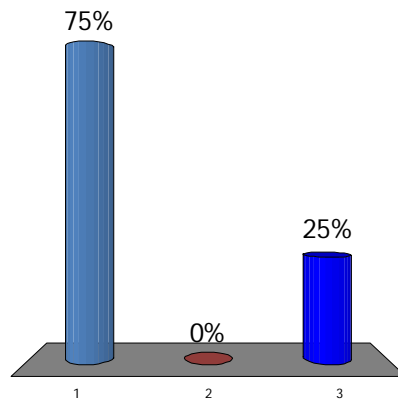




If you have the capability, do you or your organization plan on using/running the DST?



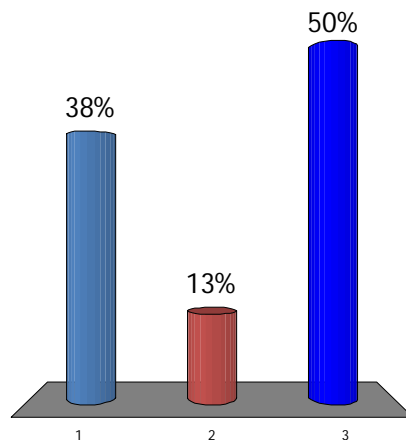
1. Yes
2. No
3. Maybe

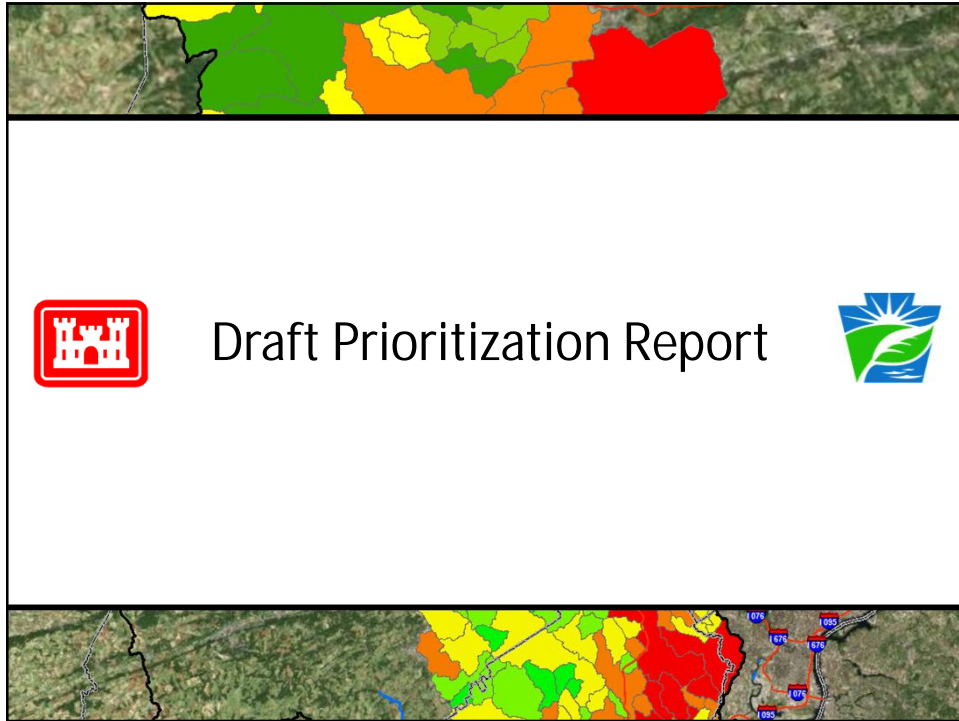


Are you planning on attending the hands-on Decision Support Tool Workshop?



1. Yes
2. No
3. Maybe





Key Considerations

1. Watersheds classified as highest priority or high priority are preferred candidates for further consideration under the Project/Program
2. Exact ranking not as important funding and degree of local support
3. Solution may be located outside of identified priority analysis unit (i.e. upstream)

DRAFT
Prioritization Report
March, 2012

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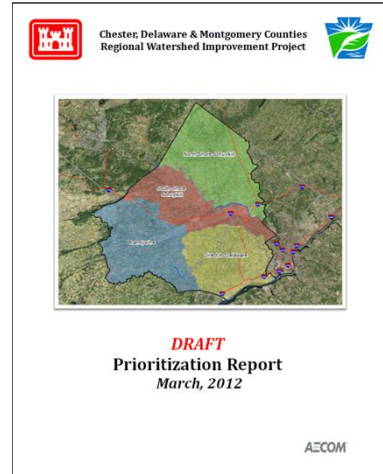
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Key Considerations



1. Category and Indicator Weighting Factors play an important role in determining which areas are ranked highest
2. We will be adjusting Decision Support Tool based on comments prior to release of Final Prioritization Report
3. Future phases dependent on additional funding



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NS-Schuylkill River Category Weighting Factors



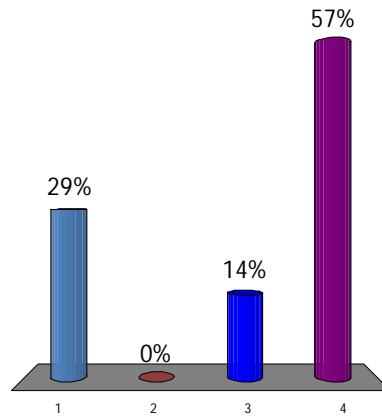
Category Name	Weighting Factor (%)
Flooding	25
Watershed Health	30
Water Quality	45



Which NS-Schuylkill River Category Weighting Factor should be **increased**?



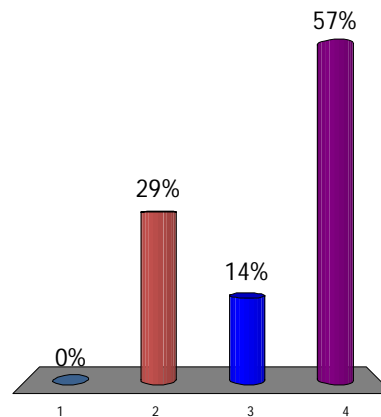
1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...



Which NS-Schuylkill River Category Weighting Factor should be **decreased**?



1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...





Flooding Indicators



Flooding Indicators	Weighting Factor (%)
NFIP Claims per Square Mile	10
FEMA Risk Decile	15
Average Annualized Flood Loss per Square Mile	20
Percent Population in Floodplain	10
Percent Highly Erodible Land	15
Repetitive Loss Properties per Square Mile	25
Site Specific Flooding Issues per Square Mile	5



Watershed Health Indicators



Watershed Health Indicators	Weighting Factor (%)
Percent Impervious	30
Population Density	10
Percent Wetlands	5
Percent Hydric Soils	5
Riparian Buffer Quality	15
Percent Tree Cover	10
Critical Habitat Quality	5
Percent of Stream Miles that are High Quality or Exceptional Value	5
Percent Increase in Impervious Cover	5
Active Dams per Square Mile	5
Site Specific Watershed Health Issues per Square Mile	5

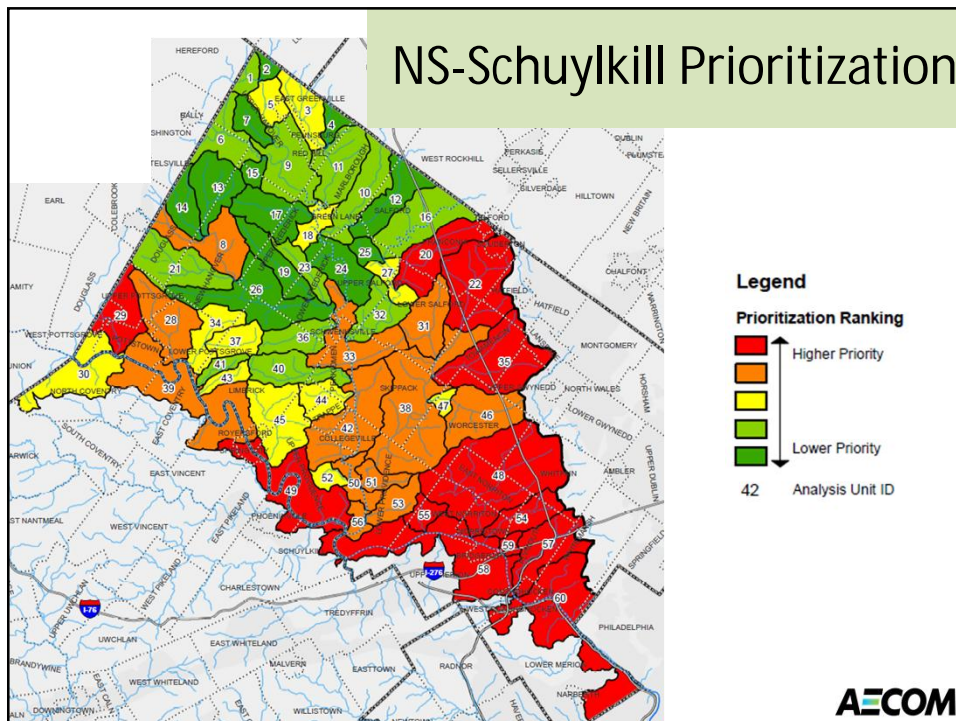




Water Quality Indicators



Water Quality Indicators	Weighting Factor (%)
Estimated Annual Sediment Loading per Square Mile	20
Estimated Annual Nitrogen Loading per Square Mile	10
Estimated Annual Phosphorus Loading per Square Mile	10
Percent of Stream Miles Impaired	25
Percent of Stream Miles with TMDL	5
Legacy Dams per Square Mile	7.5
Sanitary Sewer Overflows per Square Mile	7.5
Water Degradation Sources per Square Mile	10
Site Specific Water Quality Issues per Square Mile	5

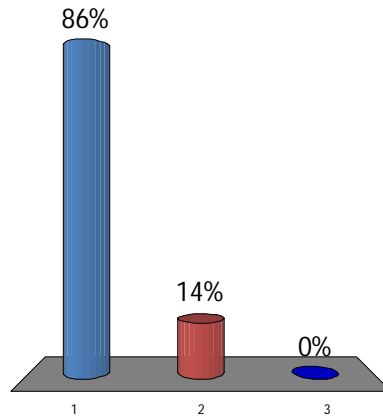




NS-Schuylkill River Draft Prioritization



- 1. Looks accurate!
- 2. Would make minor changes
- 3. Would make major changes



Verification Procedure



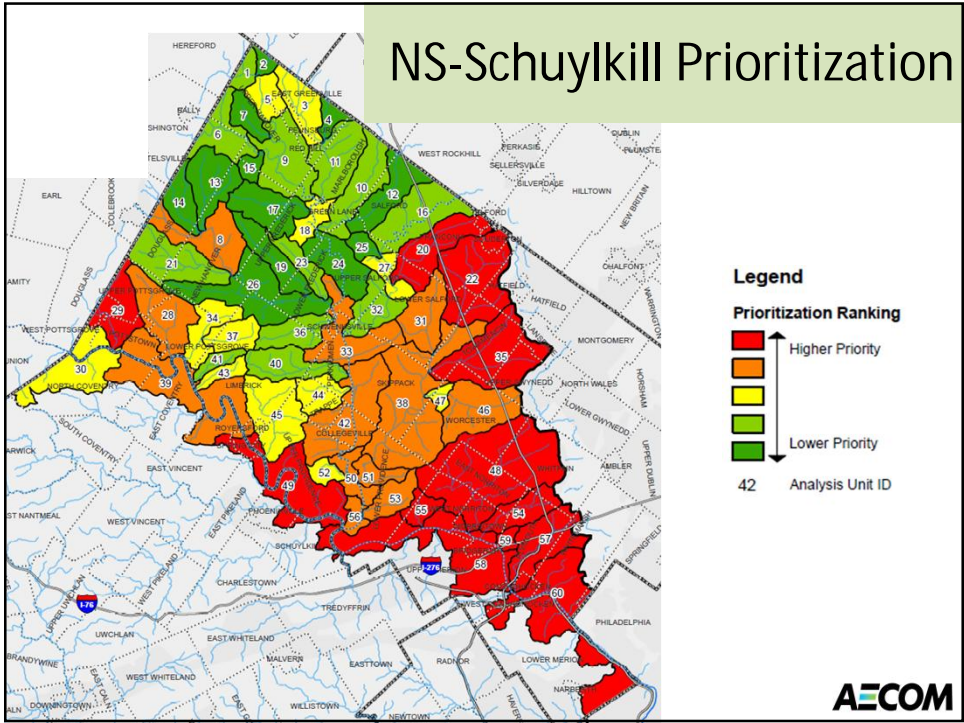
**Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project
Draft Prioritization Report Verification Summary**


