

Partners for Wildlife Program

Springs Enhancement

Agreement #14-48-11333-99-G135

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Habitat Restoration Springs Enhancement

Abstract

The purpose of this habitat restoration project was the development of three springs into long-term wildlife watering sites.

Introduction

This project will consist of the development of three springs in the lower Deadwood watershed for the purpose of making water available to a variety of wildlife species. It will consist of photos taken before, during and after the project. These springs will be developed by manual means, using pick and shovel, to expose layers of seeps to be channeled via transmission pipeline to aqua pots where water will be stored and available to wildlife.

Description of Study Area

The area is in the Deadwood Creek watershed above the old town of Deadwood. The area of spring development is in a drainage that empties into Deadwood Creek. This drainage is on the west side of the creek and has a slope of between 45 and 55 percent. The drainage has various types of riparian foliage consisting of willow, large-leaf maple, hazelnut and bracken fern. It also consists of conifers like Pondrosa Pine, Jeffrey Pine, Sugar Pine, Douglas Fir, White Fir, Incense Cedar and Juniper. Some Canyon Live Oak and Oregon White Oak are also present.

This area is home to several endangered species of birds; the Northern Spotted Owl, the Northern Goshawk, the White-headed Woodpecker and the Pilleated Woodpecker. Other birds, like the Red-Tailed Hawk and the Golden Eagle have also been observed in the immediate area.

In the evening, one can see the Fringed Myotis flying about catching insects. Larger mammals also observed are Black-tailed Deer, Roosevelt Elk, Gray Fox, Coyote, Black Bear, Bobcat, Mountain Lion, Raccoon and Porcupine. Some reptiles, such as Western Fence Lizard, Blue-tailed Skink, Tree Frog, Kingsnake, Gopher Snake, Rattlesnake and Black Racer also live here. These are some of the animals that will be utilizing this water project.

Methods and Materials

The method employed here is manual labor, utilizing shovels and picks to trench a trough in the ground, to concentrate layers of seeps into this trough. (see photos #1a, 2a and 3a, taken prior to the start of the project)

The trough is 30" deep, 18" wide by 12" long. (see photos #1b, 2b and 3 b) The bottom of the trough is lined with 4" of concrete mixed by hand and poured to create a concave bowl. This concave bowl is 2" deep. (see photos 1e and 2c) This bowl is designed as an impenetratable barrier so that all water collected will have no other way to go except out the collection port.

In the center of this trough is a 2" pvc pipe that has been manually drilled out with 1/2" and 1/4" holes on the bottom and sides, spaced 3" apart the full length of the pipe, which is 10' long. (see photo #1d) At either the end or the center of the trough, the discharge port is damned so that water only runs out the discharge port. This pipe is elevated above the concrete barrier by 1". Gravel, that is 1" diameter, is then poured around the pipe and above it to a depth of 3". Above that, another layer of 2" to 3" diameter gravel is filled another 17". (photos 1e and 2d) Then, it is topped with 3" of dried fern fronds that were gathered in the area. (photos #1f and 2f) To seal it, the soil that was dug to make the trough covers over the fern fronds to a depth of 6". The remaining soil material is fanned out to give the area a finished look. (photo#2h)

The overflow will be reduced outside the dam from 2" pvc to 1" and carried by 1" polyethylene pipe buried underground to a point where there is a transition from polyethylene to galvanized pipe before it is exposed above ground to the storage tank. (photos #1f, 2c, 2d and 2e) The storage tank is a 100 gallon aqua pot that is 18" deep by 5' in diameter. This tank is placed on level ground and a rock cladding is mounded around it. This will help protect the tank and aid in making it available to small animals. (photos #1g, 1h, 2g, 2i, 3c and 3d) Also, two of the tanks were fitted with redwood shelves and ramps for easier access and egress.

Results
and
Discussion of Accomplishments during the Project

After installation was complete, the three tanks filled overnight. Numerous species have already been observed drinking from them. In one visit, a Roosevelt Elk drank down the level of one tank by several inches. A Black-tail Deer doe and her fawn were seen drinking as well as lizards, chipmunks, sparrows, Stellar jays and insects, such as yellow jackets, black hornets, ants and moths.

