

Milestone 1 (1997)

Nebraska Onsite Wastewater Advisory Task Force Formed and Constructed Wetlands Research Project Initiated

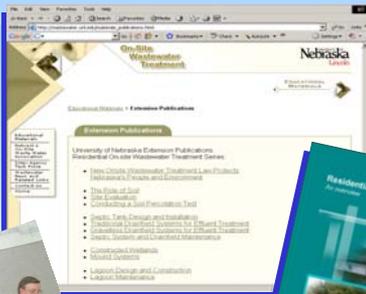
A 1997 Formation of Task Force

Motivation:

- Extension publications dated
- Team effort to rewrite publications desired

Members:

Douglas County Health Department
 Lincoln-Lancaster County Health Department
 Nebraska Department of Environmental Quality
 Nebraska Health & Human Services System
 Sarpy County Planning & Zoning
 UNL Conservation & Survey
 UNL Extension

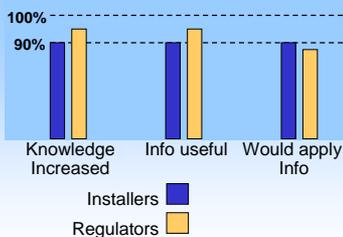


B 1998 Task Force Activities

Spearheaded by UNL, received grant* and

- Designed and delivered six industry workshops
- Conducted homeowner education
- Polled industry on professional association
- Developed 12 publications

2001 Evaluations



C Impact of Activities 2000-2001

- 12 industry workshops
 - 357 participants
- Results of workshops in 2000**
- Gave 28-question test at program completion
 - 86 to 88% answered >75% questions correctly
 - Impact 5,067 systems annually



D Research Project

Rogers Memorial Farm constructed wetlands established to determine performance levels in NE climate

- System for 4-bedroom residence
- Septic tank size: 1250 gallons
- Subsurface constructed wetland cell: 13ft x 45ft
- Depth of media (pea/road gravel): 25"
- Influent flow to constructed wetland: 230 gpd
- Research allows project team to "connect" with on-site literature

Summary of Treatment Performance of Constructed Wetland Cell

Parameter	Influent	Effluent	Percent Removal
BOD, mg/L	204	81	60%
COD, mg/L	400	206	49%
Total Suspended Solids, mg/L	257	26	89%
Ammonia-N, mg/L	18	16	11%
Nitrate-N, mg/L	0.25	0.25	-
Total Phosphorus, mg/L	8.5	8.4	-
Coliform, MPN/100ml	3,260,000	7,150	99.4%

The constructed wetland performance indicates it is suitable for organics, solids and coliform removal but needs some modifications for nutrient removal.

Advances in the Onsite Wastewater Industry in Nebraska through Research and Extension

Wayne Woldt, Associate Professor, Extension Specialist
 Sharon Skipton, Extension Water Quality Educator
 Jan Hygnstrom, Extension Program Coordinator
 University of Nebraska - Lincoln



Milestone 2 (2001)

Formation of Nebraska Onsite Waste Water Association and Publication of Three MS Theses

- A** 2001
 First Statewide Conference
- 100 participants
 - 16 educational presentations
 - Nationally recognized speakers
 - State Association formed (NOWWA)



- B** 2001-2004
 Homeowner Education Developed and Delivered
- Acreage owners targeted**
- 189 participants
- High risk areas targeted**
- Johnson Lake, 173 participants
 - Lower Platte River, 420 participants
- Web modules developed**



- C** 2002
 2nd Annual Statewide Conference
- 100 participants
 - 2 concurrent educational tracks
- 2003-2006
 3rd to 6th Annual Statewide Conferences
- NOWWA leadership assumed management
 - 100 participants per year
 - 2 concurrent educational tracks



- D** 2002 Industry Primer Course
- 2-day installation course: 80 participants**
- Knowledge was gained and would be used
 - 100% agreed or strongly agreed
- Local health dept. piloted professional certification**
- 32 installers took local certification exam
- 1-day inspection course: 75 participants**
- Knowledge was gained and would be used
 - 100% agreed or strongly agreed