Instructions: Please write the Analysis Unit number of up to five Analysis Units, ranked in order of importance, which you believe should be of higher or lower priority

	Brandywine		Direct-to-Delaware		SS Schuylkill		NS Schuylkill	
	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority
1								
2								
3								
4								
5								





NS-Schuylkill Prioritization





Future Steps







Future Steps



- The DST is a support tool designed to aid local, state and federal officials in the decision making process.
- Prioritizations should not be considered “final decision” for future work efforts, but rather a starting point at understanding the complex nature of the watershed network.
- Project Alternatives Development (Phase IV) analyzes priority areas in detail to develop a suite of feasible alternatives to address priority issues. Process recommends preferred option for Preliminary Project Design (Phase V).

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Future Considerations for Alternative Development



- Acceptability: Is there evidence of broad based public consensus and support for the alternative?
- Completeness: Does the alternative provide and account for all necessary investments or other actions needed to ensure the realization of the planned outputs?
- Efficiency: Is the alternative a cost effective means of addressing the problem or opportunity?
- Effectiveness: Does the alternative make a significant contribution to addressing the specified problems or opportunities?

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Funding Considerations



- Additional federal and non-federal funding is required to proceed with all future phases, including:
 - Phase 4 – Alternatives Development
 - Phase 5 – Preliminary Design
- Alternate Paths Forward
 - USACE will conduct in-depth analysis of the prioritization areas and evaluate other means to complete Phases 4-5 (i.e. utilization of existing studies or other funding authorities).
 - Communities and organizations utilize the decision support tool to further develop existing planning efforts and pursue funding opportunities outside of the USACE

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Upcoming Schedule



- April – Comment period for Draft Final Prioritizations
 - Visit website for comment submission instructions
 - <http://www.nap.usace.army.mil/Projects/spe/>
- May – Release Final Prioritization Report via website

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Project Website



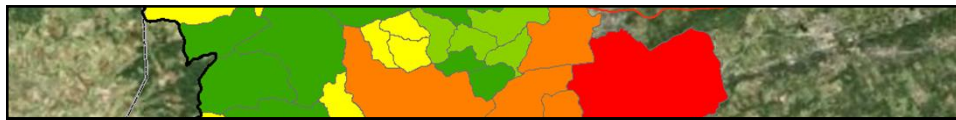
Website currently includes:

- Download link for Decision Support Tool & User Manual
- Draft Prioritization Report (PDF)
- Comment submission instructions

After May release of Final Prioritizations, website to include:

- Download link for Decision Support Tool & User Manual
- Final Prioritization Report including maps and tables
- Link to web-based ArcServer to view digital version of final prioritizations

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Question & Answer





Question & Answer



- Program / Project Overview
- Draft Prioritization Report
- Future Steps

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Question & Answer



- Program / Project Overview
- Draft Prioritization Report
- Future Steps

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Question & Answer



- Program / Project Overview
- Draft Prioritization Report
- Future Steps



THANK YOU

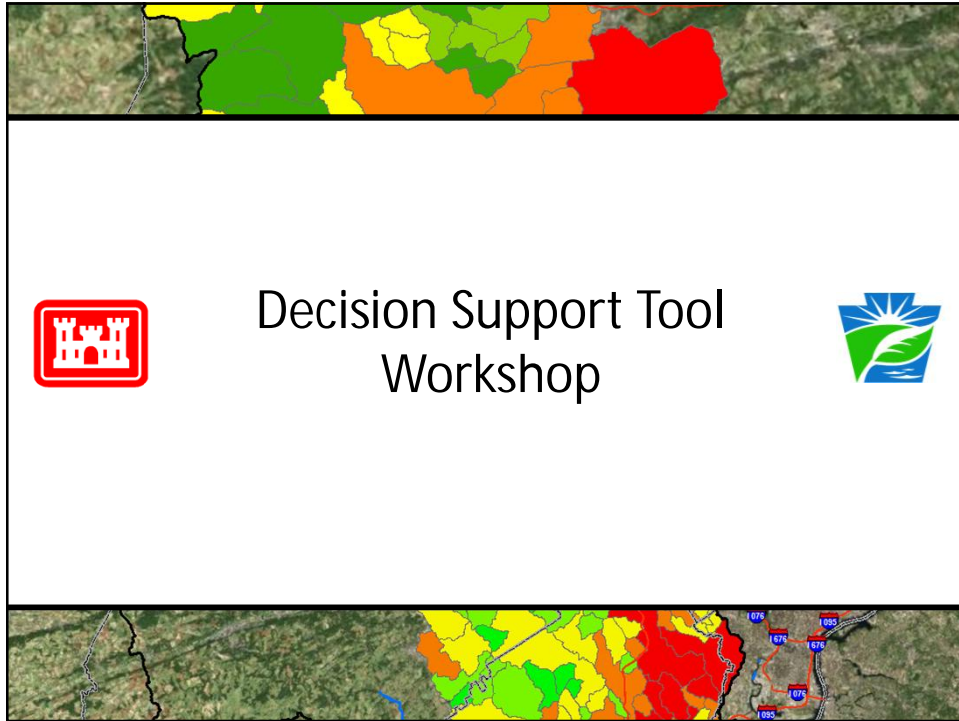



Indicator Selection and Weighting	Weight	Default	Indicator
Indicator Score 0%	14.3	14.3	2002 Assessment Score_2005
2005 Peak Discharge	14.3	14.3	2005 Peak Flow_ContributorGroup_0405
Percent Population Flood-Prone	14.3	14.3	2005 Peak Flow_ContributorGroup_0405
Percent Population on Floodplain	14.3	14.3	Population in 2000_Floodplain_Availability
Percent High-Quality Land	14.3	14.3	2005 Assessment Score_2005
Population Loss Potential per Square Mile	14.3	14.3	2005 Assessment Score_2005
Topographic Wetness Index per Square Mile	14.3	14.3	2005 Assessment Score_2005
Total	100.0	100.0	2005 Assessment Score_2005

Stay up to date at our website
<http://www.nap.usace.army.mil/Projects/spe/>


Please turn in your Turning Point Clicker







Where to Download?

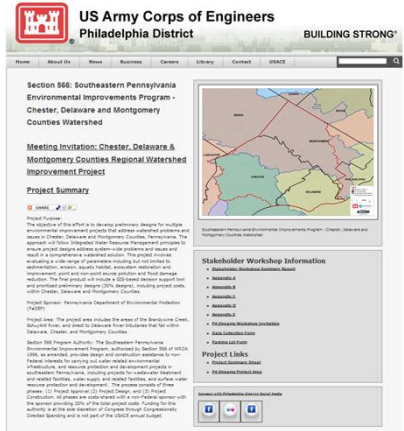



Project Website

<http://www.nap.usace.army.mil/Projects/spe/>

Documents Available:

- Draft Prioritization Report (PDF)
- DST User Manual (PDF)
- DST Installer (MSI)
- DST File Geodatabase (GDB)







Software/Hardware Requirements



- Hardware:
 - PC Desktop or Laptop
 - Windows XP, Windows Vista or Windows 7
(Check compatibility with ArcGIS)
 - 1+ GB of Available Memory
- Software:
 - Version 10 ArcMap, "Standard" (ArcEditor)
 - ArcGIS Spatial Analyst Extension



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Downloads



File Geodatabase

USACE_DecisionSupportTool_Data.gdb

Installer

USACE_DstSetup.2012XXXXXXXXX.msi

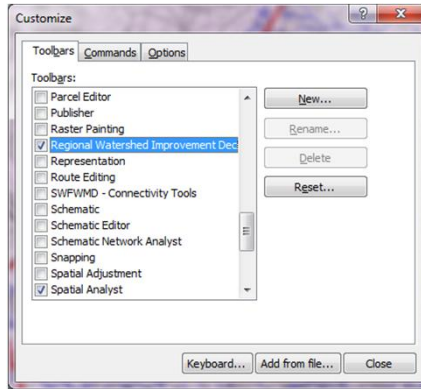
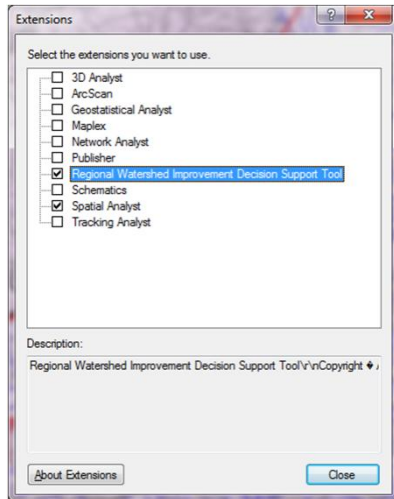
FLOODING	File Geodatabase Feature Dataset
GENERAL_DATA	File Geodatabase Feature Dataset
RESULTS	File Geodatabase Feature Dataset
WATER_QUALITY	File Geodatabase Feature Dataset
WATERSHED_HEALTH	File Geodatabase Feature Dataset
AnalysisFeatureClass	File Geodatabase Table
CategoryWeighting	File Geodatabase Table
D_Category	File Geodatabase Table
D_GeneralData	File Geodatabase Table
D_Indicator	File Geodatabase Table
D_Weighting	File Geodatabase Table
DefaultFeatureClassGeneral	File Geodatabase Table
DefaultFeatureClassIndicator	File Geodatabase Table
IndicatorWeighting	File Geodatabase Table
Normalization	File Geodatabase Table
WaterQuality_Annual_tn	File Geodatabase Raster Dataset
WaterQuality_Annual_tp	File Geodatabase Raster Dataset
WaterQuality_Sediment_lbsyr	File Geodatabase Raster Dataset
Watershed_Health_Critical_Hab...	File Geodatabase Raster Dataset
Watershed_Health_Impervious2...	File Geodatabase Raster Dataset
Watershed_Health_Impervious...	File Geodatabase Raster Dataset
Watershed_Health_RiparianBuff...	File Geodatabase Raster Dataset
Watershed_Health_TreeCover	File Geodatabase Raster Dataset



