

Collier County Utilities

Application for Modification of Florida Department of Environmental Protection Class I Injection Well Operation Permit Collier North County Regional Water Treatment Plant Injection Well IW-1 (Permit No. 50581-387-UO)

August 2004

Prepared for:

Collier County Utilities
8005 Vanderbilt Beach Road Extension
Naples, FL 34120

Prepared by:

CDM
9311 College Parkway, Suite 1
Fort Myers, FL 33919

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1.0 INTRODUCTION

1.1 Background

This report details the drilling, construction, and testing of a Class I injection well, designated IW-2, at the Collier County Utilities Division's North County Regional Water Treatment Plant (NCRWTP). The NCRWTP currently has a capacity to treat 12 million gallons of water per day (MGD) using softening membranes. The plant will soon be expanded to a capacity of 20 MGD with the addition of low pressure reverse osmosis membranes. Treatment of 12 MGD by the softening membranes would produce approximately 1.2 MGD of concentrate. At build-out to 20 MGD capacity, the NCRWTP will generate a maximum concentrate stream of between 4.75 and 8.57 MGD, depending on the type of treatment process being used.

The completed concentrate disposal system consists of two (2) injection wells, (IW-1 and IW-2), and a dual zone monitor well. Underground Injection Control (UIC) rules classify membrane process concentrate as an industrial waste, which thereby requires the disposal well to be of the tubing and packer design. Injection well IW-1 and the dual zone monitor well were constructed from June 1992 to March 1993. The design of injection well IW-2 is similar to the successful design of well IW-1. Injection well IW-1 has a total depth of 3,210 feet below land surface (ft bls), with the base of the 20-inch diameter casing located at 2,498 ft bls. The bottom of the 16-inch diameter injection tubing is positioned at 2,460 ft bls. The injection zone, commonly referred to in south Florida as the "Boulder Zone", consists of hydraulically connected, highly fractured and cavernous dolomites that are part of the lower and middle Oldsmar Formation. The Boulder Zone in the NCRWTP area extends from approximately 2,404 ft bls to 3,330 ft bls. The dual zone monitor well is located approximately midway between injection wells IW-1 and IW-2 (140 feet from each well), and monitors a shallow zone occurring between 900 and 995 ft bls and a deeper zone between 1,815 and 1,930 ft bls.

