

Chapter 4 – WPP Management Measures

Allen Berthold



Purpose of Management Measures

- ⊙ Proposed primarily to address causes and sources of bacteria concentrations in the watershed identified in earlier chapters
- ⊙ All measures are voluntary
- ⊙ Heavy focus on public outreach and education
- ⊙ Also consist of:
 - ⊙ Problem statement
 - ⊙ Objective
 - ⊙ Priority areas
 - ⊙ Description
 - ⊙ Load reduction
 - ⊙ Potential funding sources

Management Measures

- ⊙ Agricultural
 - ⊙ Develop conservation plans
- ⊙ Wildlife and Non-Domestic Animals
 - ⊙ Remove feral hogs
- ⊙ On-site Sewage Facility
 - ⊙ Replace failing systems
- ⊙ Illegal Dumping
 - ⊙ Reduce illegal dumping
- ⊙ Urban
 - ⊙ Stormwater planning and management
 - ⊙ Structural measures
 - ⊙ Pet waste programs
- ⊙ Wastewater Treatment Facility
 - ⊙ Wastewater reuse
- ⊙ Sanitary Sewer Overflow
 - ⊙ Infrastructure maintenance and replacement

Agricultural Management Measure – p. 35

- ⊙ MM 1 - Development of conservation plans
 - ⊙ Work with local landowners to develop conservation plans through incentive programs
 - ⊙ Implement 9 conservation plans annually
 - ⊙ Priority sub watersheds 1, 4, 10, 12, and riparian areas - p.35
- ⊙ Host education programs
 - ⊙ Lone Star Healthy Streams, Riparian Education, TX Watershed Stewards, etc.
- ⊙ Expected Annual Loading Reduction
 - ⊙ 2.61×10^{14}

Wildlife and non-domestic animals – p.38

- ⊙ MM2 - Reduce feral hog population by 20% (1,000 hogs) and maintain population
 - ⊙ Fencing around deer feeders, trapping, aerial gunning, etc.
 - ⊙ Priority sub watersheds include 1, 4, 6, 10, 12, 17 and riparian areas
- ⊙ Develop online tracking tool
- ⊙ Host Feral Hog Workshops
- ⊙ Loading reduction
 - ⊙ 2.65×10^{10}

On-Site Sewage Facilities (OSSFs) – p. 41

- ⊙ MM 3 - Bring OSSFs within compliance
 - ⊙ Identify and Inspect Failing OSSFs
 - ⊙ Repair or Replace as 30 systems funding allows
 - ⊙ Maintain database of OSSF systems
- ⊙ Priority Sub watersheds 1, 4, 18, 19 and riparian areas
- ⊙ Education Maintenance Education Programs
- ⊙ Loading Reduction
 - ⊙ 1.22×10^{13}

Illegal Dumping – p.44

- ⊙ MM 4 - Reduce Dumping at road crossings and proper disposal of animal carcasses
 - ⊙ Posting signage at bridge crossings
 - ⊙ Maintenance
 - ⊙ Motion cameras
- ⊙ Priority Areas
 - ⊙ Bridge crossings and areas with high hunting demand
- ⊙ Education and outreach
- ⊙ Loading Reductions
 - ⊙ N/A

Urban Management Measures – p.47

- ⊙ MM 5 - Storm water planning - p.47
 - ⊙ Planning for a future storm water permit
- ⊙ Priority Areas
 - ⊙ City of El Campo
- ⊙ Education Component
 - ⊙ N/A
- ⊙ Loading Reduction
 - ⊙ N/A

Urban Management Measures Cont.

- ⊙ MM 6 - Install Storm water BMPs p.48
 - ⊙ Urban storm water detention pond capturing 50 acres
- ⊙ Priority Areas
 - ⊙ City of El Campo
- ⊙ Education Component
 - ⊙ Deliver programs to local residents
- ⊙ Loading Reduction
 - ⊙ 1.74×10^{10}

Urban Management Measures Cont.

- ⊙ MM 7 - Pet Waste Program p. 53
 - ⊙ Install and maintain pet waste stations
- ⊙ Priority Areas
 - ⊙ City of El Campo, Markham, Midfield
- ⊙ Education Component
 - ⊙ Deliver programs to local residents, 1 annually
- ⊙ Loading Reduction
 - ⊙ 9.58×10^{13}

Wastewater Treatment Facility Mgmt. Meas.

- ⊙ MM 8 - Wastewater Reuse p. 56
 - ⊙ Identify and implement a wastewater reuse system
- ⊙ Priority Areas
 - ⊙ City of El Campo
- ⊙ Education Component
 - ⊙ N/A
- ⊙ Loading Reduction
 - ⊙ 1.28×10^{12}

Sanitary Sewer Overflow Mgmt. Meas.

- ⦿ MM 9 - Infrastructure repair and replacement p. 58
- ⦿ Priority Areas
 - ⦿ City of El Campo, Markham, Midfield
- ⦿ Education Component
 - ⦿ Deliver programs to utility staff on aging infrastructure and replacement
- ⦿ Loading Reduction
 - ⦿ N/A

Education and Outreach

- ⦿ The Watershed Coordinator
- ⦿ Public Meetings
- ⦿ Future Stakeholder Engagement
- ⦿ Education Program
 - ⦿ Feral Hog Management Workshops
 - ⦿ Lone Star Healthy Streams
 - ⦿ OSSF Operation and Maintenance
 - ⦿ Texas Well Owner Network
 - ⦿ Riparian Education
 - ⦿ Wildlife Management
- ⦿ Public Meetings
- ⦿ Newsletters and News Releases