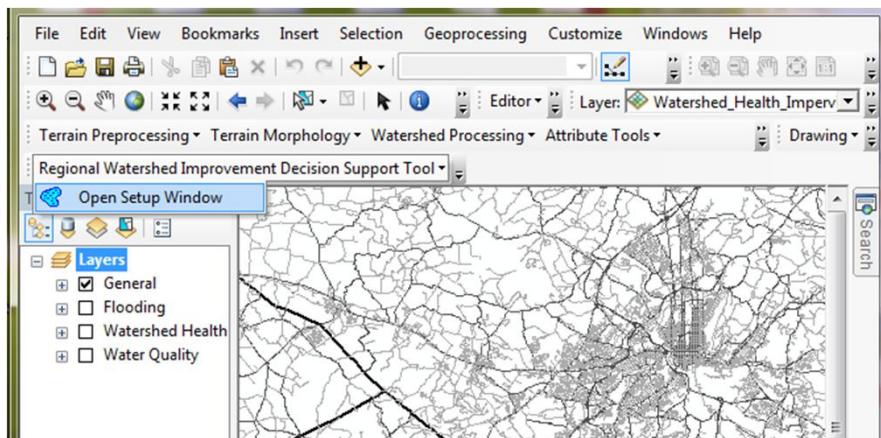
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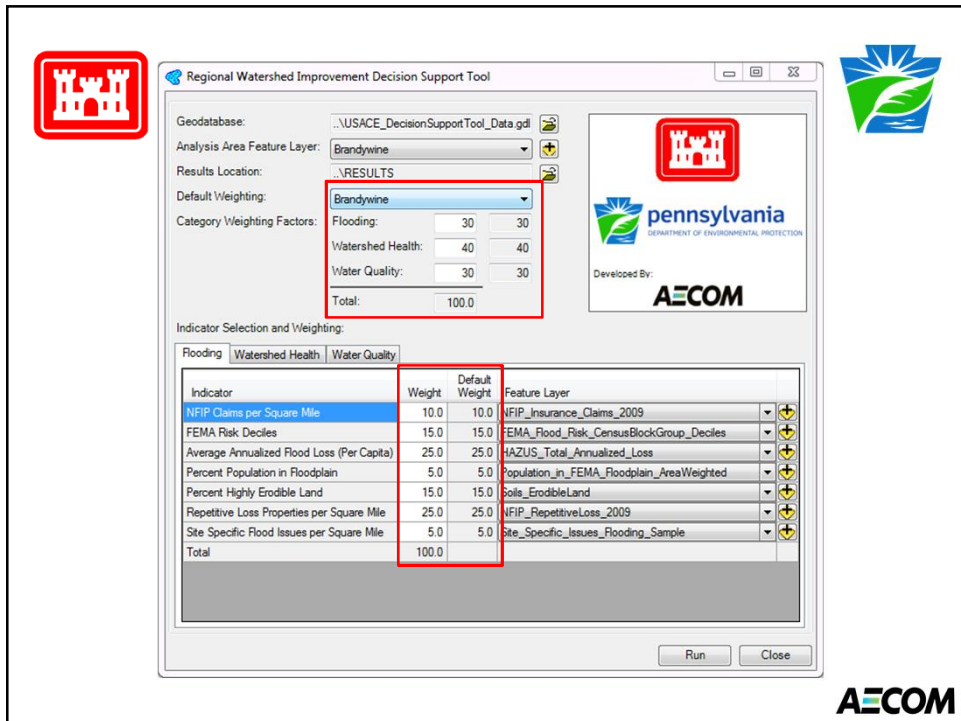
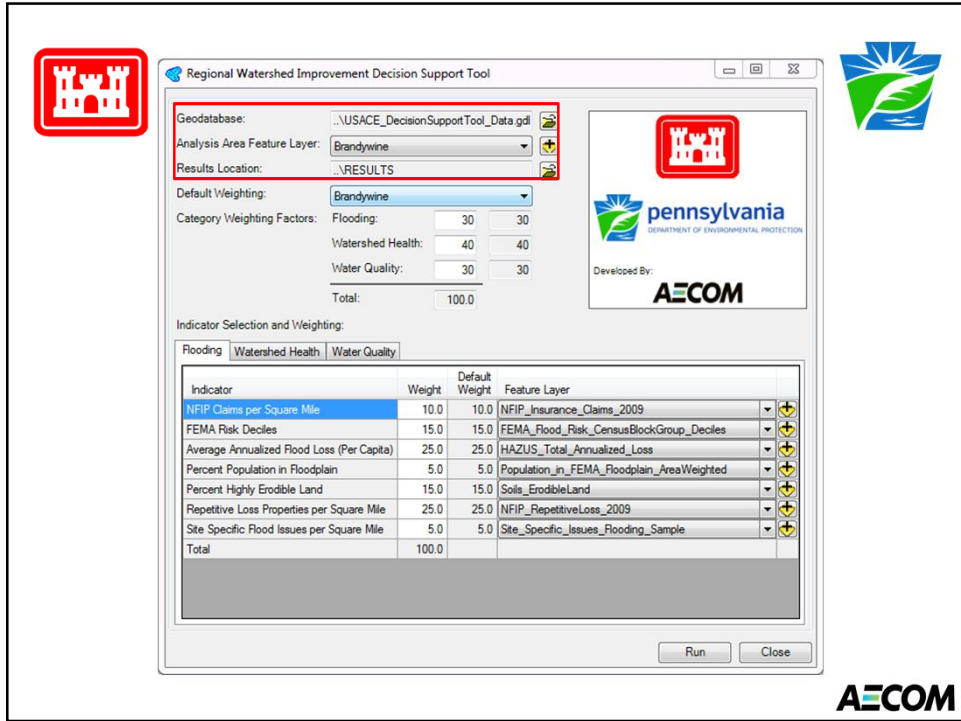


Loading the DST



Loading the DST





Regional Watershed Improvement Decision Support Tool

Geodatabase: ..\USACE_DecisionSupportTool_Data.gdb

Analysis Area Feature Layer: Brandywine

Results Location: ..\RESULTS

Default Weighting: Brandywine

Category Weighting Factors:

Flooding:	30	30
Watershed Health:	40	40
Water Quality:	30	30
Total:	100.0	

Indicator Selection and Weighting:

Indicator	Weight	Default Weight	Feature Layer
NFIP Claims per Square Mile	10.0	10.0	NFIP_Insurance_Claims_2009
FEMA Risk Deciles	15.0	15.0	FEMA_Flood_Risk_CensusBlockGroup_Deciles
Average Annualized Flood Loss (Per Capita)	25.0	25.0	HAZUS_Total_Annualized_Loss
Percent Population in Floodplain	5.0	5.0	Population_in_FEMA_Floodplain_AreaWeighted
Percent Highly Erodible Land	15.0	15.0	Soils_ErodibleLand
Repetitive Loss Properties per Square Mile	25.0	25.0	NFIP_RepetitiveLoss_2009
Site Specific Flood Issues per Square Mile	5.0	5.0	Site_Specific_Issues_Flooding_Sample
Total	100.0		

Run Close

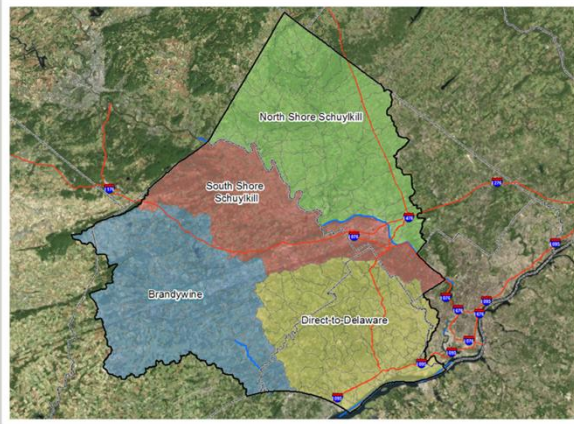
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**Hands-on Experimentation
(3 Computers)**

Chester County
Presentation Slides



Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project



STAKEHOLDER FORUM

Chester County
March 30, 2012



Introductions



U.S. Army Corps of Engineers – Philadelphia District

- Peter Blum
- Tricia Aspinwall

Pennsylvania Department of Environmental Protection

- Jay Braund
- David Burke

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- Ross Gordon
- Suzanne Ciavola
- Andy Wohlsperger





Meeting Agenda



- Introductions and Goals for Meeting (10 min)
- Program & Project Overview (5 min)
- Review Prioritization & Decision Support Tool (5 min)
- Review Draft Prioritization Report (45 min)
- Overview of Future Steps (5 min)
- Question & Answer Session (20 min)
- Decision Support Tool Workshop (45 min)

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Goals for Meeting



1. Confirm understanding of the Project/Program
2. Present Draft Prioritization Report and receive stakeholder feedback
3. Confirm understanding of future steps and upcoming Project schedule
4. Build support for addressing priority problems
5. Provide training on use of Decision Support Tool

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Turning Point Introduction



Please return your Turning Point Clicker on exiting

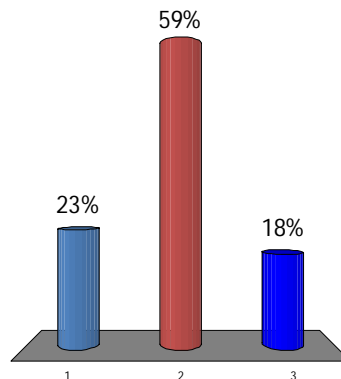


Sample Question



Will the Phillies win the World Series?

1. Yes, of course!
2. Maybe, we'll see...
3. Not a chance!

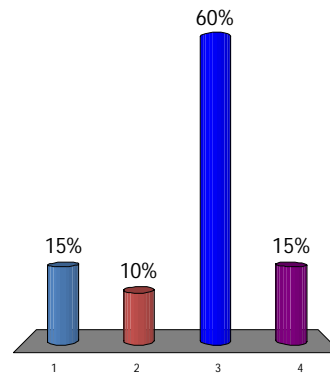




Have you attended a previous workshop?



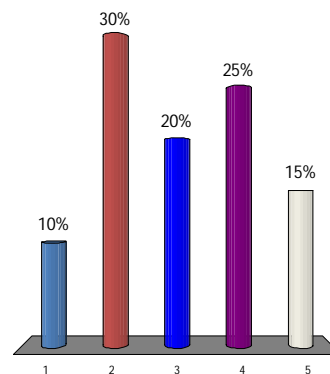
1. March 2011
2. January 2012
3. Both Workshops
4. No, I Have Not

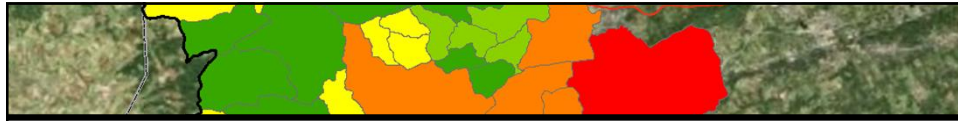




What is your affiliation?