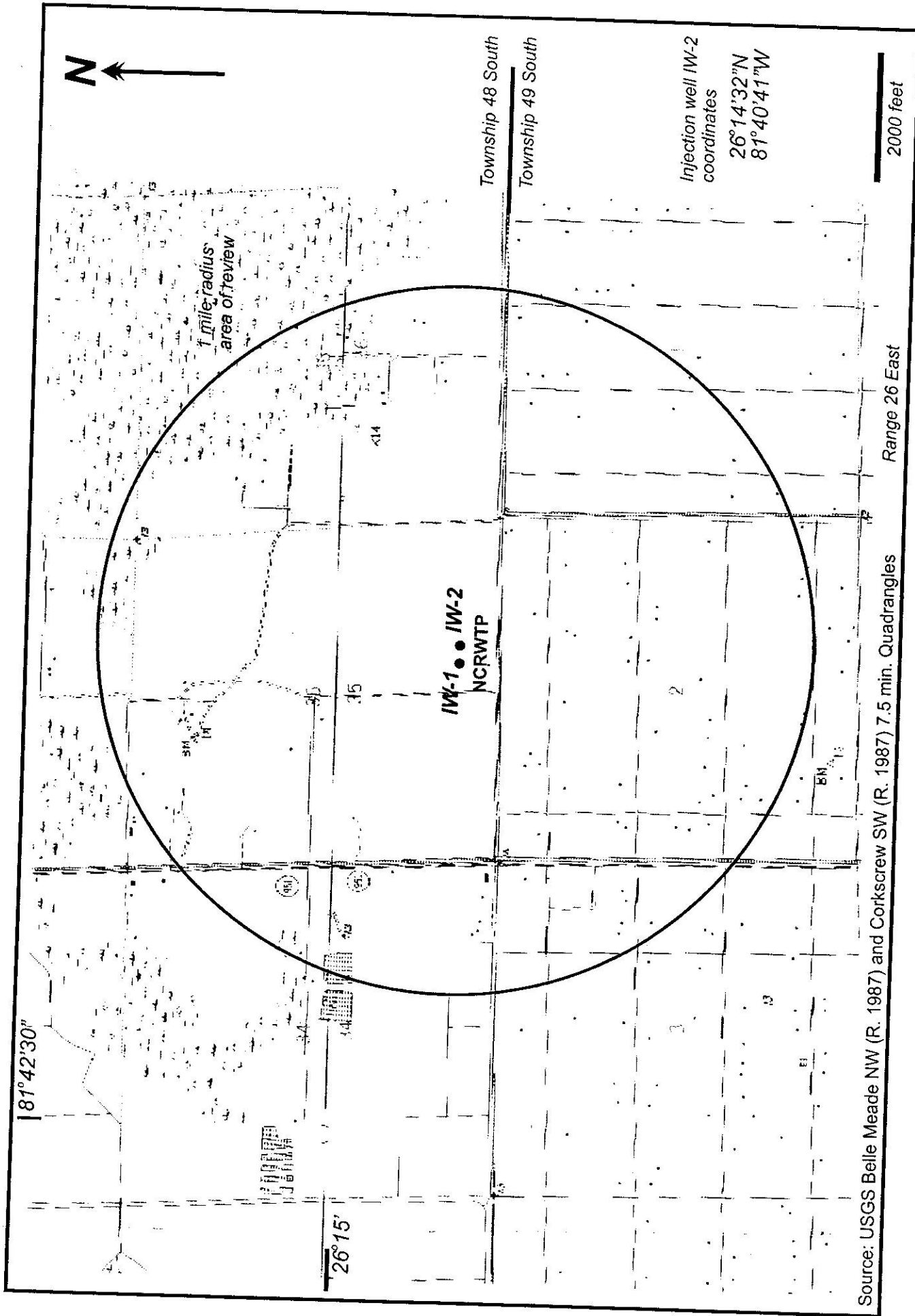
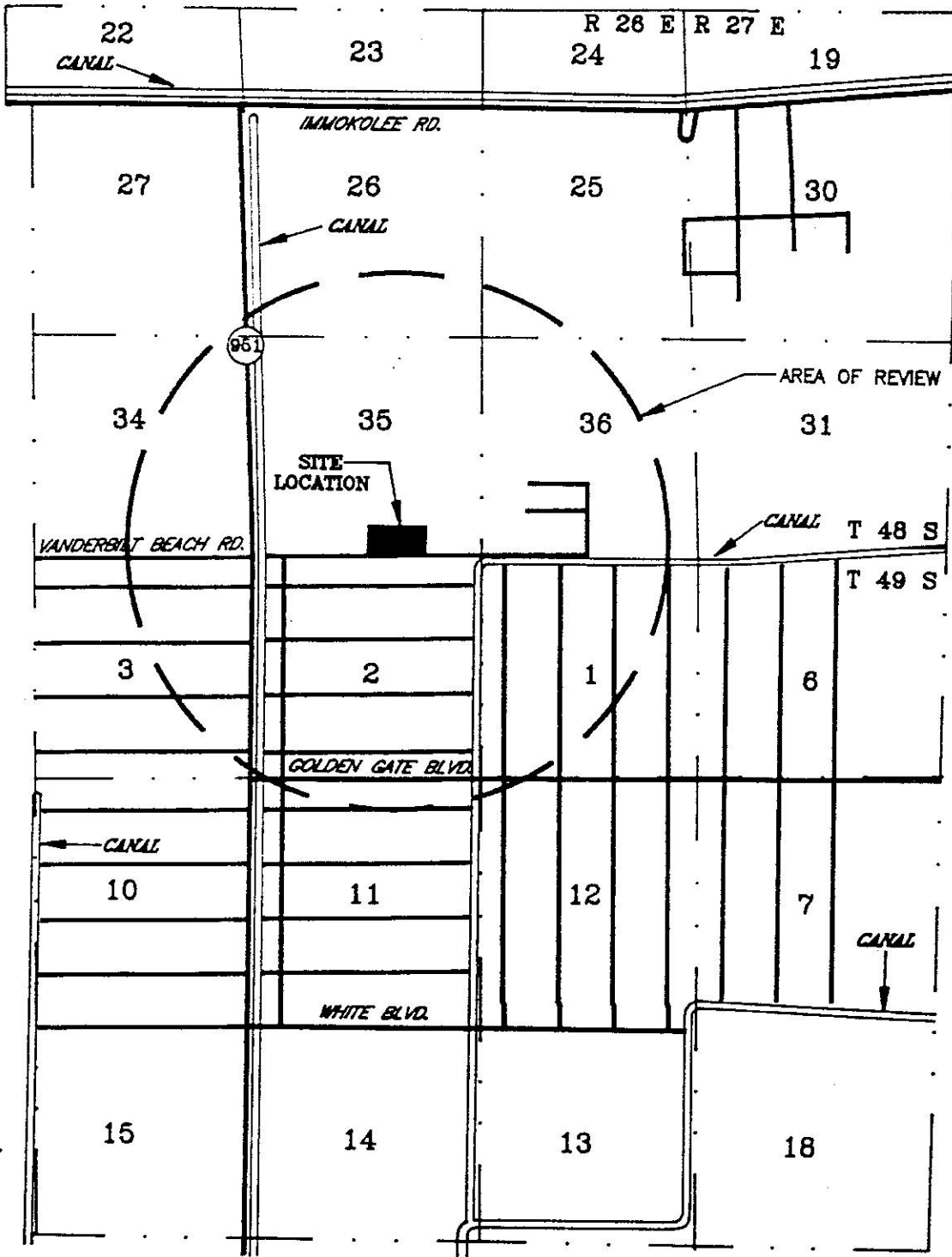