Now, water that was basically available only to insects as damp spots is now collected and available to all wildlife. Despite the sometimes hazardous nature of deep water, no animals have yet drowned. We look forward to spotting many more species taking advantage of the abundant water here.

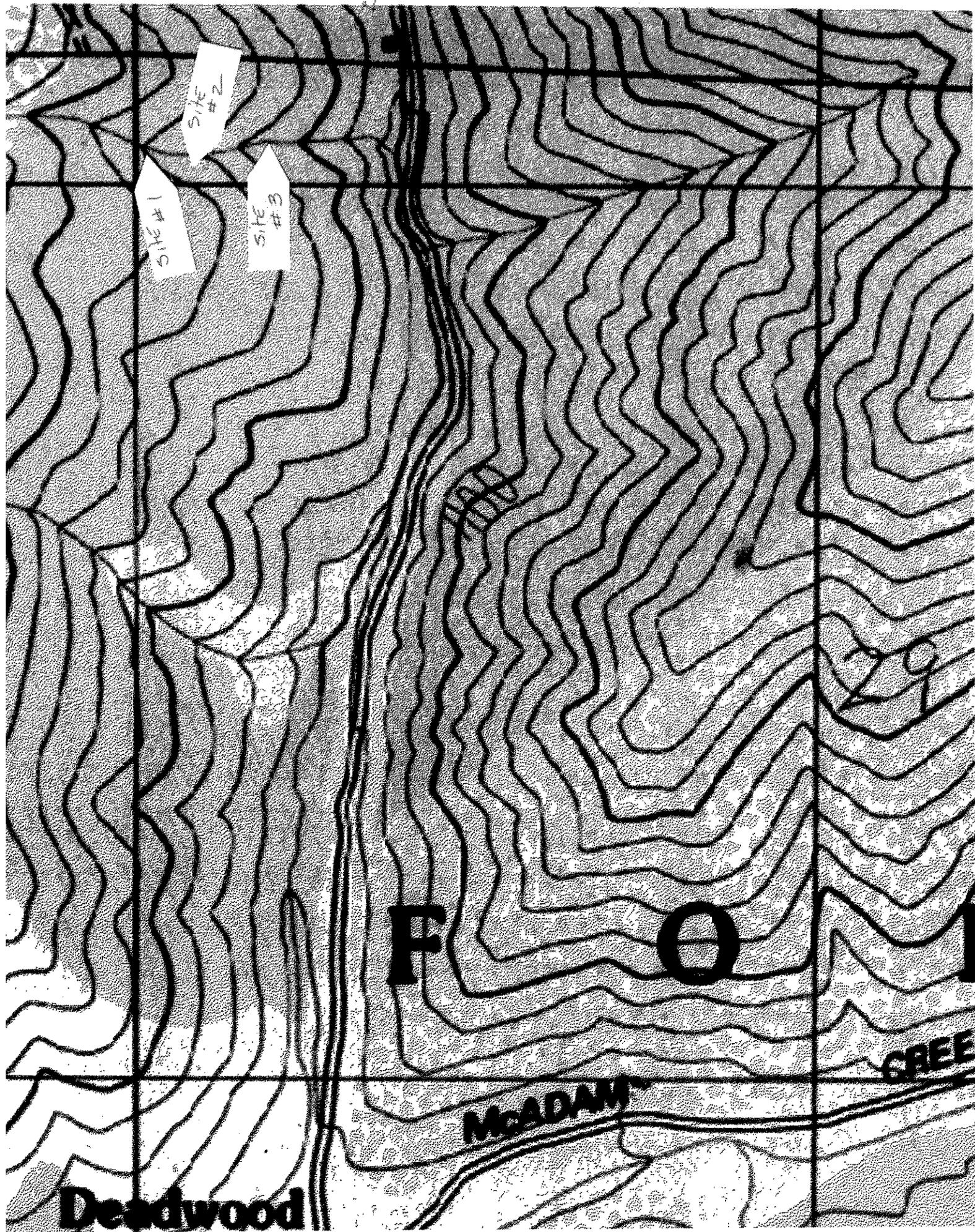
The only problem encountered was that the project was delayed by the Northern Spotted Owl's breeding season. During this time, the Department of Fish and Wildlife Service had strict rules forbidding any work on the project. Although the work was done with picks and shovels on the outskirts of the NSO boundary, it was considered to be disruptive to the owls.

