

# *Shephard - Wesnitzer, Inc.*

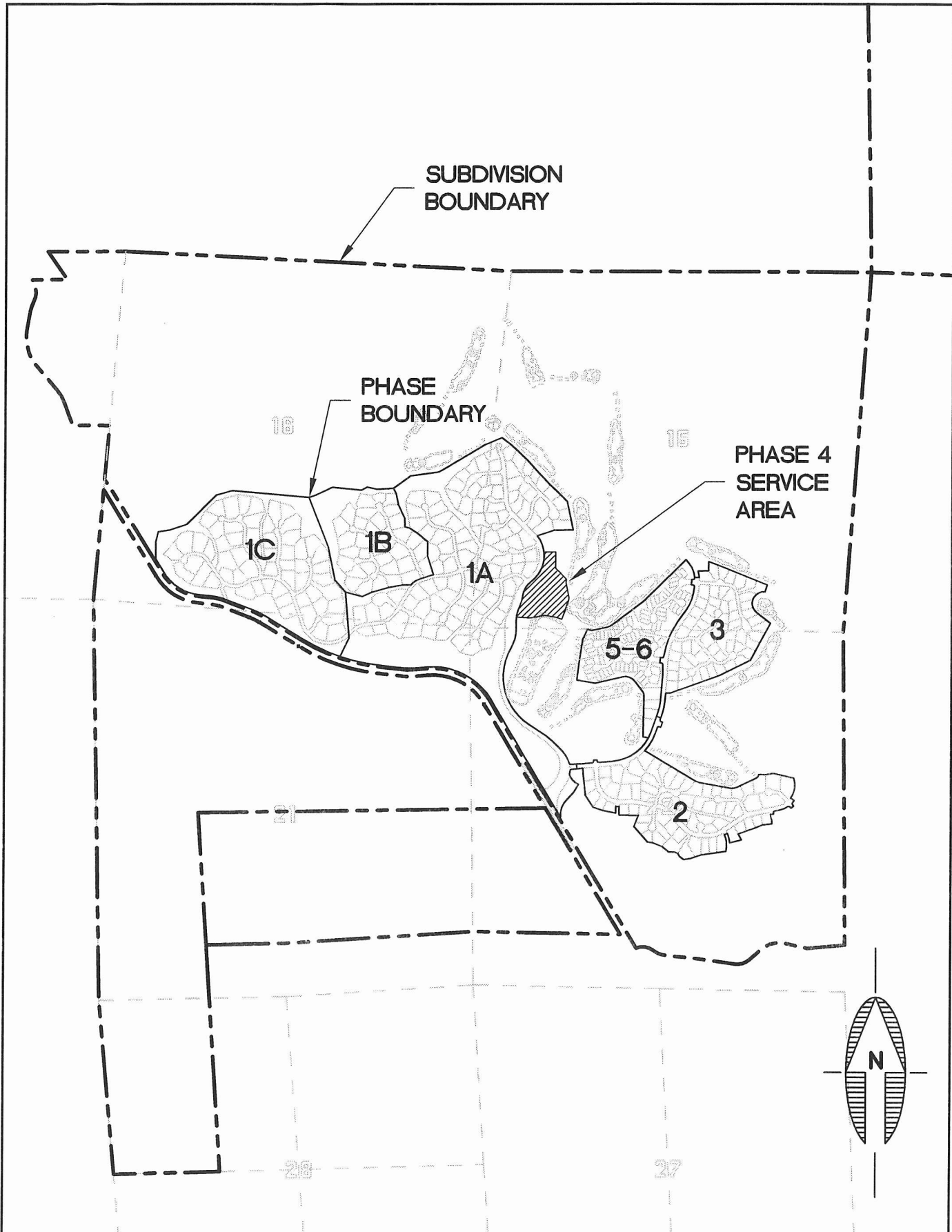
115 E. Goodwin St., Suite G.  
Prescott, AZ 86303  
928-541-0443 Fax: 928-541-1075

## **DESIGN REPORT**

**Date:** August 29, 2002  
**Prepared By:** Stephen F. Herman, P.E.  
**Subject:** **Talking Rock Ranch**  
**Phase 4A Sewer Collection System**  
**Project Number: 02137**



