

Texas Watershed Planning Training Project
CWA 319(h) NPS Grant Program
TCEQ Contract No. 582-11-12866

Quarter no. 3 From 3/1/13 Through 5/31/13

I. Abstract

Work this quarter primarily focused on preparing and updating materials for registration and advertising of Watershed Modeling using LDC and SELECT, Watershed Coordinators Roundtable and the Introduction to Modeling training, and Short Course. We conducted the Texas Watershed Training on Watershed Modeling using LDC and SELECT. Tasks also included updating webpages, updating agendas, confirming speakers, opening registration, and advertising for additional trainings to be offered including the July Watershed Coordinators Roundtable, Texas Watershed Planning Short Course, and Fundamentals of Developing a Water Quality Monitoring Plan.

II. Overall Progress and Results by Objective and Task

OBJECTIVE 1: PROJECT COORDINATION AND ADMINISTRATION

Task 1.1: Project Oversight – TWRI will provide technical and fiscal oversight of the staff and/or subgrantee(s)/subcontractor(s) to ensure Tasks and Deliverables are acceptable and completed as schedule and within budget. With the TCEQ Project Manager authorization, TWRI may secure the services of subgrantee(s)/subcontractor(s) as necessary for technical support, repairs and training. Project oversight status will be provided to TCEQ with the Quarter Progress Reports (QPRs).

The following actions have been completed during this reporting period:

- a. TWRI continually monitors project status and budget to ensure tasks and deliverables are acceptable and completed as schedule and within budget.

82% Complete

Task 1.2: QPRs – Progress will be reported to TCEQ by the 15th of the month following each state fiscal quarter for incorporation into the Grant Reporting and Tracking System (GRTS). The Reports are to include the following: status of deliverables for each task; narrative description in Progress Report format.

The following actions have been completed during this reporting period:

- a. TWRI/OSRS submitted Year 3, Quarter 2 Progress Report on March 15, 2013.

82% Complete

Task 1.3: Reimbursement Forms – Reimbursement forms will be submitted to TCEQ by the last day of the month following each state fiscal quarter. For the last reporting period of the project, Reimbursement Forms are required on a monthly basis.

The following actions have been completed during this reporting period:

- a. The total federal funds expended as of 5/31/2013 were \$62,299.

51% Complete

Task 1.4: Contract Communication – TWRI will participate in a post-award orientation meeting with TCEQ within 30 days of contract execution. TWRI will maintain regular telephone and/or email communication with the TCEQ Project Manager regarding the status and progress of the project in regard to any matters that require attention between QPRs. This will include a call or meeting each January, April, July, and October. Minutes recording the important items discussed and decisions made during each call will be attached to each QPR. Matters that must be communicated to the TCEQ Project Manager in the interim between QPRs include:

- § *Requests for prior approval of activities or expenditures for which the contract requires advance approval or that are not specifically included in the scope of work*
- § *Notification in advance when TWRI has scheduled public meetings or events, or other major task activities under this contract*

Information regarding events or circumstances that may require changes to the budget, scope of work, or schedule of deliverables; these events or circumstances must be reported within 48 hours of discovery.

The following actions have been completed during this reporting period:

- a. TWRI worked with TCEQ project manager to finalize agenda's for the May Watershed Modeling using LDC and SELECT, July Roundtable, Fundamentals of Developing a Water Quality Monitoring Plan, and Intro to Watershed Modeling training through email and teleconference calls.
- b. TWRI is also working with TCEQ project manager and EPA to update the short course agenda.
- c. TWRI has worked with TCEQ project manager to determine dates and locations of the upcoming trainings in May, August, October and November 2013.

85% Complete

Task 1.5: Annual Report Article – TWRI will provide an article for the Nonpoint Source (NPS) Annual Report upon request by TCEQ. This report is produced annually in accordance with Section 319(h) of the Clean Water Act (CWA), and it is used to report Texas' progress toward meeting the CWA 319 goals and objectives and toward implementing its strategies as defined in the Texas Nonpoint Source Management Program. The article will include a brief summary of the project and describe the activities of the past fiscal year.