Summary and Conclusions

Overall, it has been an interesting project. Even though it was labor intensive, the experience was well worth it. I found that using Redi-mix concrete made the work go faster than trying to gather native gravel and sand from the surrounding area to mix with Portland cement. During the winter months it was difficult excavating frozen ground, as was working in freezing temperatures with driving sleet. When the pipelines to the tanks were completed, the water flowed uninterruptedly, but being a dry year, I noticed that at the beginning of September, 2001, the uppermost pipeline stopped flowing and the water in the tank is slowly dissipating. The other two systems have slowed to fast drips. These tanks have stayed full. We look forward to seeing the wildlife that visit these watering sites and maintaining them for at least ten years to come.

Summary of Expenditures

1. tanks	\$320.97
2. concrete	\$ 48.94
3. 2" pvc pipe (sch 40)	\$ 17.18
4. pvc fittings (2" and 1")	\$ 32.40
5. poly pipe (1")	\$ 51.96
6. galvanized pipe (1")	\$ 41.18
7. wood (redwood)	\$ 12.60
8. miscellaneous (screws, nails, clamps)	<u>\$ 17.05</u>
 Total Materials	 \$542.28
 Labor (13 days @ 6 1/2 hours per day)	 84 1/2 hours
Travel to and from site	26 hours
Travel to purchase material	5 hours
 Total Hours	 115 1/2 hours