1. County official/employee
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 Program & Project Overview 



 Program Overview 

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- All phases cost-shared 75% Federal / 25% Non-Federal





Project Overview

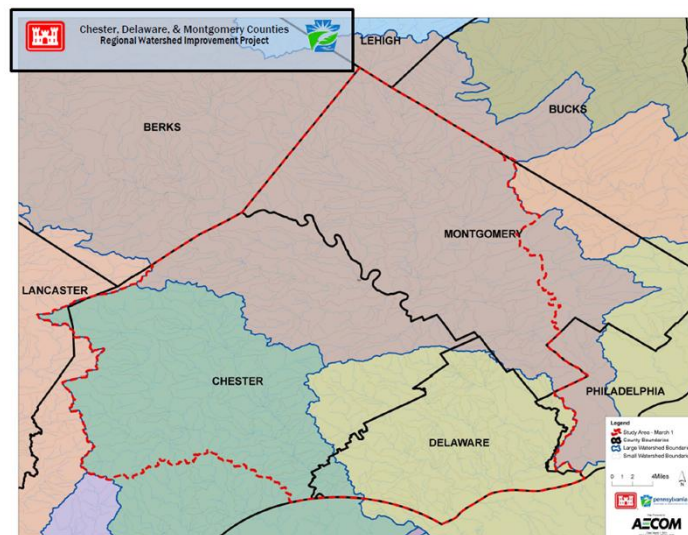


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 - Ecological restoration



Project Area



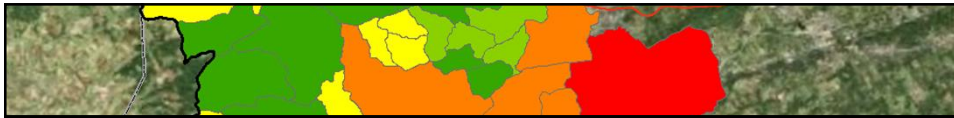


Project Phases

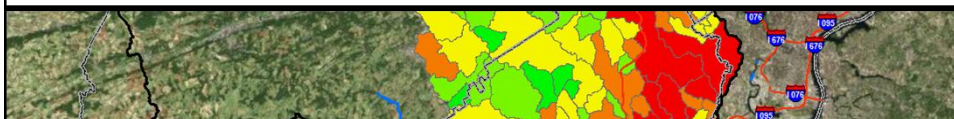


Phase 1	• Public Coordination and Involvement
Phase 2	• Data Collection, Organization, and Analysis
Phase 3	• Identify Priority Areas for Watershed Improvements (Decision Support Tool)
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Review of Prioritization & Decision Support Tool





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- With limited funds, must prioritize where investment is most needed
- Prioritization is 1st step in leveraging USACE resources

Keys to Prioritization

- Provide objective assessment of existing conditions and issues facing the project area
- Provide consistent decision-making framework

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Prioritization Methodology

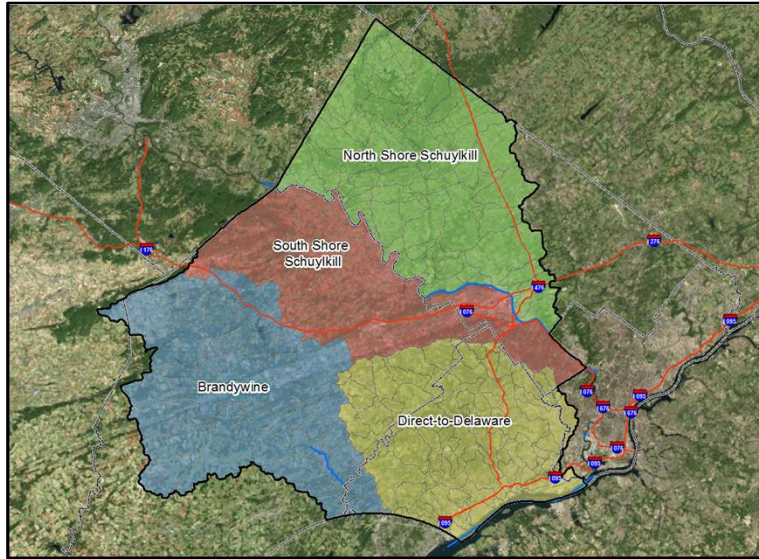


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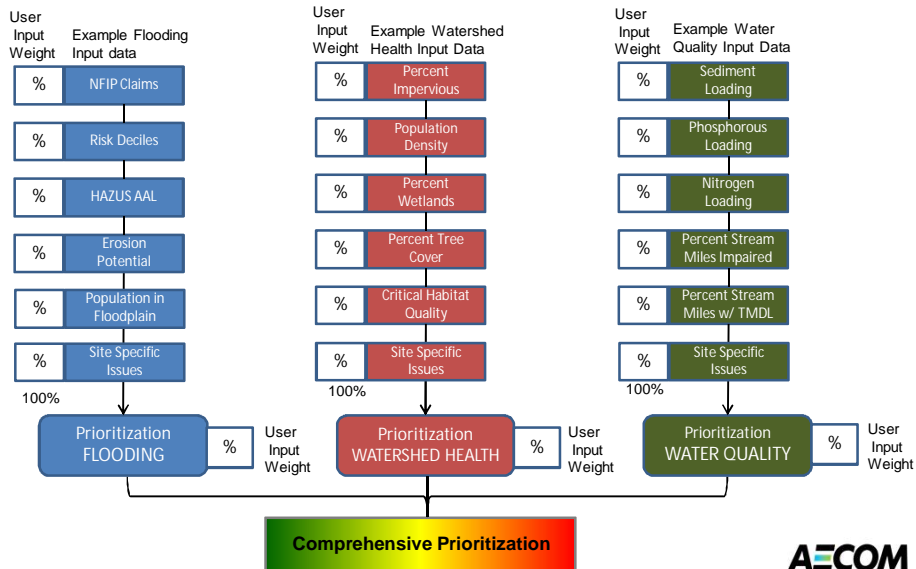
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Prioritization Areas



Example Prioritization Process





Decision Support Tool



DST Developed for Two Reasons:

1. Identify and prioritize areas where the USACE could assist in design and construction of priority regional watershed improvement projects
2. Provide useful planning tool to assist local entities in regional watershed planning

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Decision Support Tool



- Developed as an ArcGIS 10 extension
- ArcEditor and Spatial Analyst Licenses required for use
- Available for download from Project Website:
 - Installer for DST
 - Geodatabase for DST
 - Detailed User Manual

Indicator	Weight	Default Weight	Feature Layer
NPDES Discharges per Square Mile	10.0	10.0	NFP_Insurance_Claims_2009
FEMA Risk Decides	15.0	15.0	FEMA_Flood_Risk_CommunityGroup_Decides
Average Annualized Flood Loss (Per Capita)	25.0	25.0	HAZUS_Total_Annualized_Loss
Percent Population in Floodplain	5.0	5.0	Population_in_FEMA_Floodplain_YearWeighted
Percent Highly Erodeble Land	15.0	15.0	Soils_ErodebleLand
Repetitive Loss Properties per Square Mile	25.0	25.0	NFP_RepetitiveLoss_2009
Site Specific Flood Issues per Square Mile	5.0	5.0	Site_Specific_Issues_Flooding_Sample
Total	100.0		

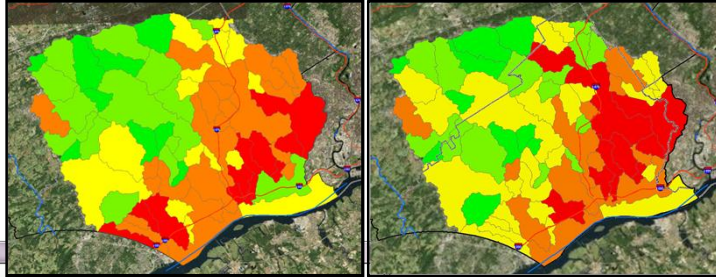
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DST Results



Tabular Results



PCTIMPUN	PCTIMPWD	PCTIMPWA	PCTIMPRS	POPDENSUN	POPDENSWD	POPDENSWA	POPDENSRS	PCTV
4.507389	9.1	9.1	1	316.824391	9.1	9.1	3	0.
1.170125	9.1	9.1	1	175.722971	9.1	9.1	2	0.
9.776408	9.1	9.1	2	659.071921	9.1	9.1	5	1.
3.431877	9.1	9.1	1	241.801784	9.1	9.1	2	0.
12.705718	9.1	9.1	3	1106.123478	9.1	9.1	6	0.
1.624801	9.1	9.1	1	227.285167	9.1	9.1	2	0.
2.194399	9.1	9.1	1	215.252756	9.1	9.1	2	1.
6.259643	9.1	9.1	2	347.014085	9.1	9.1	3	2.
5.367367	9.1	9.1	1	596.633358	9.1	9.1	4	16.
2.059939	9.1	9.1	1	221.086241	9.1	9.1	2	1.
2.391559	9.1	9.1	1	367.418588	9.1	9.1	3	1.
2.257768	9.1	9.1	1	207.864817	9.1	9.1	2	2.
1.313883	9.1	9.1	1	245.123024	9.1	9.1	2	0.
2.658879	9.1	9.1	1	177.60321	9.1	9.1	2	3.
1.160772	9.1	9.1	1	198.435357	9.1	9.1	2	0.

Graphical Results



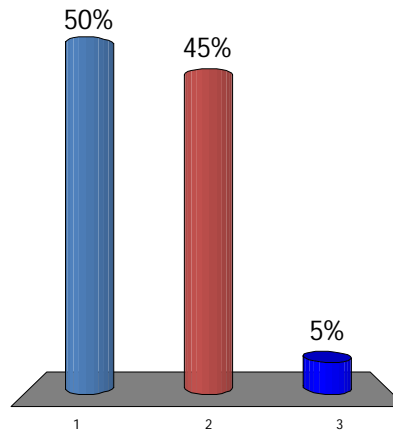
Simulated results for purposes of presentation only



Do you or your organization have the capability of running the DST?



1. Yes
2. No
3. Not Sure

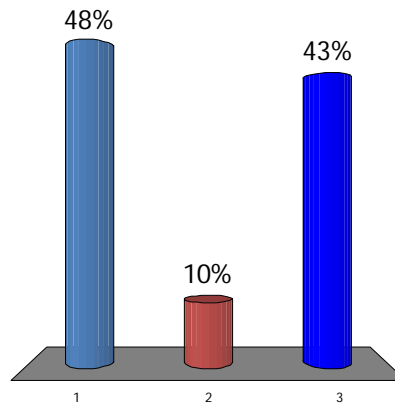




If you have the capability, do you or your organization plan on using/running the DST?