The following actions have been completed during this reporting period:

- a. Nothing to report on this activity.

67% Complete

OBJECTIVE 2: MAINTAIN WEB-BASED WATERSHED PLANNING RESOURCES FOR TEXAS WATERSHED COORDINATORS

Task 2.1: Watershed Training Webpage – TWRI will host and maintain an Internet website for information sharing and use by watershed coordinators (<http://watershedplanning.tamu.edu>).

The following actions have been completed during this reporting period:

- a. The Year 3, Quarter 3 Progress Report was posted on the watershed training webpage in the “Projects” section
- b. The “Training” section was updated on the Watershed Planning website; information included:
 - § Texas Watershed Planning Short Course – advertised date and location
 - § Watershed Modeling using LDC and SELECT – agenda and registration opened
 - § Texas Watershed Coordinators Roundtable – advertised on website date, RSVP open and location
 - § Fundamentals of Developing a Water Quality Monitoring Plan – advertised on website with date
- c. There were 523 visits from 374 unique visitors to the webpage during this quarter.

85% Complete

Task 2.2: Maintain Directory of Watershed Resources – TWRI will coordinate with the EFC at Boise State University to maintain the Directory of Watershed Resources with data for Texas-specific funding programs. The Directory of Watershed Resources is an on-line, searchable database for watershed restoration funding. The database includes information on federal, state, private, and other funding sources and assistance. This will allow Texas users to query information in a variety of ways including agency sponsor, keyword, or by a detailed search.

The following actions have been completed during this reporting period:

- a. TWRI continues to work with the Environmental Finance Center to update the directory and continues to work with them on updating the directory.

85% Complete

Task 2.3: Report on the Maintenance of Web-based Watershed Planning Resources for Texas Watershed Coordinators – TWRI will submit a report detailing activities conducted under Task 2 during the current contract.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

OBJECTIVE 3: CONDUCT WATERSHED PLANNING SHORT COURSE

Task 3.1: Organize and Deliver 3 WPSC Events – TWRI will continue to coordinate and offer WPSC annually. To accomplish this, TWRI with assistance from the Project Team, will identify key speakers for the course, make arrangements for facilities, advertise the WPSC, conduct registration, and facilitate the delivery of three (3) Texas WPSCs to a total of 80-120 water resource professionals in Texas and the surrounding region. Certificates will be provided to participants upon completion of the course. A registration fee of \$375 will be charged to WPSC participants. One WPSC Scholarship will be offered per year to assist those who lack funds to attend the WPSC. TWRI will work closely with TCEQ and the Project Team to assess the need for and timing of these short courses to best meets the needs of the state. As needed, travel for speakers will be paid for through project funds.

The following actions have been completed during this reporting period:

- a. The next Texas Watershed Planning Short Course is planned for November 4-8, 2013.
- b. The Mayan Ranch in Bandera is booked for this week for the Course.
- c. Speakers have already been contacted to confirm this date.
- d. Advertised this training at the January Watershed Coordinators Roundtable and on the watershed coordinators listserv.
- e. Materials are being updated for printing and on the website for this course to be able to open up registration during the next quarter.
- f. Several speakers are no longer available and we are working with TCEQ project manager to adjust the agenda accordingly.

80% Complete

Task 3.2: Administer Questionnaires and Evaluations – TWRI will oversee the administration of questionnaires and evaluations to gauge the knowledge gained and how effective the course was for each course participant. Questionnaires will be administered at the beginning and end of selected short courses to demonstrate the course's effectiveness and to identify areas needing adjustment. Evaluations will be completed at the end of each short course to receive comments and participant input and also determine watersheds represented and new WPPs initiated by participants at the short course.

The following actions have been completed during this reporting period:

- b. Questionnaires and evaluations will be updated and printed next quarter for the upcoming Course.

