Installation Curriculum for Small Scale Wastewater Treatment Systems

CIDWT
Consortium of Institutes for Decentralized Wastewater Treatment

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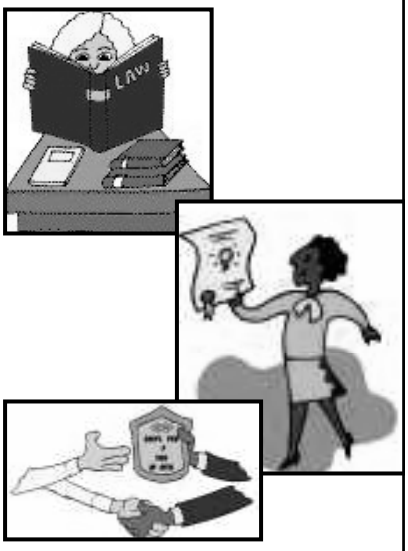
Overview of Presentation

- Importance
- Installer Training Program
- Background
- Project implementation
- Project deliverables
- Project timeline
- Pilot training summary

What is an Installer?

- Professional providing a service to the public
- Basic requirements for the profession
  - Body of knowledge
  - Standards for admission
  - Standards of practice
  - Standards for retention
  - Criteria for expulsion



Professional Installer

- Skills as a general contractor & equipment operator
- But need additional knowledge, skills & abilities
- Maintain site's natural ability to accept and treat wastewater
- Protect public health
- Protect environmental health

Project Background

- NOWRA 2004 – Conference short course
  - NOWRA
  - CIDWT
  - NEHA
  - Presentations describing how partners would work together to implement installer training
- NOWRA – Installer Academy, December 2005, 2006
- NEHA – CIOWTS – Implemented June 2006
- CIDWT – Proposal to WERF May 2006

Project Implementation and Development

- CIDWT – Texas AgriLife Extension Service
- MOU Partners: NOWRA, NEHA
- Funding:
  - EPA/NDWRCDP: WERF
- Project Review Group (PRG)
  - Stonebridge, Converse, Stuth, Smithson, Lesikar

Development and refinement of materials

- Writing team:
  - Request for Proposals – December 2006
  - Primary writers:
    - University of Minnesota, Sara Christopherson,
    - University of Rhode Island, George Loomis, David Kalen
    - North Carolina State University, David Lindbo, Nancy Deal
    - Texas AgriLife Extension Service, Bruce Lesikar, Rebecca Melton, Rachel Alexander, Justin Mechell
  - Secondary writers:
    - University of Arizona, Kitt Farrell-Poe
    - University of Tennessee, John Buchanan
    - University of Minnesota, David Gustafson
    - University of Missouri, Randy Miles

Development and refinement of materials

- Review team: OIPRC Official Installation Practitioner Review Committee
  - Nine people - Highly experienced O&M service providers
  - David Burnham - Rhode Island, Kenneth Davis - Texas, Anthony Gaudio – Florida, Scott Greene - North Carolina, Eric Larson - Minnesota, Albert Mills – North Carolina, Mark Ritter - Minnesota, Kyle Shern - Missouri, Bill Stuth, Jr. - Washington
  - Alternate member Tim Stasiunis – Rhode Island.

Development and refinement of materials

- National review
  - Important to gain broad input on manual content
  - June to July 2008
  - Request materials – CIDWT web site, www.onsiteconsortium.org
  - Provide your contact information to team members

National Practitioner Training Curriculum for Onsite Wastewater Treatment System Installation

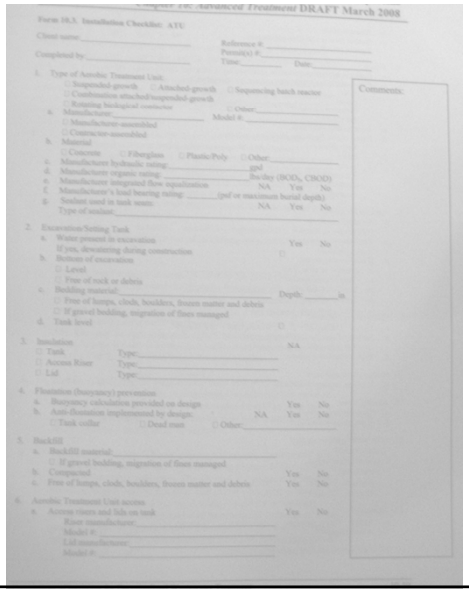
- Training Manual
  - Description of critical skills, knowledge and abilities
  - Checklists of critical components of the installation process
- Training materials to conduct two-day course