1. This report examines the design requirements for the Sewer Collection System for Phase 4A of Talking Rock Ranch PAD in Williamson Valley, Arizona. Since Phase 4A is attached to the existing Phase 1 Sewer Collection System, this report will be a supplement to the previously approved *Sewer Collection System Design Memorandum, Talking Rock Ranch, Phase 1, April, 2001*.
2. Phase 4A consists of ten (10) lots located West of Phase 1. A Service Area location map is attached.
3. Phase 4A shall consist of low pressure sewers with a grinder pump at each dwelling that will pump up to an existing Phase 1 gravity sewer line located in Talking Rock Ranch Road. The LPS piping layout is shown on the attached collection system layout plan.
4. System analysis was performed using the computer design program developed by Environment One Corporation of Niskayuna, New York. The design criteria used were the same as for the Phase 1 Report – except that minimum pipe velocity is 3.0 ft./sec., in accordance with the most recent ADEQ requirements. The attached spreadsheets detail the results of the analysis.
5. The existing gravity sewer, flowing full, has a capacity of 364 GPM which is greater than the total of the Phase 1 flow (132 GPM, Peak) plus the additional flow from Phase 4A (44 GPM, Peak).



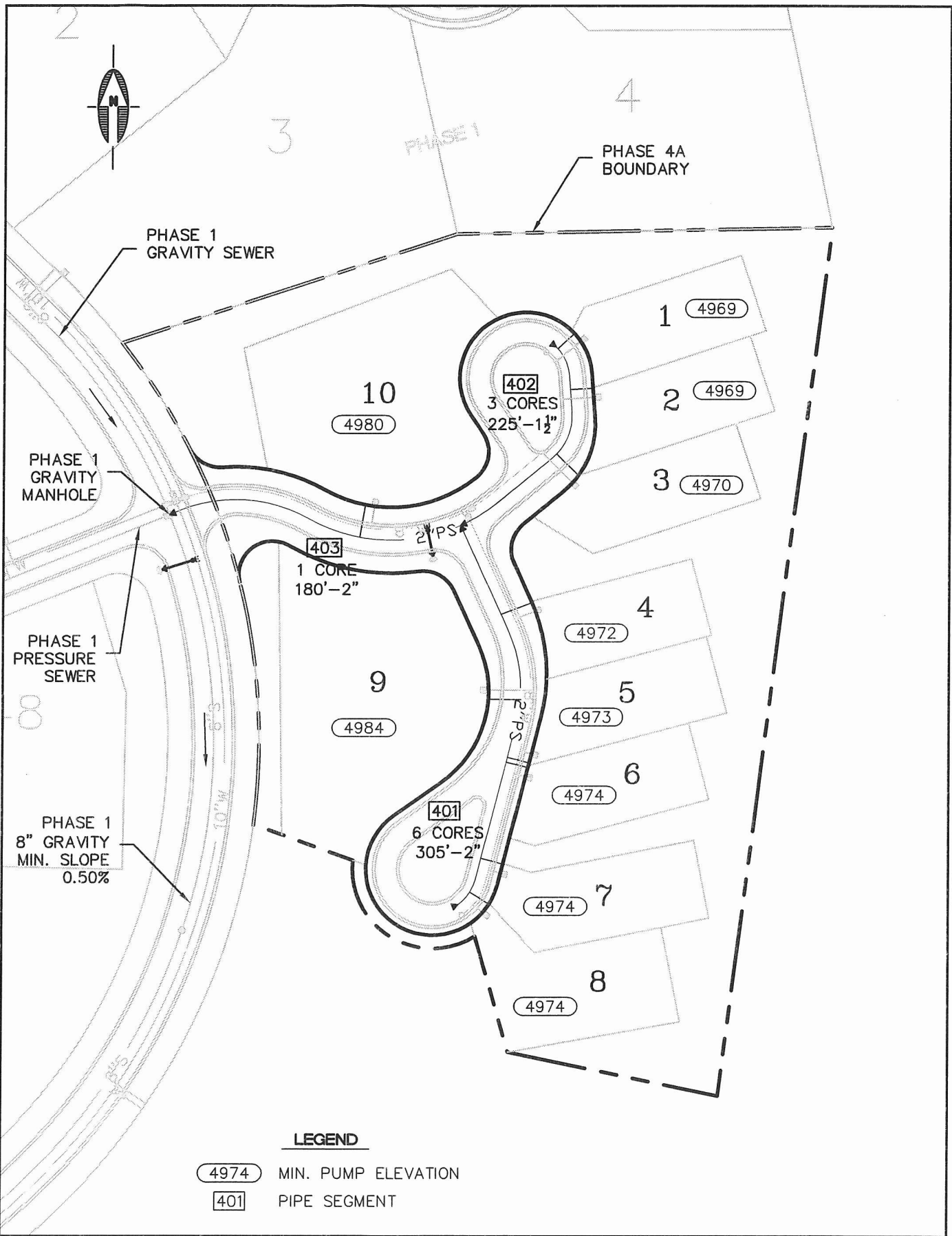
**SHEPHARD - WESNITZER, INC.**  
 CIVIL ENGINEERING AND SURVEYING  
 1146 W. HWY 89A SUITE B, SEDONA, AZ 86340  
 (928) 282-1061