SITE #1

SITE #2

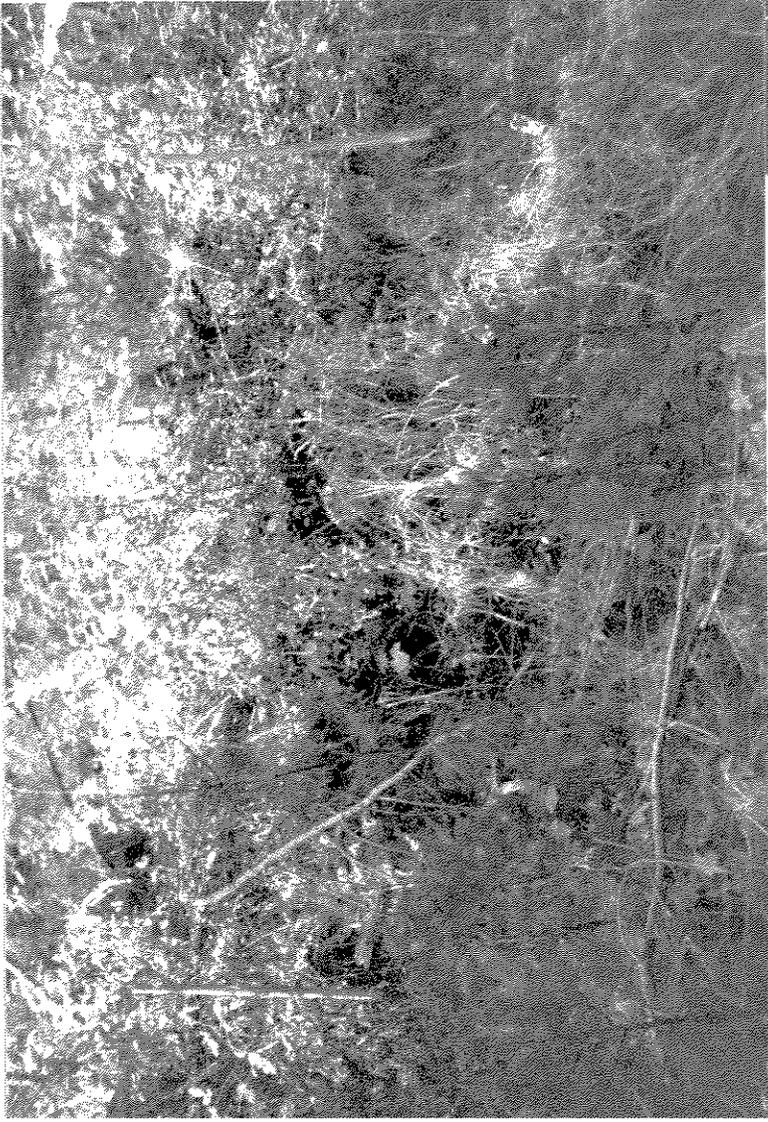
SITE #3

Deadwood

McADAM

FLO

CREE



Site 1

Prior to start of project

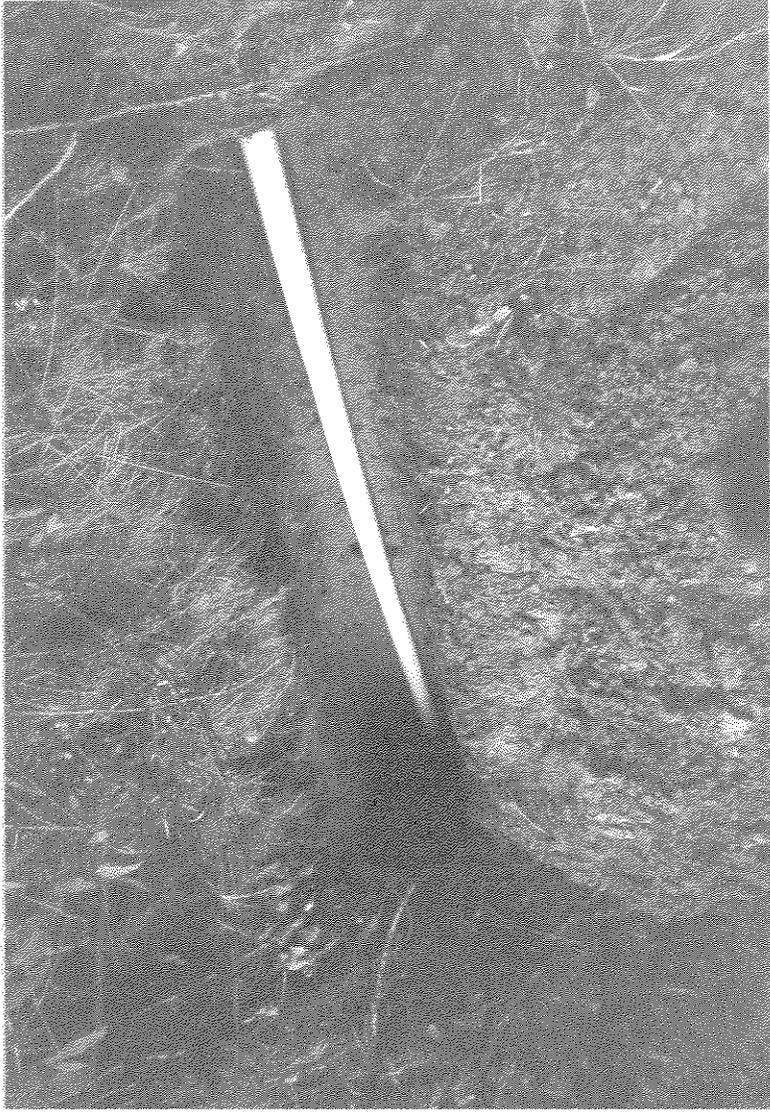
1a



Site 1

View of trenched trough

1b



Site 1

Depth and length of trench

IC



Site 1

Collection pipe in trench
with water seeping in

id

Site 1

Trench with concrete barrier,
pipe in center, and gravel

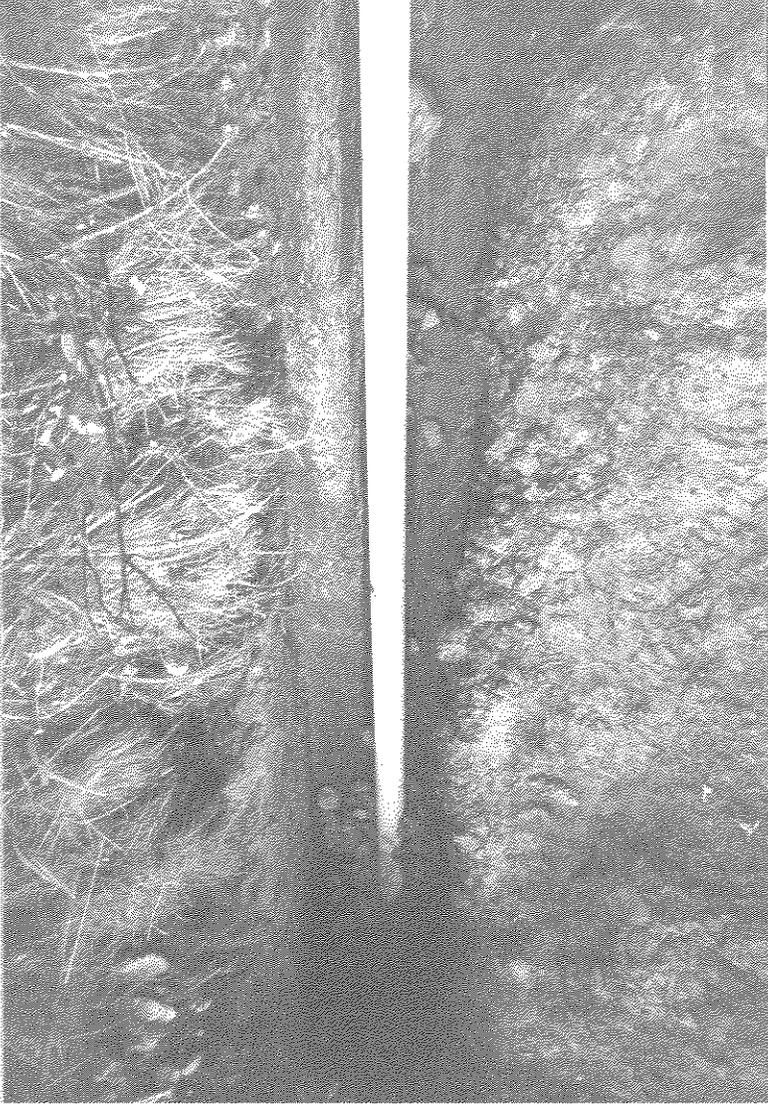
ie



Site 1