Figure 1
Collier NCRWTP Injection well IW-2
 Topographic map





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DRN. BY: CAM DWG NO. A-9342BASE-1 DATE: 3/15/93
PROJECT NAME: COLLIER COUNTY - IW-1 NUMBER: 01-09342.00

**MISSIMER
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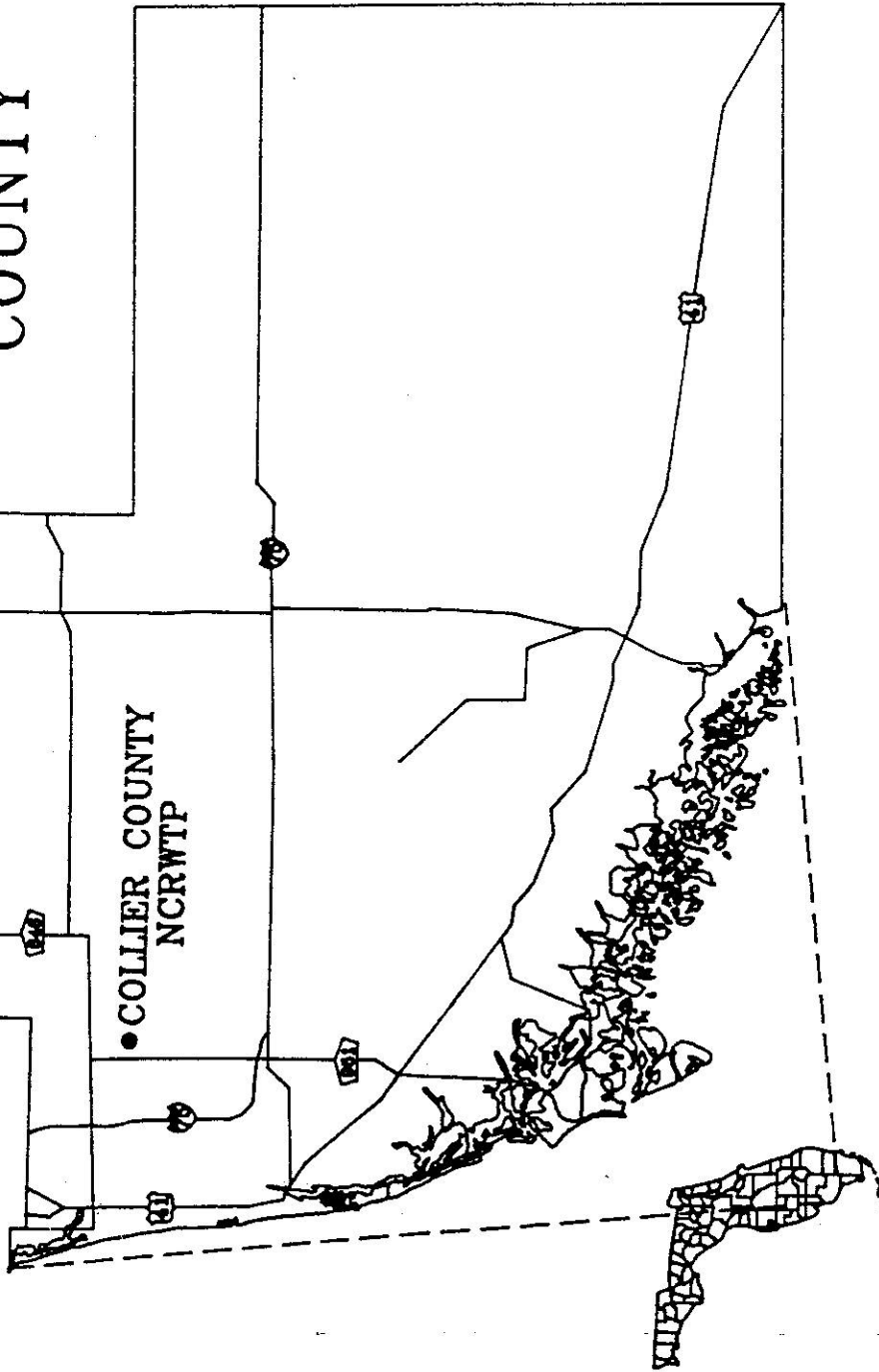
FIGURE 2. MAP SHOWING SITE LOCATION AND AREA OF REVIEW.
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Legend