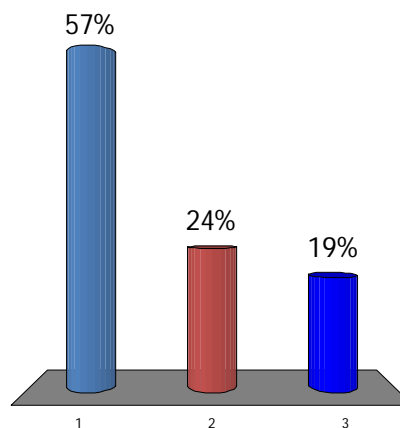
- 1. Yes
- 2. No
- 3. Maybe

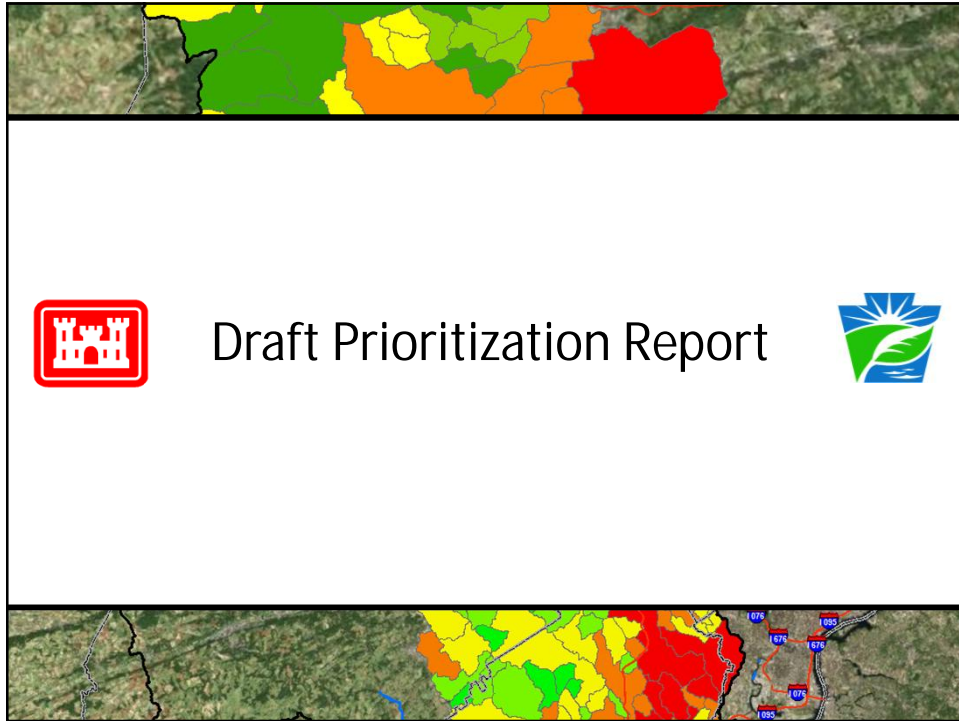



Are you planning on attending the hands-on Decision Support Tool Workshop?




- 1. Yes
- 2. No
- 3. Maybe









Key Considerations

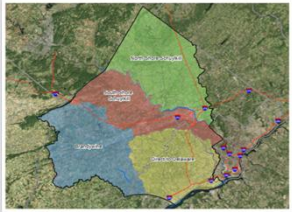


1. Watersheds classified as highest priority or high priority are preferred candidates for further consideration under the Project/Program
2. Exact ranking not as important funding and degree of local support
3. Solution may be located outside of identified priority analysis unit (i.e. upstream)




Chester, Delaware & Montgomery Counties
Regional Watershed Improvement Project





DRAFT
Prioritization Report
March, 2012

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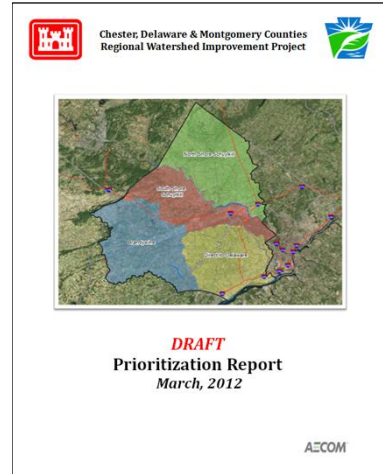




Key Considerations



1. Category and Indicator Weighting Factors play an important role in determining which areas are ranked highest
2. We will be adjusting Decision Support Tool based on comments prior to release of Final Prioritization Report
3. Future phases dependent on additional funding



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Brandywine Creek Category Weighting Factors



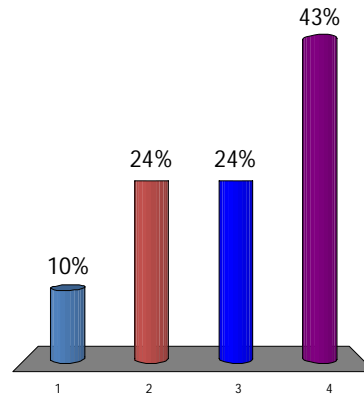
Category Name	Weighting Factor (%)
Flooding	35
Watershed Health	30
Water Quality	35



Which Brandywine Creek
Category Weighting Factor
should be **increased**?



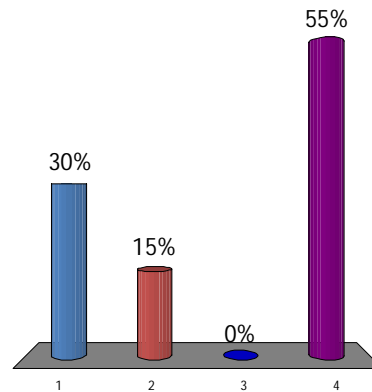
1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...



Which Brandywine Creek
Category Weighting Factor
should be **decreased**?



1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...





Direct-to-Delaware Tributaries Category Weighting Factors



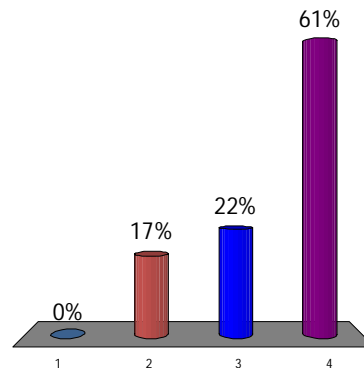
Category Name	Weighting Factor (%)
Flooding	55
Watershed Health	20
Water Quality	25



Which Direct-to-Delaware Tributaries Category Weighting Factor should be **increased**?



1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...

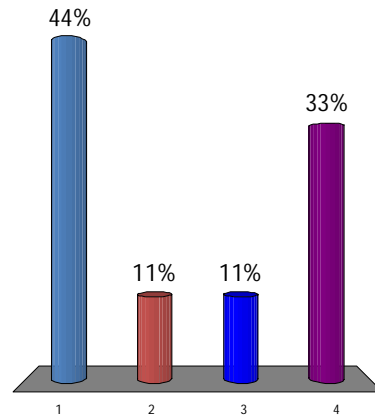




Which Direct-to-Delaware Tributaries Category Weighting Factor should be **decreased**?



1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...



SS-Schuylkill River Category Weighting Factors



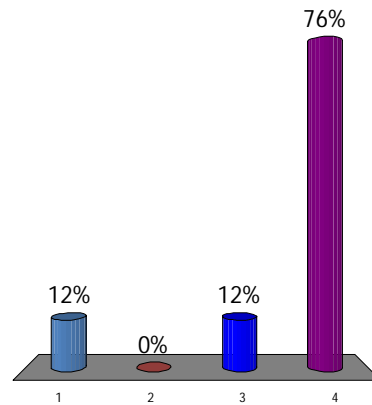
Category Name	Weighting Factor (%)
Flooding	30
Watershed Health	35
Water Quality	35



Which SS-Schuylkill River Category Weighting Factor should be **increased**?



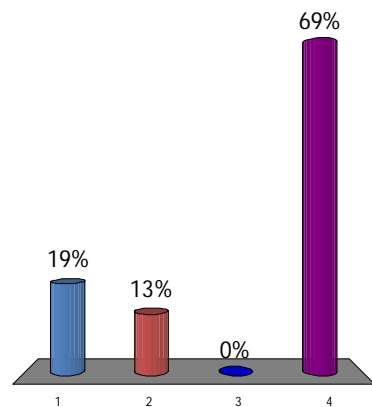
1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...



Which SS-Schuylkill River Category Weighting Factor should be **decreased**?



1. Flooding
2. Watershed Health
3. Water Quality
4. Looks good as is...





Flooding Indicators



Flooding Indicators	Weighting Factor (%)
NFIP Claims per Square Mile	10
FEMA Risk Decile	15
Average Annualized Flood Loss per Square Mile	20
Percent Population in Floodplain	10
Percent Highly Erodible Land	15
Repetitive Loss Properties per Square Mile	25
Site Specific Flooding Issues per Square Mile	5

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Watershed Health Indicators



Watershed Health Indicators	Weighting Factor (%)
Percent Impervious	30
Population Density	10
Percent Wetlands	5
Percent Hydric Soils	5
Riparian Buffer Quality	15
Percent Tree Cover	10
Critical Habitat Quality	5
Percent of Stream Miles that are High Quality or Exceptional Value	5
Percent Increase in Impervious Cover	5
Active Dams per Square Mile	5
Site Specific Watershed Health Issues per Square Mile	5

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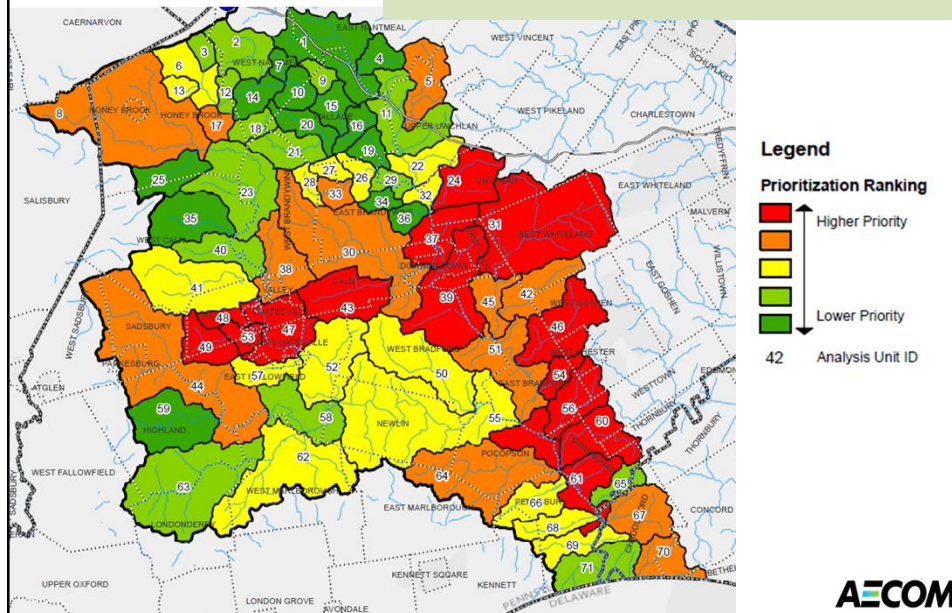
Water Quality Indicators



Water Quality Indicators	Weighting Factor (%)
Estimated Annual Sediment Loading per Square Mile	20
Estimated Annual Nitrogen Loading per Square Mile	10
Estimated Annual Phosphorus Loading per Square Mile	10
Percent of Stream Miles Impaired	25
Percent of Stream Miles with TMDL	5
Legacy Dams per Square Mile	7.5
Sanitary Sewer Overflows per Square Mile	7.5
Water Degradation Sources per Square Mile	10
Site Specific Water Quality Issues per Square Mile	5