75% Complete

Task 3.3: Report on Watershed Planning Short Course Task – TWRI will provide a report detailing the WPSC held and associated activities conducted under Task 3.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

OBJECTIVE 4: PROVIDE PROFESSIONAL DEVELOPMENT TRAINING

Task 4.1: Organize and Deliver “Introduction to Modeling” Training – A two-day course will be developed by TWRI and Texas A&M University System personnel in years 1-2 and delivered in subsequent years of the project to provide watershed coordinators with an introduction to watershed modeling. Development is year 1 and 2. Delivery is year 2 and 3. Topics of the course will include (1) purposes and limitations of different models, (2) timelines, (3) data needs (watershed characterization, water quality information), (4) cost estimates, (5) literature values vs. monitoring, (6) Quality Assurance Project Plans (QAPPs), (7) request for bids, (8) presenting models to stakeholders, and (9) contractor interaction with stakeholder groups. The course registration fee is to be determined.

The following actions have been completed during this reporting period:

- a. Additional edits were made to the agenda this quarter and all speakers were contacted and confirmed to finalize the agenda based on evaluation results from the first training.
- b. Registration will open for the second training at the beginning of the next quarter. The registration form was updated on the website.
- c. The training date had to change as the main instructor Dr. Srinivasan was no longer available for the previous date as he would be out of the country.
- d. The training will be advertised through the watershed coordinators listserve and a press release at the beginning of next quarter.
- e. The registration fee was determined to be \$75 for the one-day training.

60% Complete

Task 4.2: Organize and Deliver Training on Watershed modeling using LDC and SELECT – LDCs provide a graphical representation of stream flow and pollutant loading whereby real data can be compared to a stream’s maximum allowable load to indicate reductions needed and help identify the type of pollutant load (i.e. point source vs. NPS). SELECT provides a spatially explicit analysis of land use/land cover, animals/humans in watersheds, and other parameters to assess/determine potential sources of bacteria. The models are being used for Total Maximum Daily Load (TMDL) and WPP development. A two-day course will be developed and delivered in subsequent years of the project. A \$100 registration fee will be charged for these two-day courses.

The following actions have been completed during this reporting period:

- a. TWRI conducted the first training on November 6-7, 2012.
- b. TWRI updated the website with information for the second training.
- c. TWRI advertised for this training at the January Watershed Coordinator Roundtable and Introduction to Modeling Training.
- d. Presentations and the manual were updated and printed.
- e. The computer lab has been reserved and contract for this training in May 7-8, 2013 at the Horticulture and Forest Science Bldg computer lab.
- f. The training had 18 attendees to the second training in May 2013.
- g. Evaluations were compiled for this training and submitted to TCEQ with deliverables.

100% Complete

Task 4.3: Organize and Deliver Training on Stakeholder Facilitation – Stakeholder facilitation continues to be identified by watershed coordinators as a training need in Texas. To provide this, TWRI will deliver 2 day-long trainings on stakeholder facilitation. A \$30 registration fee will be charged for the stakeholder facilitation programs.

The following actions have been completed during this reporting period:

- a. This task is complete:
 - § The first Stakeholder Facilitation training was held July 26, 2011 in Austin in conjunction with the January 2011 Texas Watershed Coordinator Roundtable.
 - § The second Stakeholder Facilitation Training was held January 24, 2012 in Waco in conjunction with the January 2012 Texas Watershed Coordinator Roundtable.

100% Complete

Task 4.4: Organize and Deliver Training on Water Quality Monitoring – Training will be developed by TWRI and others and will cover monitoring for (1) watershed characterization and (2) evaluation of water quality improvements and BMP effectiveness from implementation activities. Topics of the training will include: data quality objectives; identifying available data; determining data gaps and needs; monitoring plan development to meet data quality objectives and support modeling; selecting monitoring types, locations, equipment and laboratory analysis; obtaining stakeholder input; developing QAPPs for monitoring and acquiring data; and a workshop portion for collaboratively creating monitoring plans. The course(s) will be developed in years 1-2, and a minimum of one course per year will be delivered in subsequent years.