Trench filled with gravel
and fern fronds to keep soil out

if





Site 1

Tank placement with water

ig



Site 1

Filled tank with rock cladding

ih



Site 2

Before start of project

2a



Site 2

Depth of trench

2b

Site 2

Trench with concrete barrier,
pipe centered and dammed port

2c



Site 2

Trench with pipe, water and gravel

2d

Site 2

Trench with collection feed
and poly pipe

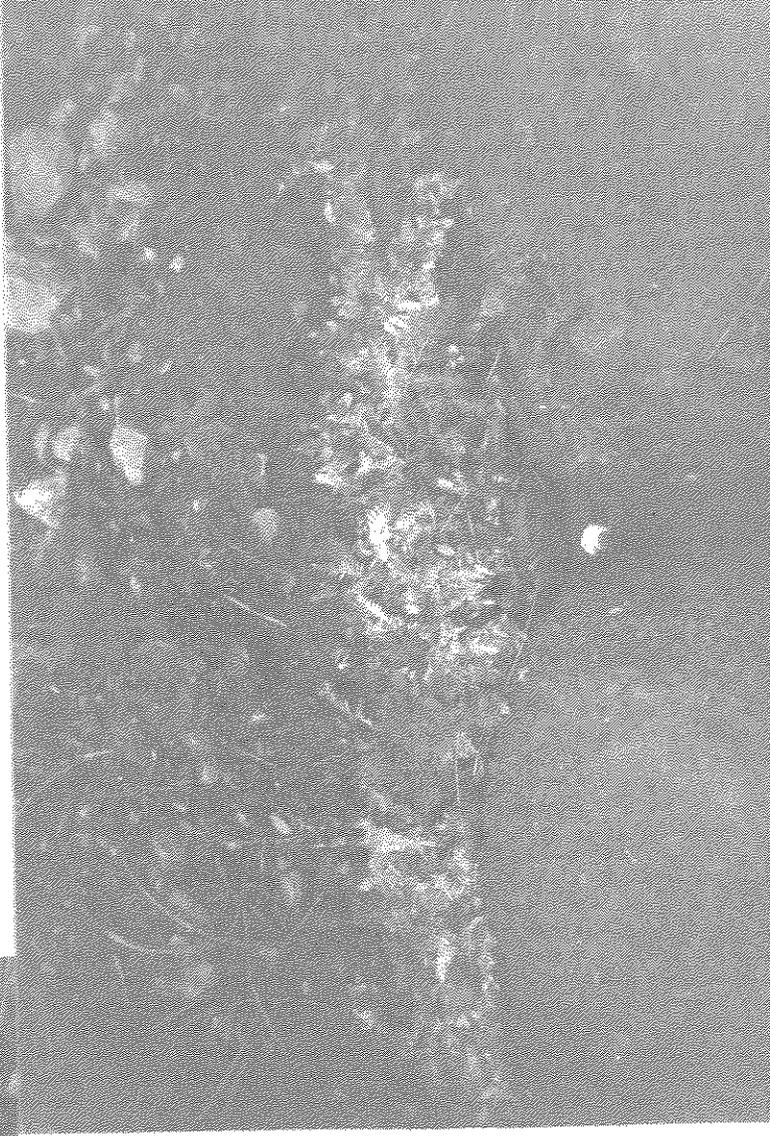
2e



Site 2