Brandywine Prioritization

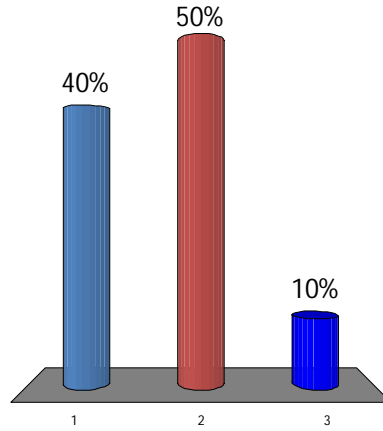




Brandywine Creek Draft Prioritization



- 1. Looks accurate!
- 2. Would make minor changes
- 3. Would make major changes



Verification Procedure



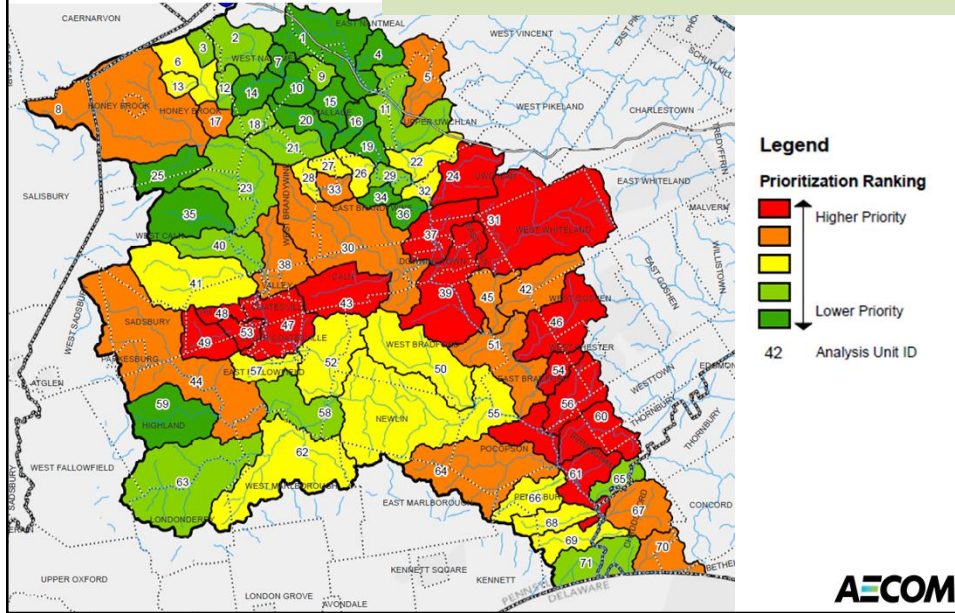
**Chester, Delaware, and Montgomery Counties Regional Watershed Improvement Project
Draft Prioritization Report Verification Summary**

Instructions: Please write the Analysis Unit number of up to five Analysis Units, ranked in order of importance, which you believe should be of higher or lower priority

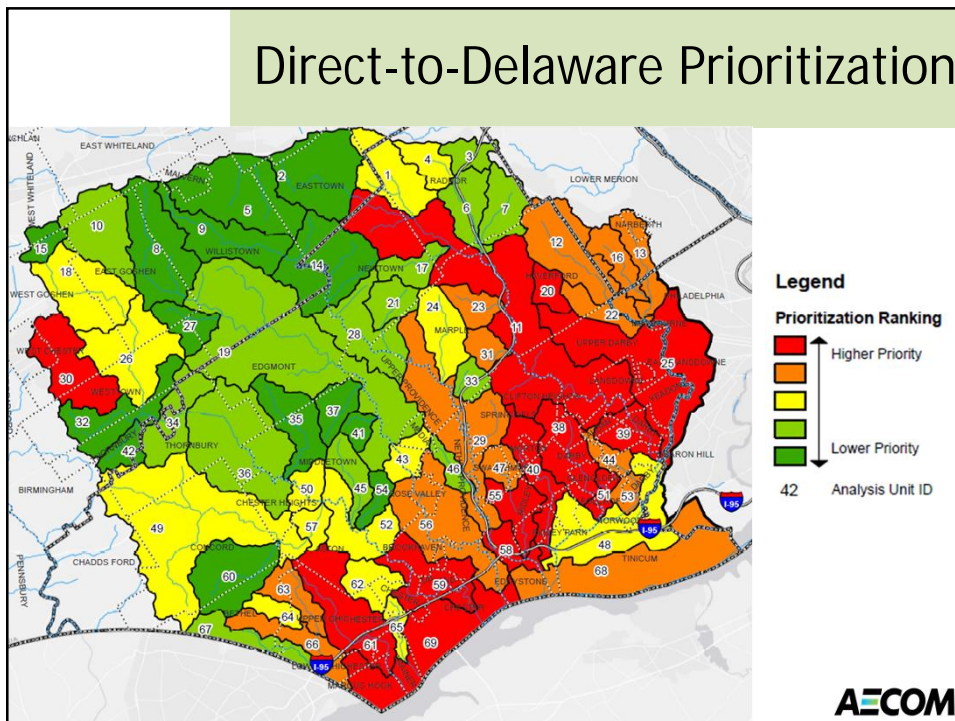
	Brandywine		Direct-to-Delaware		SS Schuylkill		NS Schuylkill	
	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority	Should Raise Priority	Should Lower Priority
1								
2								
3								
4								
5								



Brandywine Prioritization



Direct-to-Delaware Prioritization

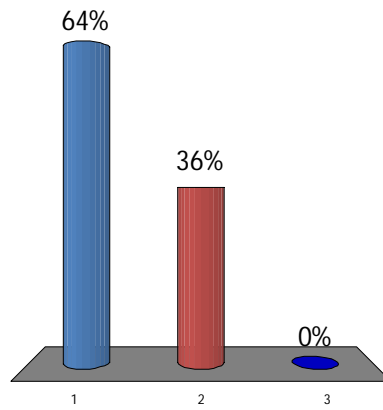




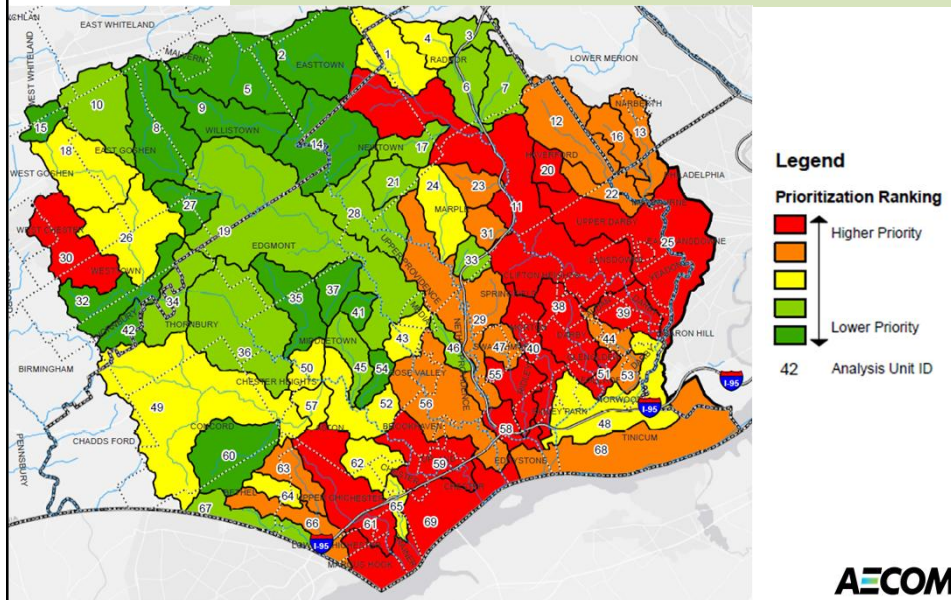
Direct-to-Delaware Tributaries Draft Prioritization

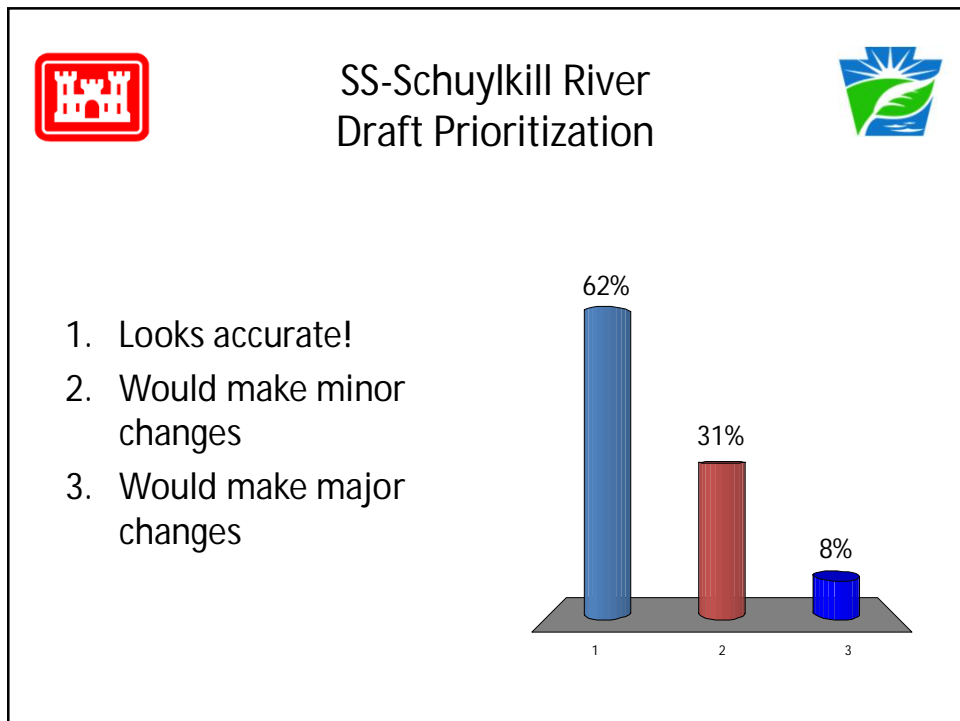
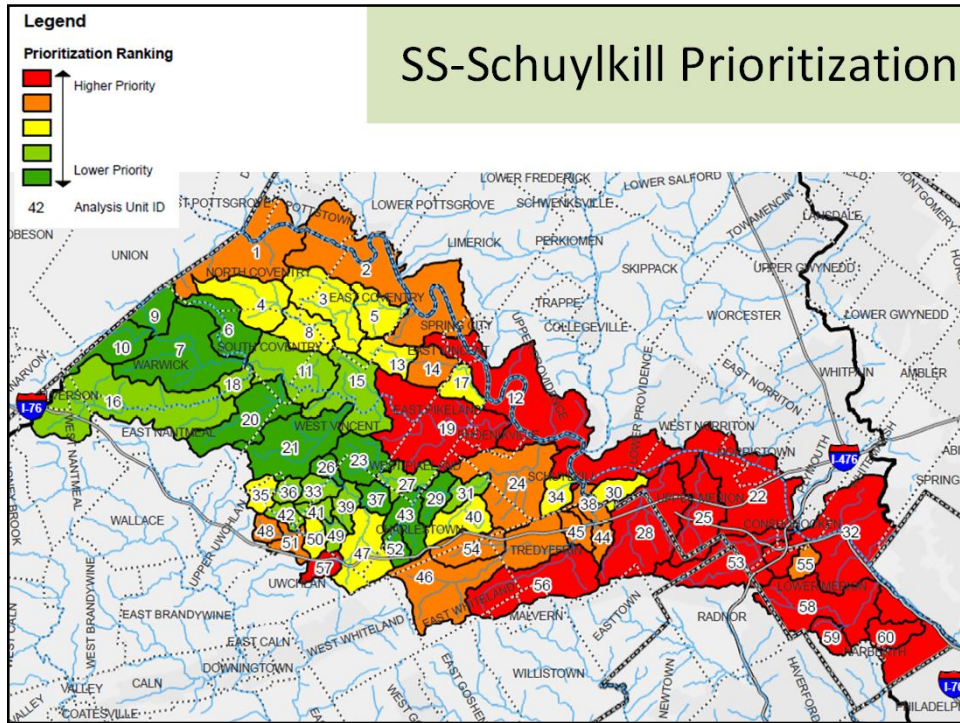