The following actions have been completed during this reporting period:

- a. The Fundamentals of Developing a Water Quality Monitoring Plan workshop was conducted in Austin and a total of 25 registered and 5 presenters.
- b. Course materials were compiled and the workshop manual was developed and printed for the course.
- c. The date has been set and advertised for the next training to be held in October 23-24, 2013.
- d. The agenda was updated and registration materials have been updated and prepared.
- e. Registration will be opened during the next quarter.

70% Complete

Task 4.5: Administer Questionnaires and Evaluations –TWRI will oversee the administration of questionnaires and evaluations to gauge the knowledge gained and how effective the course was for each course participant. Questionnaires will be administered at the beginning and end of each course to demonstrate the course’s effectiveness and to identify areas needing adjustment.

The following actions have been completed during this reporting period:

- a. TWRI administered questionnaires and evaluations to Stakeholder Facilitation Training participants for each training (July 2011 and January 2012).
- b. TWRI Program Coordinator developed evaluations for the Water Quality Monitoring and LDC/SELECT trainings.
- c. Evaluations were conducted for the Short Course Training.

- d. Training evaluations and questionnaires were administered and compiled for the Fundamentals of Water Quality Monitoring Training.
- e. Training evaluations and questionnaires were administered and compiled for LDC/SELECT Training held in November 2012 and May 2013.
- f. Training evaluations were developed and conducted for the Texas Watershed Coordinator roundtable.
- g. Training evaluations were developed and conducted for the Introduction to Modeling.

65% Complete

Task 4.6: Report on Professional Development Trainings Provided –TWRI will submit a report detailing professional development trainings provided and associated activities conducted under Task 4.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

OBJECTIVE 5: ORGANIZE AND FACILITATE TEXAS WATERSHED COORDINATOR ROUNDTABLES

Task 5.1: Facilitate Watershed Coordinator Roundtables – TWRI will coordinate with TCEQ, TSSWCB and EPA to organize and facilitate a total of six (6) semi-annual Watershed Coordinator Roundtables. These face-to-face Roundtables will build upon the fundamental knowledge conveyed through the WPSC and establish a continuing dialogue between watershed coordinators in order to facilitate interactive solutions to common issues being faced by watershed coordinators statewide. Periodically, TWRI, in conjunction with TCEQ and the Project Team will review the continued need for semi-annual Roundtables as well as their specific timing.

The following actions have been completed during this reporting period:

- a. A Roundtable was held on January 22, 2013 with 59 participants in attendance.
- b. Presentations, videos and a participant list can be found on the Watershed Planning website: <http://watershedplanning.tamu.edu/developing/roundtable/january-22-2013/>
- c. This quarter focused on preparations and RSVPs for the July 30, 2013 Roundtable to be held in Dallas, TX.
- d. All of the speakers were contacted and confirmed.
- e. The agenda was finalized and updated on the website.

80% Complete

Task 5.2: Administer Evaluations – TWRI will oversee the administration of evaluations to gauge the knowledge gained and how effective the Roundtable was for each participant. Evaluations will be administered at the end of each Roundtable to determine future topics of discussion.

The following actions have been completed during this reporting period:

- a. Evaluations were conducted and have been summarized on the January 22, 2013 Roundtable.
- b. Evaluations are being prepared for the July Roundtable.

75% Complete

Task 5.3: Report on the Texas Watershed Coordinator Roundtables – TWRI will submit a report detailing Texas Watershed Coordinator Roundtable meetings provided and associated activities conducted under Task 5.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

OBJECTIVE 6: SUBMIT FINAL REPORT

Task 6.1: Draft Report

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

Task 6.2: Final Report

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

III. Related Issues/Current Problems and Favorable or Unusual Developments

- N/A

IV. Projected Work for Next Quarter

- Prepare to conduct the Texas Watershed Coordinator Roundtable on July 30, 2013
- Conduct the second Introduction to Watershed Modeling August, 2013.
- Advertising and registration for the workshop: Introduction to Modeling in 2013.
- Prepare to conduct Fundamentals for Water Quality Monitoring Training in October 2013.
- Continue registration and advertising for July Roundtable, Fundamentals of Developing a Water Quality Monitoring Plan, and Short Course training in Nov.
- TWRI will prepare and submit Year 3, Quarter 4 Progress Report