Trench with fern fronds
to prevent soil penetration

2f



Site 2

Tank placement
with water flowing into tank

2g



Site 2

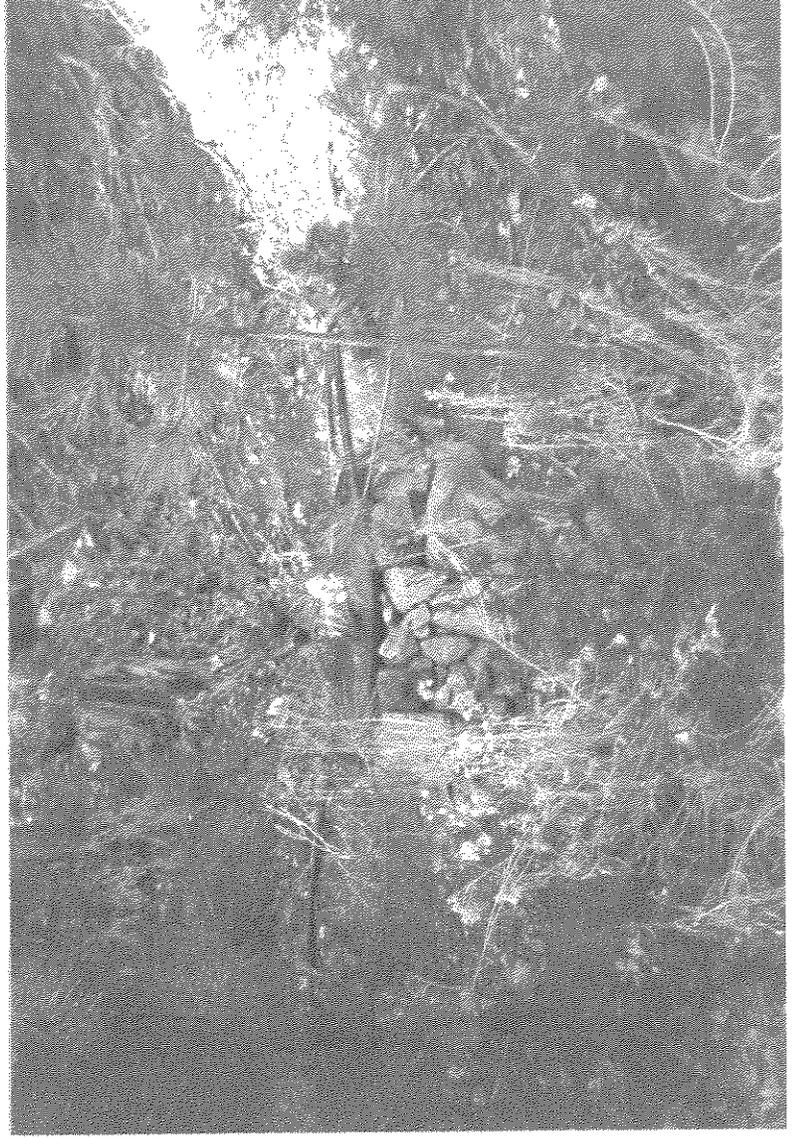
Trench filled over
covering fronds, and feathered soil

2h

Site 2

Tank placement with rock cladding,
filled with water

2i





Site 3
Prior to project
3a



Site 3
Depth of trench
3b



Site 3

Placement of tank

3c



Site 3

Placement of tank with rock cladding,
filled with water

3d