Manual Content

- Introduction
- Business Models and Industry Ethics
- Safety
- Soil and Site concepts for Installers
- Construction Materials and Techniques
- Planning
- Distribution
- Watertight tanks and piping
- Installation of Pumps and Controls
- Advanced Treatment
- Soil Treatment Areas
- Appendicies: math review, surveying, watertightness testing, tables and figures, tank buoyancy, calculating volumes, slope intersection calculations and installer glossary

Manual Layout

- Introduction of concepts
- Description of treatment
- Installation checklist
- Start-up checklist



Project Deliverables

- Training Manual: bound copy – cost recovery basis; Midwest Plan Service
- Presentation materials: obtained through a Train-the-Trainer program
- Four pilot testing events: NOWRA(2), VOWRA, and Missouri Small Flows
- Two OIPRC meetings
- Web assisted sharing of project information
- Final Report

Project Timeline

- PRG – December 2006
- RFP – December 2006, February 2007
- Writing Team – May 2007
- OIPRC – August 2007, March 2008
- First Meeting – August 2007
- Pilot Testing – December 2007, March 2008, December 2008, March 2009
- Broad Review: June – July 2008
- Final Materials: June 2009

Pilot Training Evaluation

- 1st Pilot training
  - December 10-11, 2007 NOWRA Installer Academy, Las Vegas, 40 - 60 Participants
- 2nd Pilot training
  - March 18-19, 2008 VOWRA Workshop, Richmond, 23 Participants
- 3rd Pilot training
  - December 8-10, 2008 NOWRA Installer Academy, Las Vegas, 30 - 60 Participants
- Retrospective Pre- then-Post Evaluation

Retrospective Pre-Then-Post Evaluation

2nd Training Results do not include OIPRC responses

Question	Mean 1	Mean 2	Mean 3
Effectively evaluate the site conditions and system installation when developing a contract:	26.3	22.5	14.8
Review a design plan and conduct a site review to successfully develop a bid and plan for construction:	23.2	24.3	15.4
Evaluate site conditions with respect to OSHA construction safety practices:	34.3	38.9	35.0

Retrospective Pre-Then-Post Evaluation

Question	Mean 1 st	Mean 2 nd	Mean 3 rd
Use of surveying practices to lay out the system, locate components and evaluate proper elevations:	25.3	25.6	22.0
Recognize how site conditions influence equipment selection and installation methods:	15.0	22.0	20.0
Understand how effective excavation, bedding, placement and backfilling methods help achieve stable watertight components:	26.2	15.2	17.3

Retrospective Pre-Then-Post Evaluation

Question	Mean 1 st	Mean 2 nd	Mean 3 rd
Select and assemble pumping systems and properly adjust and verify control settings.	18.6	9.3	19.4
Implementation of critical practices needed for installation of advanced treatment system components.	30.3	22.5	23.9
Install soil treatment areas at the proper elevation using appropriate materials while maintaining natural soil conditions.	17.6	19.0	29.2

Retrospective Pre-Then-Post Evaluation

Question	Mean 1 st	Mean 2 nd	Mean 3 rd
Understand how proper installation influences subsequent operation and maintenance activities and facilitates management of wastewater treatment systems.	21.3	18.2	31.3

Willingness to adopt

Question	Not	?	Will use	Yes Now	Not Again
Utilize a checklist to document completeness of installation process.	0	7	17	7	0
	1	0	12	7	0
	0	3	11	2	0
Utilize a checklist to document startup status of treatment system.	1	6	18	6	0
	0	1	12	7	0
	0	3	11	2	0
Implement safety practices to minimize potential of work-place accidents.	0	1	12	17	0
	0	1	11	9	0
	0	2	4	9	2

Willingness to adopt

Question	Not	?	Will use	Yes Now	Not Again
Provide system owner's information on proper system management .	0	2	11	17	0
	0	1	6	13	0
	0	2	5	9	0
Implement watertightness testing procedures for evaluating tanks.	2	3	15	10	0
	1	4	5	9	0
	2	4	4	6	0

Satisfaction Evaluation

- I would recommend this course to another wastewater professional?

- 3rd Pilot Training Event
  - 100% of respondents

Using the Materials

- Training Manual – Purchase bound manual at cost recovery basis – July 2009
- Potential Instructors:
  - CIDWT member
  - Attend CIDWT Installer Train-the-Trainer program - August 2009
  - Instructors guide
  - Provided the latest version of Presentations with speaker notes

4th Pilot Training Event

- Missouri Small Flows
- March 5-6, 2009
- Liberty Missouri

- Contact Missouri Small Flows to register

Summary

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