Appendix A: LDC SELECT Training – Agenda, Sign-in Sheet, and Evaluation Results

**Watershed modeling using LDC and SELECT
May 7-8, 2013**

Texas A&M University • Horticulture/Forest Science Bldg. • Lab 125

Agenda

Tuesday, May 7

10 a.m. to 5:30 p.m.




















- 10–10:30 a.m. **Introductions & Workshop Overview** [Kevin Wagner, TWRI]
- 10:30–11:15 a.m. **Introduction to Load Duration Curves** [R. Karthikeyan & K. Borel, AgriLife Research]
- 11:15–12 p.m. **LDC Demonstration** [R. Karthikeyan & K. Borel, AgriLife Research]
- 12–1:30 p.m. Lunch (*bring your own or view list of nearby restaurants*)
- 1:30–2:30 p.m. **Assignment: Estimating Pollutant Loads for Plum Creek Using LDCs** [Group]
- 2:30–3:30 p.m. **Discuss LDC Assignment** [Group]
- 3:30–3:50 p.m. Break
- 3:50–5:30 p.m. **Introduction to SELECT** [R. Karthikeyan & K. Borel, AgriLife Research]

Wednesday, May 8

9 a.m. to 4:15 p.m.

- 9–9:30 a.m. **Gathering animal density data for SELECT** [Nikki Dictson, TWRI]
- 9:30–11 a.m. **SELECT Demonstration** [R. Karthikeyan & K. Borel, AgriLife Research]
- 11–11:20 a.m. Break
- 11:20–12 p.m. **Assignment: Estimating Pollutant Sources for Plum Creek Using SELECT** [Group]
- 12–1:30 p.m. Lunch (*bring your own or view list of nearby restaurants*)
- 1:30–3 p.m. **Complete SELECT Assignment** [Group]
- 3–4 p.m. **Discuss SELECT Assignment** [Group]
- 4–4:15 p.m. **Wrap Up** [Nikki Dictson, TWRI]

Watershed Modeling Using LDC and SELECT

Sign In	#	First	Last	Agency/Organization	Email
	1	Todd	Adams	TTAER	adams@twaer.tarlton.edu
	2	Ashley	Alexander	Texas State Soil and Water Conservation Board	alexander@tsswcb.texas.gov
	18	Justin	Bower	Houston Galveston Area Council	justin.bower@h-gac.com
	3	Tim	Cawthon	Texas Commission on Environmental Quality	tim.cawthon@tcqg.texas.gov
	4	Nikki	Dickson	Texas Water Resources Institute	n-dickson@ag.tamu.edu
	5	Rocky	Freund	Nueces River Authority	rfreund@nueces-ra.org
	6	Wesley	Gibson	Texas State Soil and Water Conservation Board	wygibson@tsswcb.texas.gov
	7	Stephanie	Glenn	Houston Advanced Research Center	sglenn@harc.edu
	8	Lucas	Gregory	Texas Water Resources Institute	lgregory@ag.tamu.edu
	9	Binur	Goven	Houston Advanced Research Center	brobinson@harc.edu
	10	Maria	Hirebik	USDA - Natural Resources Conservation Service	mhirebik@nrc.tamu.edu
	11	Chris	Lesser	USDA - Natural Resources Conservation Service	cleaser@nrc.tamu.edu
	12	Jana	Lloyd	Texas State Soil and Water Conservation Board	jlloyd@tsswcb.texas.gov
	13	Anne	McFarland	TTAER	mcfarla@twaer.tarlton.edu
	17	Thushara	Ramaranga	Houston Galveston Area Council	Thushara.ramaranga@h-gac.com
	14	Sarah	Schwab	Stephen F. Austin State University	schwab.sarah@gmail.com
	14	Jared	Timmons	Texas A&M Agrilife Extension Service	jbtimmons@ag.tamu.edu
	15	Zach	Vernon	Houston Advanced Research Center	zvernon@harc.edu
	16	Kevin	Wagner	Texas Water Resources Institute	kwagner@ag.tamu.edu
	20				

