

**TALKING ROCK RANCH
PHASE 9**

**SEWER SYSTEM
DESIGN REPORT**

Prepared for:

Harvard Investments
7600 East Doubletree Ranch Road, Suite 220
Scottsdale, Arizona 85258
Job # 04257

Prepared By:

Shephard-Wesnitzer, Inc.
221 North Marina Street, Suite 102
Prescott, Arizona 86301
Phone: (928) 541-0443

September 2004

TABLE OF CONTENTS

INTRODUCTION	3
SYSTEM ANALYSIS	3
CONCLUSIONS.....	5
REFERENCES	6

APPENDICES

Appendix A – Site Map

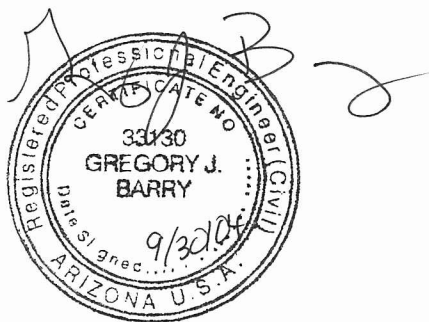
Appendix B – Pressure Sewer Analysis & Modeling Results

Appendix C – Pressure Sewer Layout and Zones

Appendix D – Pump Details

Appendix E – Lift Station and Force Main Details

Appendix F – Sewer Service Agreement



INTRODUCTION

General Description

The Talking Rock Ranch Subdivision consists of residential and recreational facilities. This planned area development (PAD) was approved by the Yavapai County Board of Supervisors on October 6, 1999 and Amended on May 8, 2000. It is being developed in multiple phases. This report is provided for Phase 9.

Talking Rock Ranch encompasses about 3500 acres of undeveloped and newly developed land that slopes towards Inscription Canyon. The site, divided by Williamson Valley Road, consists of forested areas with slopes ranging from gentle to near vertical.

Project Location

The project site (Phase 9) is located in portions of Northeast $\frac{1}{4}$ Section 22 and South $\frac{1}{2}$ Section 15, Township 16 North, Range 3 West, Gila and Salt River Base and Meridian, Yavapai County, Arizona. The project is generally located in the Southern portion of Williamson Valley and lies to the east of Williamson Valley Road. See Appendix "A" for site map.

The site is surrounded by unsubdivided land of Talking Rock to the north, golf course tracts and Phase 3 of Talking Rock to the west, Phases 2 and 8 of Talking Rock to the south, and residential zoning to the east. Surrounding land use is single family dwellings with $\frac{1}{2}$ to 5 acre lots. Average lot density within the TRR community is 2.3 acres.

SYSTEM ANALYSIS

The manufacturer of choice for the pressure sewer system is Model OGP-AU, submersible grinder pumps by Crane/Barnes Pumps. These systems use a traditional simplex pump within a fiberglass basin at each residence. Data sheets for the proposed pump configuration are included in Appendix D. The impact of this type of system on the wastewater treatment plant will be minimal and consistent with other systems designed for previous phases of Talking Rock Ranch.

The pressure sewer piping analysis was performed utilizing spreadsheet and EPANet hydraulic modeling software. The spreadsheet computed line velocities and head losses in a tabular format. Several assumptions and system parameters were utilized in the analysis as shown below. The system was broken up into zones as shown in Appendix C.