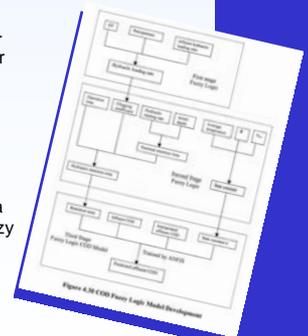
- E** 2003
 First Industry Soils Workshops
- 83 participants
 - 2 locations
 - Evaluations positive



- F** 2000-2004
 Overall Industry Education
- 792 training contacts
- Topics
- Soils
 - Regulations
 - Risk
 - Basics
 - Alternative systems



- G** MS Theses Titles
- Design, construction and start-up of a constructed wetland for onsite wastewater treatment
 - Pathogen and pathogen indicator organism removal in subsurface flow constructed wetlands
 - Modeling the performance of a constructed wetland using fuzzy logic



Milestone 3 (2004)

- Onsite Wastewater legislation passed
- PhD research dissertation published

A Legislative Requirements:

2004–2005 Provisional Certification

- Must prove 1 year min. experience as
 - installer
 - inspector
 - pumper
 - soil evaluator

Onsite Wastewater Advisory Committee (OWAC) formed to advise NDEQ on matters related to onsite wastewater

- UNL Extension assists as needed
- 2004 Onsite systems must be registered
 - New installations
 - Reconstructed systems

2006 Certification by Exam begins



B UNL Extension Received Continuation Grant



- Onsite curriculum for certification training developed
- Practitioner manuals
- 1/3 scale models (septic tank, laterals)
- Day-long training sessions for:
 - Pumpers
 - Installers
 - Inspectors



C 2005-2006 UNL Extension Delivers Voluntary Certification Training

- Generated \$75,000 gross receipts
 - 733 training contacts 2005-2006
 - 86% of attendees passed exam 1st attempt
- Impact: Mail survey to 460 attendees, 38% response

Knowledge increased

Pumpers 90%

Installers 99%

Inspectors 100%

Change in how I do my work

Pumpers 76%

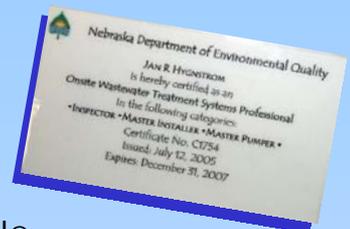
Installers 71%

Inspectors 90%

D 2004-2006 Almost 4,000 Systems Registered

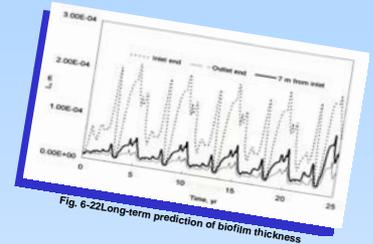
2005-2006 Certification by Exam

- 678 individuals
- 572 Installers
- 200 Pumpers
- 149 Inspectors
- 4 Soil Evaluators



E Dissertation Title

Multiscale modeling of a vegetated submerged bed system with application in organic matter removal and clogging



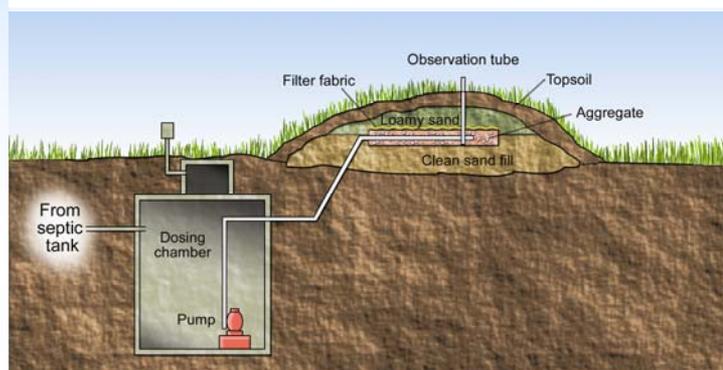
F 2004-2006 Homeowner Education Continued

High risk watersheds targeted

- Shell Creek Watershed
- Duck Creek Watershed
- Swan Lake Watershed
- Turtle Beach

G 2006-2009 UNL Extension Received Continuation Grant*

- Develop and pilot training materials
- Curriculum for Site Evaluation endorsement
- Curriculum for Mound System endorsement
- Distance education
- Homeowner education via alternative delivery methods



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