Chapter 5 – Sources for Watershed Protection Plan Implementation



Chapter 5 Handout

Management Measure	Technical Assistance
MM 1: Develop and implement conservation plans in priority areas of the watershed	TSSWCB, Texas AgriLife, NRCS, and TPWD
MM 2: Explore Feasibility of Altering Tax Exemption Requirements for Small Acreage Landowners	Texas Comptroller of Public Accounts office to ensure that all requirements of the tax code have been met
MM 3: Promote the Management of and Control Feral Hog Populations	Texas A&M AgriLife Extension Service Texas Wildlife Services
MM 4: Promote the Reduction of Illicit Dumping and Proper Disposal of Animal Carcasses	Texas A&M AgriLife County Extension Agents TCEQ Region 14 TCEQ Small Business and Local Government Assistance Program
MM 5: Identify OSSFs, Prioritize Problem Areas, and Systematically Work to Bring Failing Systems into Compliance	TCEQ Region 14 TCEQ Small Business and Local Government Assistance Program
MM 6: Promote the Improved Quality of and Management of Urban Stormwater	TCEQ Region 14
MM 7: Coordinate Efforts to Reduce Unauthorized Discharges	TCEQ Region 14
MM 8: Reduce WWTF Contributions by Meeting Half of the Permitted Bacteria Limit	TCEQ, TEEEX
MM 9: Monitoring of WWTF Effluent to Ensure Permit Compliance	TCEQ permit compliance assistance TEEX – WWTF operation and maintenance TRWA – sample collection and handling Private Engineering firms – general civil engineering services
MM 10: Improve and Upgrade WWTFs	TCEQ permit compliance assistance TEEX – WWTF operation and maintenance TRWA Private Engineering firms – general civil engineering services

Management Measure	Financial Assistance Program
MM 1: Develop and implement conservation plans in priority areas of the watershed	Agricultural Conservation Easement Program (ACEP) Agricultural Food Research Initiative Competitive Fellowship Grants Program Coastal Wetlands Conservation Grants Coastal Zone Management Administration (CZMA) Awards Conservation Innovation Grants Conservation Stewardship Program (CSP) Environmental Education Grants Environmental Quality Incentives Program (EQIP) Farm Business Management and Benchmarking (FBMB) Program Federal and State CWA §319(h) Grants (USEPA/TCEQ/TSSWCB) Integrated Programs National Integrated Water Quality Program (NIWQP) Regional Conservation Partnership Program (RCPP) Sustainable Agriculture Research & Education (SARE) Targeted Watershed Grants Program
MM 2: Explore Feasibility of Altering Tax Exemption Requirements for Small Acreage Landowners	State CWA §319(h) Grants (TCEQ/TSSWCB)
MM 3: Promote the Management of and Control Feral Hog Populations	State CWA §319(h) Grants (TSSWCB) or other available opportunities Texas Department of Agriculture (TDA) Texas Wildlife Services
MM 4: Promote the Reduction of Illicit Dumping and Proper Disposal of Animal Carcasses	State CWA §319(h) Grants (TCEQ/TSSWCB) USDA Rural Utilities Service Water and Waste Disposal Loans and Grants
MM 5: Identify OSSFs, Prioritize Problem Areas, and Systematically Work to Bring Failing Systems into Compliance	Coastal Impact Assistance Program (CIAP) Coastal Management Program (CMP) and National Coastal Zone Management Program (CZM) State CWA §319(h) grants (TCEQ)
MM 6: Promote the Improved Quality of and Management of Urban Stormwater	Clean Water State Revolving Fund (CWSRF) Environmental Education Grants State CWA §319(h) Grants (TCEQ) Urban Water Small Grants
MM 7: Coordinate Efforts to Reduce Unauthorized Discharges	Clean Water State Revolving Fund (CWSRF) Economically Distressed Areas Program (EDAP) Water and Waste Disposal Loans and Grants
MM 8: Reduce WWTF Contributions by Meeting Half of the Permitted Bacteria Limit	Clean Water State Revolving Fund (CWSRF) Economically Distressed Areas Program (EDAP) Water and Waste Disposal Loans and Grants
MM 9: Monitoring of WWTF Effluent to Ensure Permit Compliance	Clean Water State Revolving Fund (CWSRF) Economically Distressed Areas Program (EDAP) Water and Waste Disposal Loans and Grants
MM 10: Improve and Upgrade WWTFs	Clean Water State Revolving Fund (CWSRF) Economically Distressed Areas Program (EDAP) Existing local funding for wastewater improvements Water and Waste Disposal Loans and Grants

Chapter 6 – Measures of Success

Allen Berthold
Texas Water Resources Institute



Water Quality Targets

Year	Enterococcus Concentration (cfu/100mL)		
	Station 20636	Station 12515	Both Stations
2012 303(d) List	149	49	67
Year 1	120.4	45.1	58.7
Year 2	95.4	41.7	51.4
Year 3	70.5	38.3	44.1
Year 4	45.6	34.9	36.9
Year 5	33.3	33.3	33.3

Measures of Success Continued

- ⦿ Additional Data Collection Needs
 - ⦿ Additional monitoring data at index site from quarterly to monthly
- ⦿ Data Review
 - ⦿ Evaluate collected data
 - ⦿ Participate in annual Clean Rivers Program meeting
 - ⦿ Discuss adaptive management

Interim Measurable Milestones

⦿ On Handout

Adaptive Implementation

- ⦿ Necessary due to dynamic nature of watersheds
- ⦿ Relies on constant input of watershed information
- ⦿ Is an ongoing cycle

Questions?

Allen Berthold
Texas Water Resources Institute
979-845-2028
taberthold@ag.tamu.edu

Clare Entwistle
Texas Water Resources Institute
clare.entwistle@ag.tamu.edu

Michael Schramm
Texas Water Resources Institute
979-458-9191
michael.schramm@ag.tamu.edu