- 1. Looks accurate!
- 2. Would make minor changes
- 3. Would make major changes

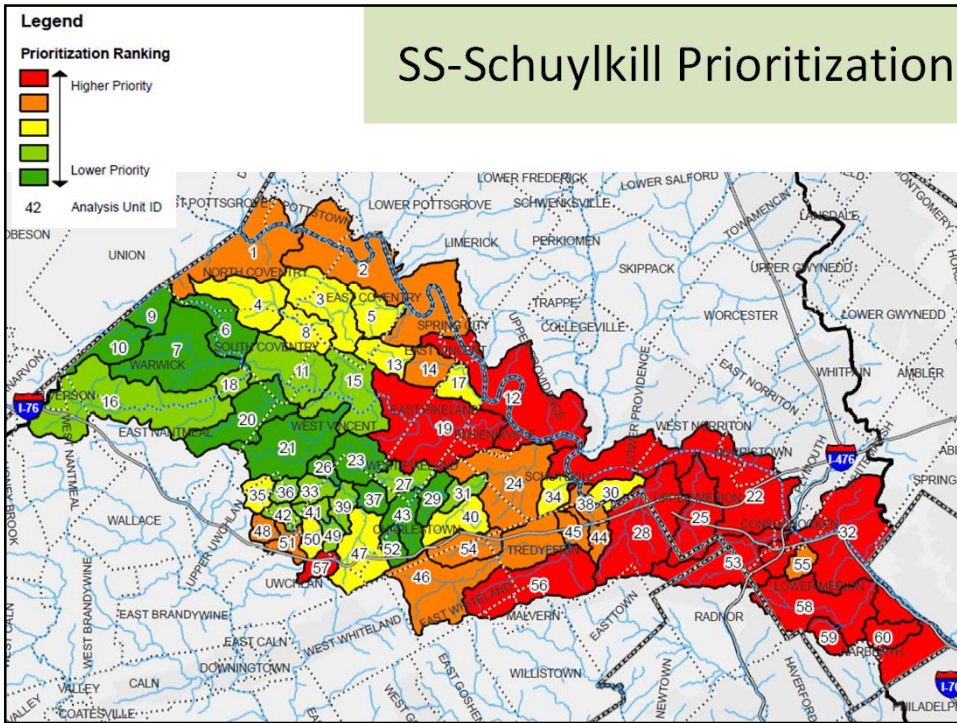



Direct-to-Delaware Prioritization






SS-Schuylkill Prioritization





Future Steps





Future Steps



- The DST is a support tool designed to aid local, state and federal officials in the decision making process.
- Prioritizations should not be considered “final decision” for future work efforts, but rather a starting point at understanding the complex nature of the watershed network.
- Project Alternatives Development (Phase IV) analyzes priority areas in detail to develop a suite of feasible alternatives to address priority issues. Process recommends preferred option for Preliminary Project Design (Phase V).

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Future Considerations for Alternative Development



- Acceptability: Is there evidence of broad based public consensus and support for the alternative?
- Completeness: Does the alternative provide and account for all necessary investments or other actions needed to ensure the realization of the planned outputs?
- Efficiency: Is the alternative a cost effective means of addressing the problem or opportunity?
- Effectiveness: Does the alternative make a significant contribution to addressing the specified problems or opportunities?

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Funding Considerations



- Additional federal and non-federal funding is required to proceed with all future phases, including:
 - Phase 4 – Alternatives Development
 - Phase 5 – Preliminary Design
- Alternate Paths Forward
 - USACE will conduct in-depth analysis of the prioritization areas and evaluate other means to complete Phases 4-5 (i.e. utilization of existing studies or other funding authorities).
 - Communities and organizations utilize the decision support tool to further develop existing planning efforts and pursue funding opportunities outside of the USACE

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Upcoming Schedule



- April 16th – Comment period for Draft Prioritizations
 - Visit website for comment submission instructions
 - <http://www.nap.usace.army.mil/Projects/spe/>
- May – Release Final Prioritization Report via website

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Project Website



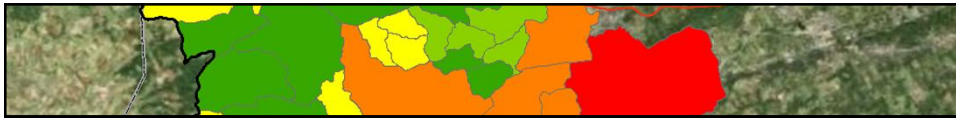
Website currently includes:

- Download link for Decision Support Tool & User Manual
- Draft Prioritization Report (PDF)
- Comment submission instructions

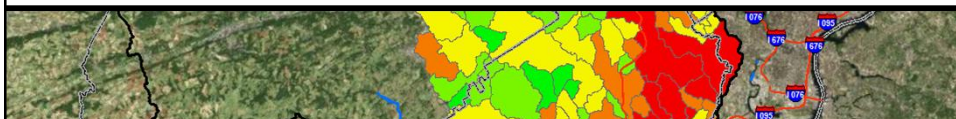
After May release of Final Prioritizations, website to include:

- Download link for Decision Support Tool & User Manual
- Final Prioritization Report including maps and tables
- Link to web-based ArcServer to view digital version of final prioritizations

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Question & Answer





Question & Answer



- Program / Project Overview
- Draft Prioritization Report
- Future Steps

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Question & Answer



- Program / Project Overview
- Draft Prioritization Report
- Future Steps

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Question & Answer



- Program / Project Overview
- Draft Prioritization Report
- Future Steps



THANK YOU

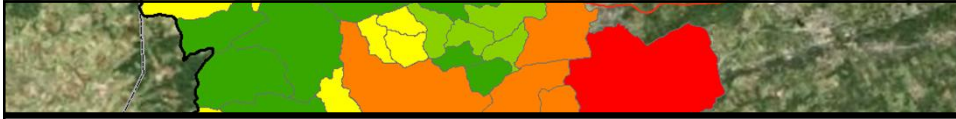



Indicator Selection and Weighting	Weight	Default	Indicator	Indicator
Watershed Score 0%	14.3	14.3	USDA Assessment Class 2005	14.3
USDA Risk Score	14.3	14.3	USDA Risk_Score_ContributedScore_0to100	14.3
Percent Population Flood Plain (P-Factor)	14.3	14.3	USDA Risk_Score_ContributedScore_0to100	14.3
Percent Population on Floodplain	14.3	14.3	Population in 2000_Floodplain_AreasHighland	14.3
Percent High Quality Land	14.3	14.3	USDA Risk_Score_ContributedScore_0to100	14.3
Population Loss Potential per Square Mile	14.3	14.3	USDA Risk_Score_ContributedScore_0to100	14.3
Topographic Wetness Index per Square Mile	14.3	14.3	USDA Risk_Score_ContributedScore_0to100	14.3
Total	100.0	100.0		

Stay up to date at our website
<http://www.nap.usace.army.mil/Projects/spe/>


Please turn in your Turning Point Clicker










Decision Support Tool Workshop







Where to Download?

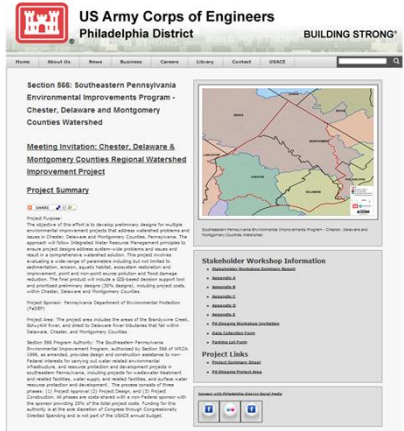



Project Website

<http://www.nap.usace.army.mil/Projects/spe/>

Documents Available:

- Draft Prioritization Report (PDF)
- DST User Manual (PDF)
- DST Installer (MSI)
- DST File Geodatabase (GDB)







Software/Hardware Requirements



- Hardware:
 - PC Desktop or Laptop
 - Windows XP, Windows Vista or Windows 7
(Check compatibility with ArcGIS)
 - 1+ GB of Available Memory
- Software:
 - Version 10 ArcMap, "Standard" (ArcEditor)
 - ArcGIS Spatial Analyst Extension



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Downloads



File Geodatabase

USACE_DecisionSupportTool_Data.gdb

Installer

USACE_DstSetup.2012XXXXXXXXX.msi

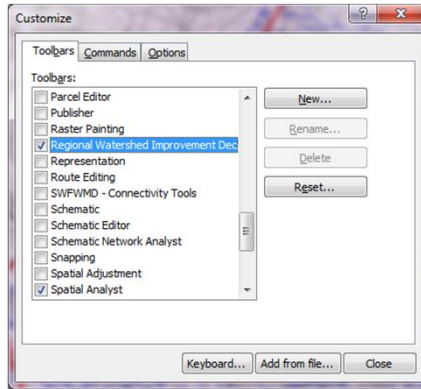
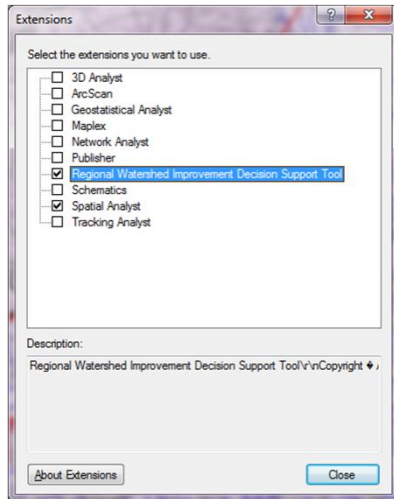
FLOODING	File Geodatabase Feature Dataset
GENERAL_DATA	File Geodatabase Feature Dataset
RESULTS	File Geodatabase Feature Dataset
WATER_QUALITY	File Geodatabase Feature Dataset
WATERSHED_HEALTH	File Geodatabase Feature Dataset
AnalysisFeatureClass	File Geodatabase Table
CategoryWeighting	File Geodatabase Table
D_Category	File Geodatabase Table
D_GeneralData	File Geodatabase Table
D_Indicator	File Geodatabase Table
D_Weighting	File Geodatabase Table
DefaultFeatureClassGeneral	File Geodatabase Table
DefaultFeatureClassIndicator	File Geodatabase Table
IndicatorWeighting	File Geodatabase Table
Normalization	File Geodatabase Table
WaterQuality_Annual_tn	File Geodatabase Raster Dataset
WaterQuality_Annual_tp	File Geodatabase Raster Dataset
WaterQuality_Sediment_lbsyr	File Geodatabase Raster Dataset
Watershed_Health_Critical_Hab...	File Geodatabase Raster Dataset
Watershed_Health_Impervious2...	File Geodatabase Raster Dataset
Watershed_Health_Impervious...	File Geodatabase Raster Dataset
Watershed_Health_RiparianBuff...	File Geodatabase Raster Dataset
Watershed_Health_TreeCover	File Geodatabase Raster Dataset