November 6-7, 2012

Appendix B: July 30, 2013 Watershed Coordinators Roundtable –Agenda

Texas Watershed Coordinator Roundtable “Urban BMPs and Low Impact Development”

**Tuesday, July 30, 2013
9:30 a.m. — 3:30 p.m.**

*Texas A&M AgriLife Research and Extension Center at Dallas
Building C, Large Hall
17360 Coit Road, Dallas, TX 75252*

- | | |
|--------------------|--|
| 9:30 – 9:45 a.m. | Welcome & Introductions [Kevin Wagner, Texas Water Resources Institute] |
| 9:45 – 10:45 a.m. | Low Impact Development Design, Construction, and Performance [Dr. Fouad Jaber, Texas AgriLife Extension Service] |
| 10:45 – 12:30 a.m. | Tour of installed LID practices onsite |
| 12:30 – 1:10 p.m. | Catered working lunch (or bring your own) [RSVP required] |
| 1:10 – 2:00 p.m. | Updated EPA 319 Grant Program Guidance [Philip Crocker, EPA] |
| 2:00 – 2:20 p.m. | Networking Break |
| 2:20 – 2:35 p.m. | Stormwater Rulemaking Update [Suzanna M. Perea, EPA] |
| 2:35 – 2:55 p.m. | Dallas LID Green Roadway Winner: South Lamar [Ben McWhorter, Freese & Nichols, Inc.] |
| 2:55 – 3:30 p.m. | Wrap-Up [Nikki Dictson, Texas Water Resources Institute] <ul style="list-style-type: none">· Upcoming Trainings:<ul style="list-style-type: none">- Texas Watershed Steward- Texas Stream Team- Texas Well Owner Network- Riparian and Stream Ecosystem Education- Fundamentals of Developing a Water Quality Monitoring Plan- Watershed Modeling Using LDC and SELECT- Introduction to Modeling· Next Roundtable<ul style="list-style-type: none">- Date: January 2014 |

Appendix C: October 23-24, 2013 Fundamentals of Developing a Water Quality Monitoring Plan in Temple, TX –Agenda

Fundamentals of Developing a Water Quality Monitoring Plan October 23-24, 2013

USDA ARS Facility in Temple, Texas

Agenda

Wednesday, October 3

9:00 a.m. to 5 p.m.

