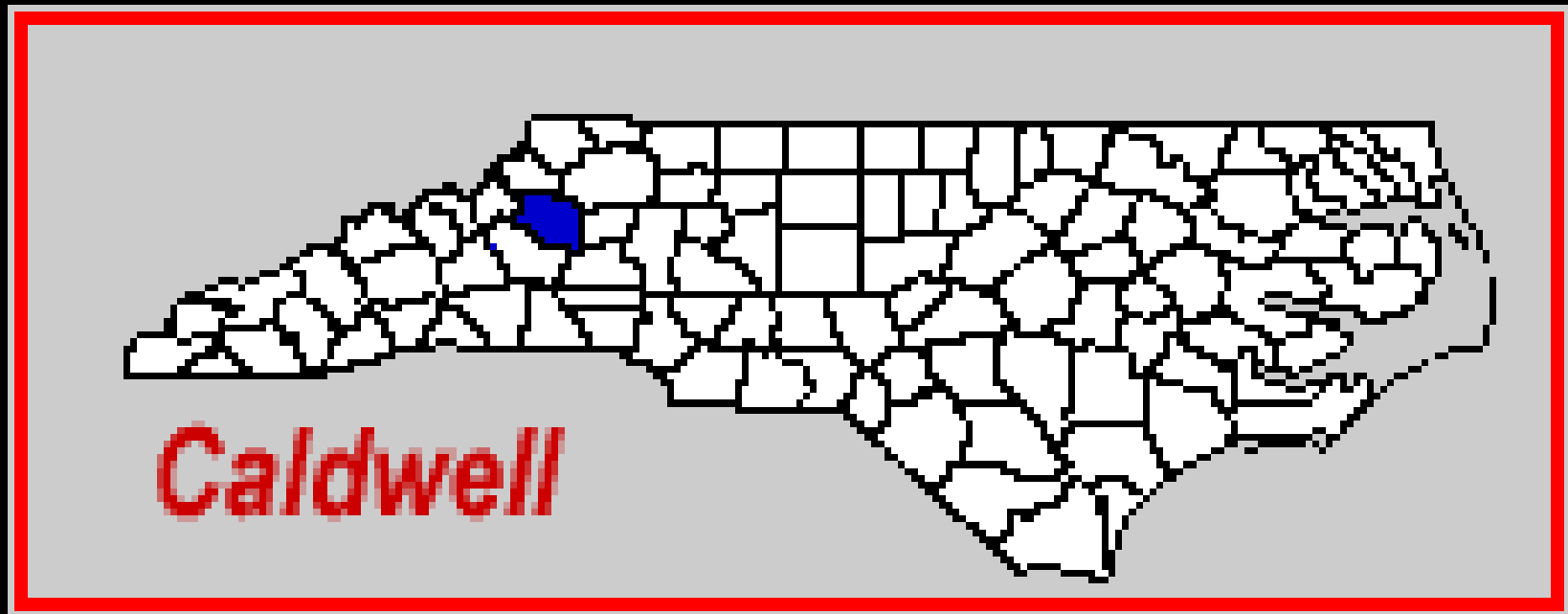


# Caldwell Rain Garden Demonstration Project



# Caldwell Rain Garden Demonstration Project



# Introduction

- ⇒ Purpose -- Demonstrate an urban stormwater practice to local planners, designers, installers & citizens.
- ⇒ Assist with compliance of EPA phase II requirements.
- ⇒ Improve water quality.

# Project Confinements

⇒ Limited funds & space.

⇒ Practical project with broad appeal.

⇒ Options --

- Green roof???
- Wetland
- Sand filter \$\$\$
- Bio-retention
- Permeable pavement

# Bio-Retention

- ⇒ Stable site.
- ⇒ Parking lot pollutant removal; motor oil, antifreeze and pathogens.
- ⇒ Increase retention time during storm events.
- ⇒ Aesthetically pleasing.
- ⇒ low cost.

# Pre Construction Steps

⇒County/City government approval.

⇒No permits required.

⇒319 grant money award.

⇒Locate all buried utilities.

⇒Schedule excavation.