COLLIER COUNTY - COLLIER COUNTY UTILITIES
NCRWTP
TEST INJECTION WELL

COLLIER
COUNTY

● COLLIER COUNTY
NCRWTP



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ENVIRONMENTAL AND GROUNDWATER SERVICES

Missimer
&
Associates, Inc.

DRN. BY: CAM DWG NO. A-019342FA-2 DATE: 4/14/93

PROJECT NAME: COLLIER COUNTY - IW-1 PROJECT NUMBER: 01-09342.00

FIGURE 1. COLLIER COUNTY UTILITIES NCRWTP LOCATION MAP.

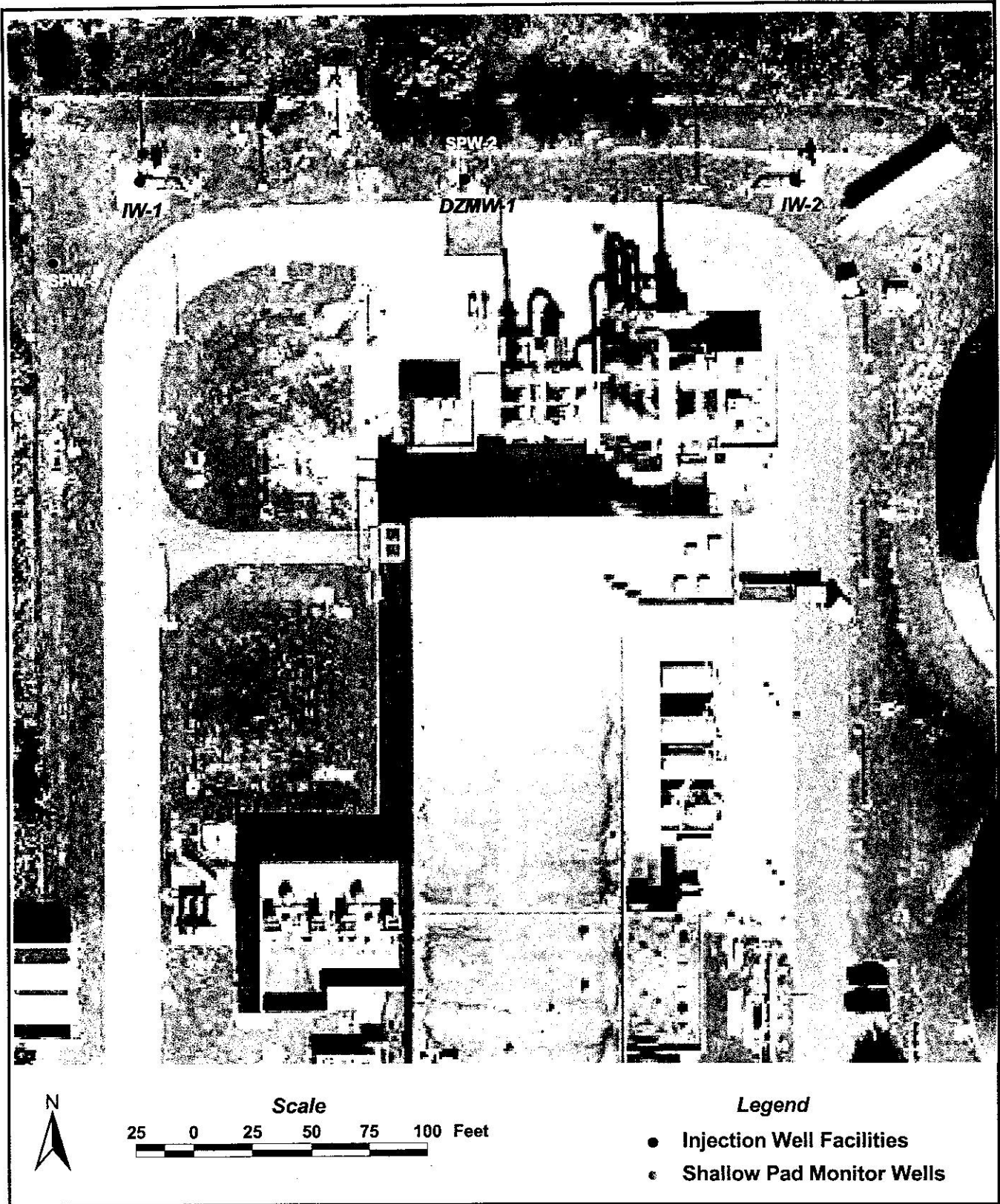


Figure 1. Project Site Aerial Showing Location of Injection Facilities and Shallow Pad Wells.

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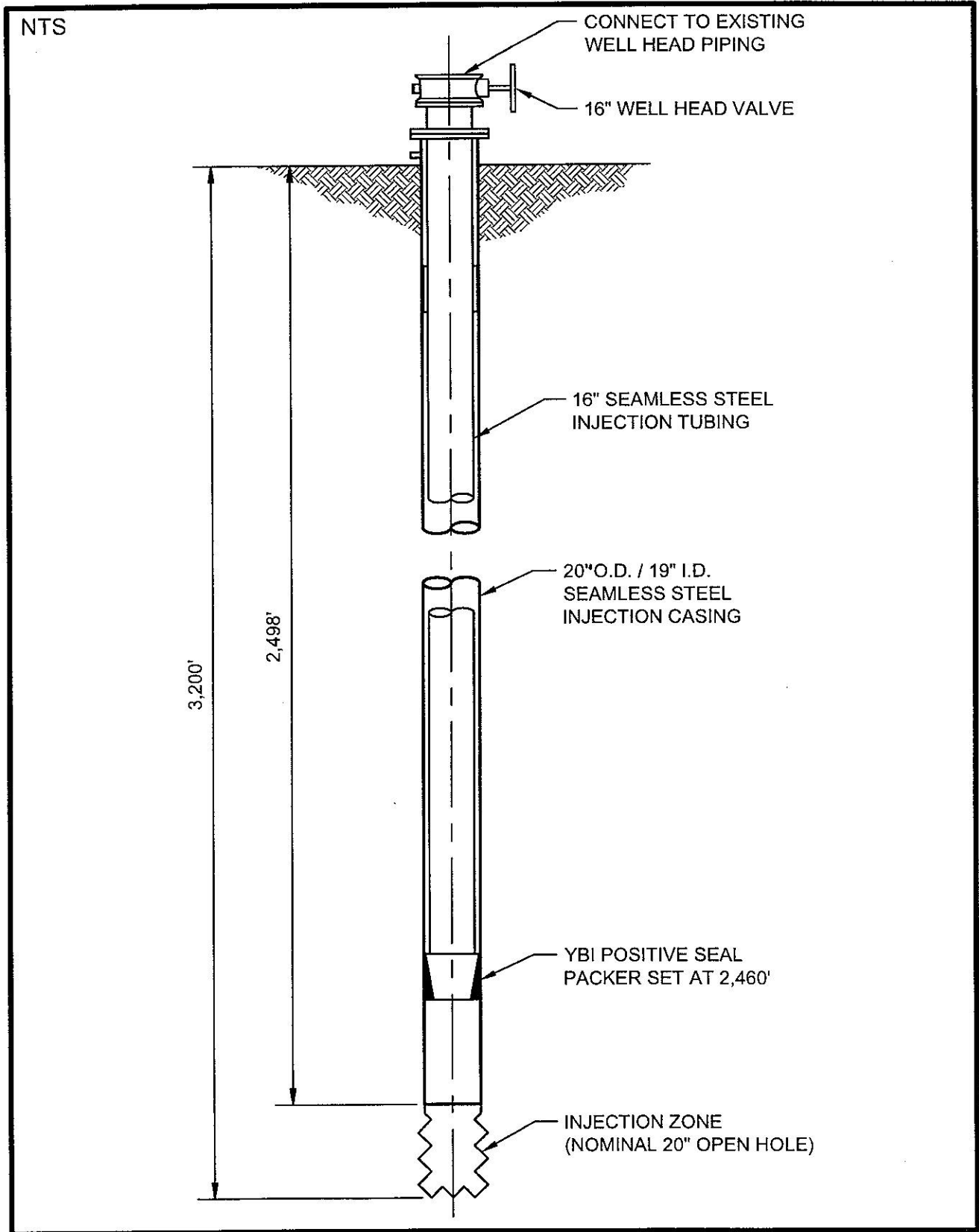