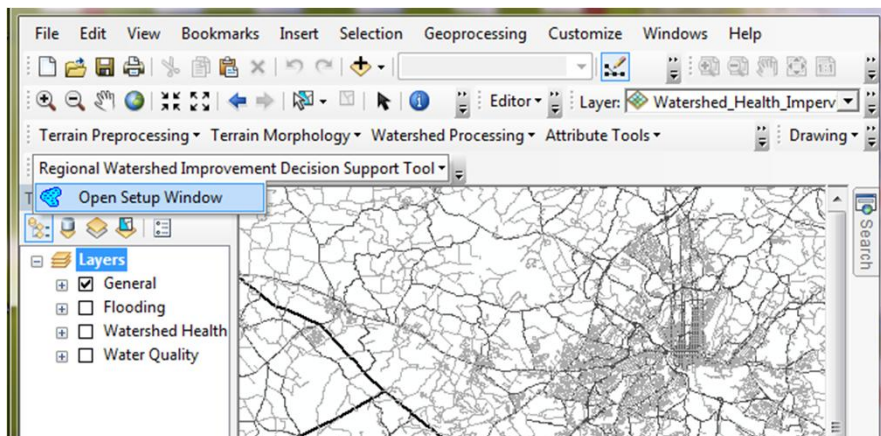
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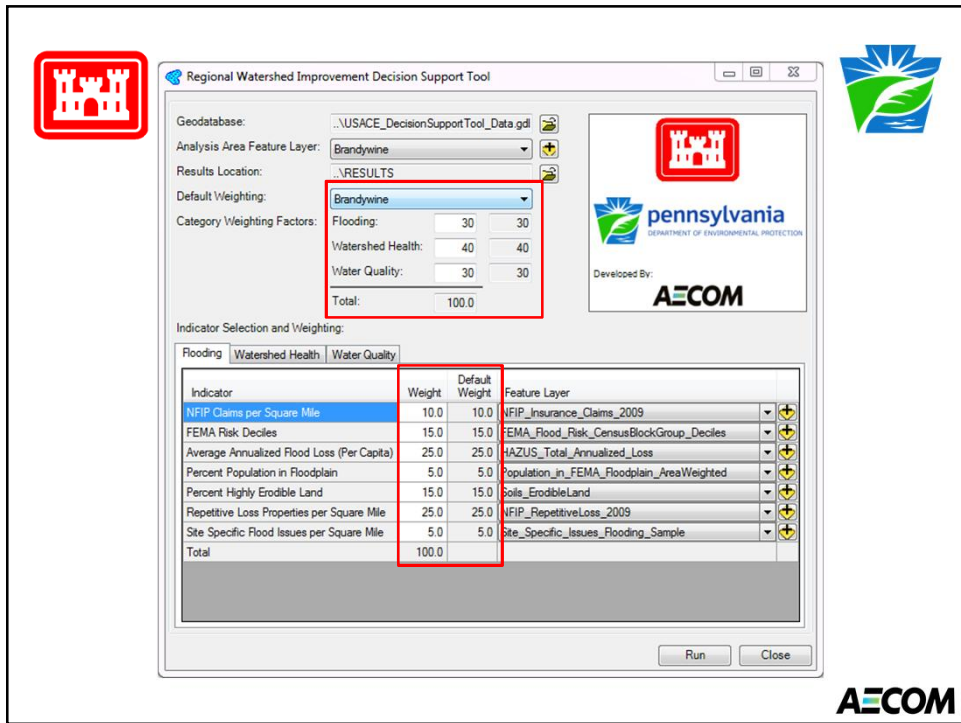
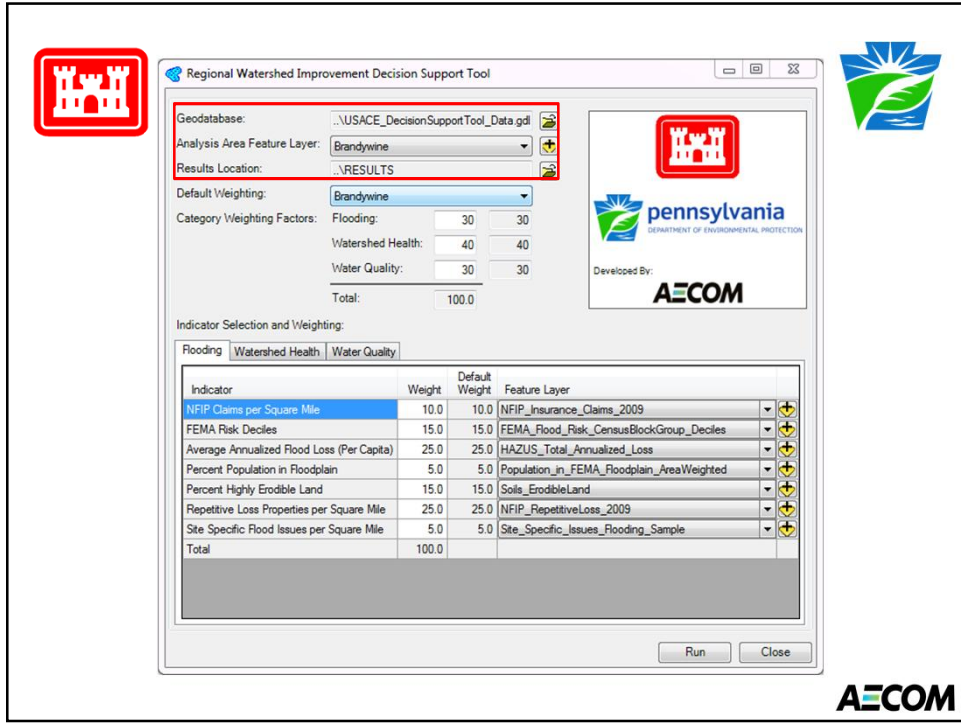


Loading the DST



Loading the DST





Regional Watershed Improvement Decision Support Tool

Geodatabase: ..\USACE_DecisionSupportTool_Data.gdb

Analysis Area Feature Layer: Brandywine

Results Location: ..\RESULTS

Default Weighting: Brandywine

Category Weighting Factors:

Flooding:	30	30
Watershed Health:	40	40
Water Quality:	30	30
Total:	100.0	

Indicator Selection and Weighting:

Indicator	Weight	Default Weight	Feature Layer
NFIP Claims per Square Mile	10.0	10.0	NFIP_Insurance_Claims_2009
FEMA Risk Deciles	15.0	15.0	FEMA_Flood_Risk_CensusBlockGroup_Deciles
Average Annualized Flood Loss (Per Capita)	25.0	25.0	HAZUS_Total_Annualized_Loss
Percent Population in Floodplain	5.0	5.0	Population_in_FEMA_Floodplain_AreaWeighted
Percent Highly Erodible Land	15.0	15.0	Soils_ErodibleLand
Repetitive Loss Properties per Square Mile	25.0	25.0	NFIP_RepetitiveLoss_2009
Site Specific Flood Issues per Square Mile	5.0	5.0	Site_Specific_Issues_Flooding_Sample
Total	100.0		

Run Close

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**Hands-on Experimentation
(3 Computers)**

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Participant List

Stakeholder Participant List

	Delaware County Workshop	Montgomery County Workshop	Chester County Workshop
1	Ann Jackson Darby Creek Valley Associatio	Amy Miller DVRPC	Andrew Reif USGS Pennsylvania Water Science Center
2	Brian J. Vadino Watershed Specialist Delaware County Conservation District	Barry Wert, P.E., P.L.S. Metz Engineers Franconia & Lower Salford Township	Bob Layman Westtown Township
3	Craig Marleton Aqua Pennsylvania	Bob Kahley Aqua Pennsylvania	Bob Struble Red Clay Valley Association
4	Dee Ross, Watershed Coordinator Partnership for the Delaware Estuary	Drew Shaw, AICP Chief, Environmental Planning Montgomery County Planning Commission	Chris Strohmaier Chester County Conservation District
5	Desiree Henning Dudley PA DEP	Jon Leshner Montgomery County Planning Commission	Daniel Crocker Chester County Water Resouces Authority
6	Jeffrey Featherstone Temple University	Peter Williamson Natural Lands Trust	Daniel H. Daley, P.E. Edward B. Walsh & Associates, Inc Uwchlan Township, East Caln Township, West Bradford Township
7	Karen L. Holm Manager, Environmental Planning Section Delaware County Planning Dept.	Rebecca Kennedy Pennsylvania Environmental Council	Dave Jostenski PA DEP
8	M. Richard Nalbandian Temple University	Scott Greenly Associate Planner Upper Merion Township	Doug Hanley Uwchlan Township Manager
9	Steve Kunz Schmid & Company, Inc.	Tricia L. Aspinwall Project Manager U.S. Army Corps of Engineers	Jan Bowers, P.G. Executive Director Chester County Water Resources Authority
10	Tim Devany Darby Creek Valley Association	Jay Braund Special Projects Coordinator Department of Environmental Protection	Jane Fava Red Streams Blue Program Brandywine Valley Association Red Clay Valley Association
11	William J. Cervino Director of Code Enforcement Springfield Township	David Burke Department of Environmental Protection	Janie Baird Chairman of Newlin Township Board of Supervisors
12	Zach Barner Environmental Planning Section Delaware County Planning Dept.	Ross Gordon AECOM	Jeffrey W. McClintock, PE, CFM Township Engineer Caln Township
13	Tricia L. Aspinwall Project Manager U.S. Army Corps of Engineers	Suzanne Ciavola AECOM	Jim Hatfield, P.E. VanDemark & Lynch, Inc.
14	Jay Braund Special Projects Coordinator Department of Environmental Protection	Erik Nerrie AECOM	Joe Sofranko Chester County Conservation District
15	David Burke Department of Environmental Protection		Kathy Bergmann Brandywine Valley Association
16	Erik Nerrie AECOM		Matthew VanLew Roadmaster East Brandywine Township

Stakeholder Participant List

	Delaware County Workshop	Montgomery County Workshop	Chester County Workshop
17	Ross Gordon AECOM		Pete Goodman Valley Forge Trout Unlimited
18	Suzanne Ciavola AECOM		Randy Patry, P.E. Advanced Geoservices Charlestown Township
19			Robert L. Johnston, P.E. Gilmore & Associates
20			Ronald A. Rambo, Jr. West Brandywine Township
21			Steve Burgo Tredyffrin Township
22			Tommy Ryan West Brandford Township
23			Tony Fernandes Aqua Pennsylvania
24			Wesley Horner Brandywine Conservancy
25			Peter Blum U.S. Army Corps of Engineers
26			Tricia L. Aspinwall Project Manager U.S. Army Corps of Engineers
27			Jay Braund Special Projects Coordinator Department of Environmental Protection
28			Ross Gordon AECOM
29			Suzanne Ciavola AECOM
30			Andy Wohlsperger AECOM