**Water Shed**  
8400 square feet of  
impervious pavement



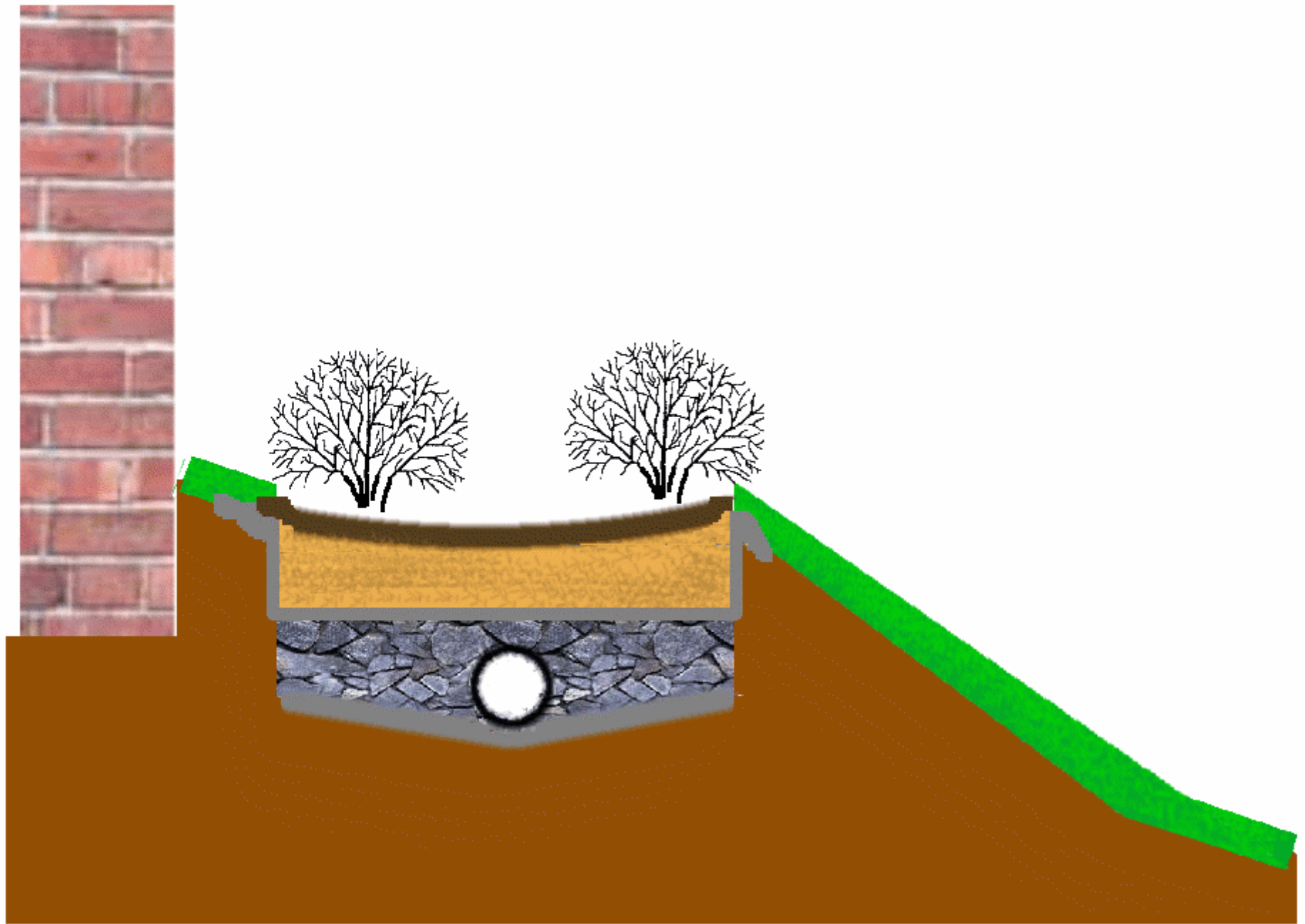
# Pre Construction Survey





# Bio-Retention Design

- ⇒ Bio-retention Area = 5% to 7% of water shed
- ⇒ (40ft x 13ft) = 520 ft<sup>2</sup> = 6% of water shed
- ⇒ Under drain, one 4" drain line
- ⇒ Diverse plant selection
- ⇒ Flexible design



# Construction Begins





**Oops!!**





Mother Nature





Work Is  
Progressing











# Plants

- ⇒ *Calycanthus* Sweetshrub
- ⇒ *Itea* Sweetspire
- ⇒ *Clethra* Summer Sweet
- ⇒ *Loropetalum* Chinese Fringe-flower
- ⇒ *Sarcococca* Sweet Box
- ⇒ *Kerria japonica*
- ⇒ Fern
- ⇒ Louisiana hybrid Iris







# Construction Costs

## Materials

□	Filter cloth (140 yd <sup>2</sup> )	\$86
□	Two tons wash stone	\$23
□	Pipe	\$70
□	Fill sand	\$1200
□	Compost & mulch	\$320
□	Plants	\$800
	TOTAL	\$2499

# Construction Costs

## ⇒ Labor

- Inmate workers 32 hours
- Skilled workers 38 hours

## ⇒ Equipment

- Backhoe 14 hours

Does it work?

















# Summary

- ⇒ Locate site conveniently
- ⇒ Have a good plan
- ⇒ Work with equipment operators
- ⇒ Be resourceful
- ⇒ Thank the folks that help

# Thanks To

⇒ **Bill Hunt -- NCCES**

⇒ **Greg Jennings -- NCCES**

⇒ **Dwight Minton -- Caldwell County Water Dept**

⇒ **Jim McKee -- Library Director**

⇒ **Caldwell County Sheriff's Dept.**

⇒ **Caldwell County**

⇒ **Lynn Haggerman -- City of Lenoir**

⇒ **Allen Caldwell -- NCCES**



Questions?



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