Figure 3
Well Schematic of NCRWTP IW-2 Following Modification

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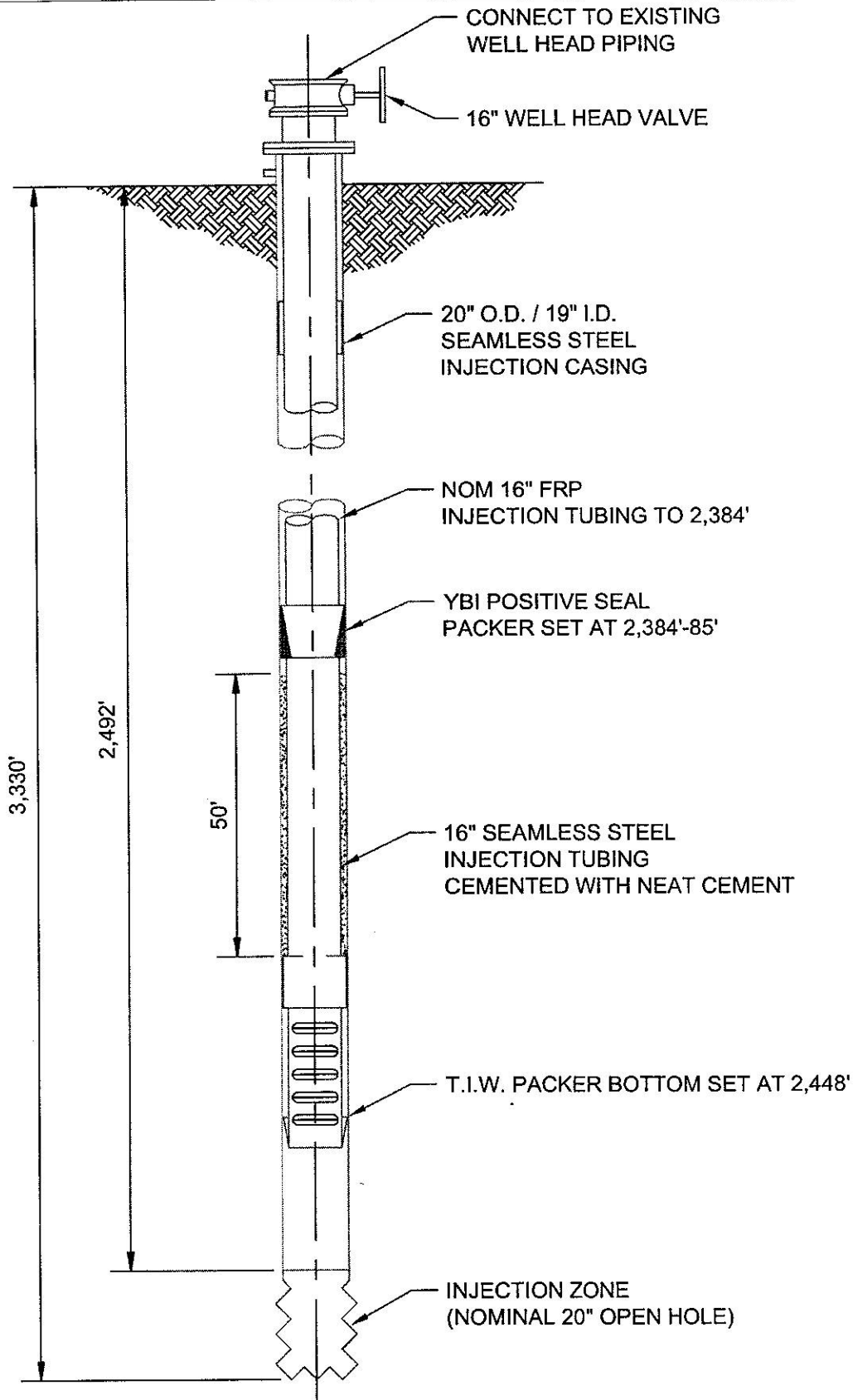


Figure 2
Well Schematic of NCRWTP IW-1