- 9:00 – 9:30 a.m. **Introductions & Workshop Overview**.....Larry Hauck, TLAER
Group introductions and Workshop purpose: Provide participants with the tools to develop and implement a monitoring program for watershed characterization and evaluation of water quality improvements and BMP effectiveness from implementation activities. Brief watershed overview of case studies presented throughout the day.
- 9:30 – 10:00 a.m. **Data Quality Objectives & Project Planning**.....EPA
Defining the water quality problem, determining monitoring objectives, and establishing data quality objectives at the outset. Long term data needs of the watershed; analytical framework to determine loadings in a watershed protection plan; routine monitoring vs. BMP evaluation (Elements H and I)
- 10:00 – 10:15 a.m. **Case Study: Introduction**
- 10:15 – 10:30 a.m. **Break**
- 10:30 – 11:00 a.m. **Inventorying and Acquiring Existing Resources**.....Patricia Wise, TCEQ
*Review 305(b) process & existing monitoring framework
Inventory existing/historic monitoring sites & data (TCEQ, USGS, others); Acquiring existing data*
- 11:00 – 11:45 a.m. **Watershed Characterization & Sufficient Data**.....Anne McFarland, TLAER
*Review/select experimental/statistical design – reconnaissance/synoptic, plot, single watershed/before-after, above-and-below watersheds, paired watersheds, multiple watersheds, trend stations
Assess ability of existing data to meet objectives & identify data gaps and data needs
Assessing # of additional sites, samples, and frequency needed*
- 11:45 – 12:00 p.m. **Case Study: Defining the problem, monitoring objectives, and data quality Inventorying and acquiring existing data, selecting experimental design, and assessing data sufficiency and data gaps.**
- 12:00 – 1:00 p.m. **Lunch** (catered lunch or bring your own)
- 1:00 – 2:15 p.m. **Selecting Monitoring Design**.....Larry Hauck, TLAER
*Scale – point, plot, field, watershed
Sample type – grab, composite – time or flow weighted, depth integrated, continuous
Variables monitored (cost & cost cutting considerations)
Sample locations, sampling frequency, and monitoring duration
Station types – discharge measurement, water sample collection – grab vs automated, precip
Collection & Analysis Methods – collection, preservation, transport, analysis, QA/QC
Routine monitoring vs. BMP evaluation; flow and surrogates for flow
National Water Quality Monitoring Handbook*
- 2:15 – 2:45 p.m. **Introduction to Stormwater Sampling**.....Daren Harmel, USDA-ARS
Understanding the why's and how's of stormwater sampling.
- 2:45 – 3:00 p.m. **Break**
- 3:00 – 3:30 p.m. **Other Considerations & Review Building a Successful Monitoring Plan**.....Larry Hauck, TLAER
Monitoring plan development to meet data quality objectives and Support Modeling: equipment; budgets; personnel constraints and available resources; and the importance of project planning.

- 3:30 – 4:00 p.m. **Case Study: Selecting Monitoring Design**
- 4:00 – 5:00 p.m. **Workshop: Create a Monitoring Plan**..... *Group*
Divide into six groups and outline and develop a monitoring plan using National WQ Handbook worksheet.
[watershed assessment; effectiveness monitoring (watershed scale; BMPs)]
**EPA QA Training*

Thursday, October 4

8:30 a.m. to 3:30 p.m.

- 8:30 – 9:30 a.m. **Workshop Follow Up: Present/Discuss Monitoring Plan** *Group*
Each group presents monitoring plan (10 minutes per group).
- 9:30 – 10:00 a.m. **Quality Assurance Project Plans**..... *Kyle Girten, TCEQ*
Integrating monitoring design into QAPPs & QAPP development tips; session will also review different QAPP types and templates.
- 10:00 – 10:15 a.m. **Break & Travel to Monitoring Site**
- 10:15 – 12:00 p.m. **Monitoring Demonstrations** *Kolbe & Blair/Tidwell/Harmel*
- Christine Kolbe and Michele Blair (TCEQ) - routine monitoring
- Daren Harmel (USDA-ARS) & Russell Park - stormwater monitoring (ISCO)
- Travis Tidwell (Texas Stream Team) - volunteer monitoring
**30 minutes per station*
- 12:00 – 1:00 p.m. **Travel to Workshop Location & Lunch** (*catered lunch or bring your own*)
- 1:00 – 2:00 p.m. **Statistical Tools For Analysis** *Anne McFarland, TLAER*
Review and demonstrate common statistical analysis for water quality data analysis. Discuss role of statistics in final reporting of data, how they are tied back to overall monitoring objectives, and use for evaluating BMP effectiveness and quantifying load reductions.
- 2:00 – 2:30 p.m. **Uncertainty in Monitoring** *Daren Harmel, USDA-ARS*
- 2:30 – 3:00 p.m. **Stakeholder Communications** *Larry Hauck, TLAER*
Determining BMPs; incorporating analysis of sampling uncertainty and translating both to stakeholders; getting information up front.
**include list of contacts for regional offices; RRC, etc. (who to contact for complaints)*
- 3:00 – 3:30 p.m. **Wrap Up**..... *Larry Hauck, TLAER*
Discuss how monitoring folds into watershed based plans and ties back to watershed-based planning efforts.