JOB NO:	02137
DATE:	AUG 2002
SCALE:	1"=2000'
DRAWN:	DMB
DESIGN:	SFH
CHECKED:	SFH

TALKING ROCK RANCH-PHASE 4  
 YAVAPAI COUNTY ARIZONA  
**SEWER SYSTEM  
 DESIGN REPORT  
 SERVICE AREA**

SHEET  
**F.1**  
 OF

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**LEGEND**

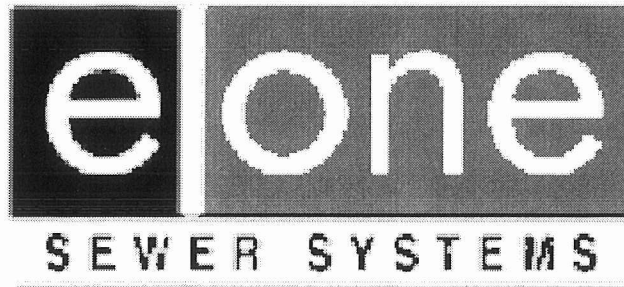
- 4974 MIN. PUMP ELEVATION
- 401 PIPE SEGMENT

**SHEPHARD - WESNITZER, INC.**  
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 115 E. GOODWIN ST., SUITE G  
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JOB NO:	02137
DATE:	AUG 2002
SCALE:	1" = 100'
DRAWN:	BBH
DESIGN:	SFH
CHECKED:	SFH

TALKING ROCK PHASE 4A	YAVAPAI COUNTY ARIZONA
<b>LOW PRESSURE SEWER SYSTEM LAYOUT</b>	

SHEET <b>1</b> OF 1
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Environment One Corporation

**Pressure Sewer Preliminary  
Cost and Design Analysis  
For  
Talking Rock Ranch Phase 4A**

**Prepared For:**

**Tel:**

**Fax:**

**Prepared By:**

**August 29, 2002**

Prepared By:

PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS  
Talking Rock Ranch Phase 4A

August 29, 2002

Zone Number	Pumps to Zone	Number of Cores in Zone	Accum Cores in Zone	Gal/Day per Core	Max Flow per Core	Max Sim Ops	Max Flow (GPM)	Pipe Size (Inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100ft)	Friction Loss this Zone	Accumulated Friction Loss (Feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (Feet)	Total Dynamic Head (ft)	
its spreadsheet was calculated using pipe diameters for: SDR 11 HDPE																		
401.00	403.00	6	6	235.00	11.00	3	33.00	2.00	3.57	305.00	2.52	7.68	15.41	5,000.00	4,972.00	28.00	43.41	
402.00	403.00	3	3	235.00	11.00	2	22.00	1.50	3.72	225.00	3.53	7.93	15.66	5,000.00	4,969.00	31.00	46.66	
403.00	403.00	1	10	235.00	11.00	4	44.00	2.00	4.76	180.00	4.29	7.73	7.73	5,000.00	4,980.00	20.00	27.73	

Prepared By:

PRELIMINARY PRESSURE SEWER - ACCUMULATED RETENTION TIME (HR)  
Talking Rock Ranch Phase 4A

August 29, 2002

Zone Number	Pumps to Zone	Accumulated Total of Cores this Zone	Existing Pipe Size	Gallons per 100 Lineal Feet	Length of Zone	Capacity of Zone	Average Daily Flow	Average Fluid Changes per Day	Average Retention Time (Hr)	Accumulated Retention Time (Hr)
this spreadsheet was calculated using pipe diameters for: SDR11HDPE										
401.00	403.00	6	2.00	15.40	305.00	46.98	1,410	30.01	0.80	1.08
402.00	403.00	3	1.50	9.85	225.00	22.17	705	31.80	0.75	1.04
403.00	403.00	10	2.00	15.40	180.00	27.73	2,350	84.76	0.28	0.28

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One