
SKYE AREA PLAN

PRESSURIZED IRRIGATION SECTION

(HAL Project No.: 432.07.300)



July 2023

INTRODUCTION

The pressurized irrigation (PI) element of the Skye Area development includes all the infrastructure needed to provide a reliable supply of irrigation water to a total of 339 irrigated acres. This includes four pressure zones located adjacent to the Texas Instruments (formerly Micron) facility in Lehi, Utah. 218 irrigated acres are located in the lower three pressure zones and 122 irrigated acres are in the higher pressure zone.

DR Horton is proposing to establish HOA requirements restricting the amount of sod allowed and reduce the water required for outdoor irrigation.

The system includes a well, two storage reservoirs, two pump stations, pipelines, and pressure reducing stations (see Figures 1 and 2.1). In addition to irrigation water, the system will provide fire protection for residential units within the development.

Water Source

The Skye development has a PI water source demand requirement of 1,187 gallons per minute (gpm). Of this capacity, 759 gpm is in the three lower pressure zones and 427 gpm is in the upper pressure zone. Lehi City is requiring the developer to construct a new well at approximately 1500 North and 1200 East (see Figure 2.1).

Pump Stations

A new 1,187 gpm pump station will be constructed near the existing Lower Hills reservoir to provide PI water to the development and provide redundancy to other areas of the City (see Figure 1). An additional outlet with an appropriately sized screen out of the Low Hills reservoir will be required to feed the pump station.

A new 427 gpm pump station will be constructed near the proposed Upper Maple Hollow reservoir to provide PI water to the upper pressure zone (see Figure 1).

Storage Reservoirs

A new 1.3-million-gallon (4.0 acre-feet) water storage reservoir will be constructed to serve the three lower pressure zones. The elevation of the overflow will match the overflow elevation of the existing Seasons PI Reservoir, which is located west of the Skye area.

A new 800,000-gallon water storage reservoir will be constructed to serve the upper pressure zone.

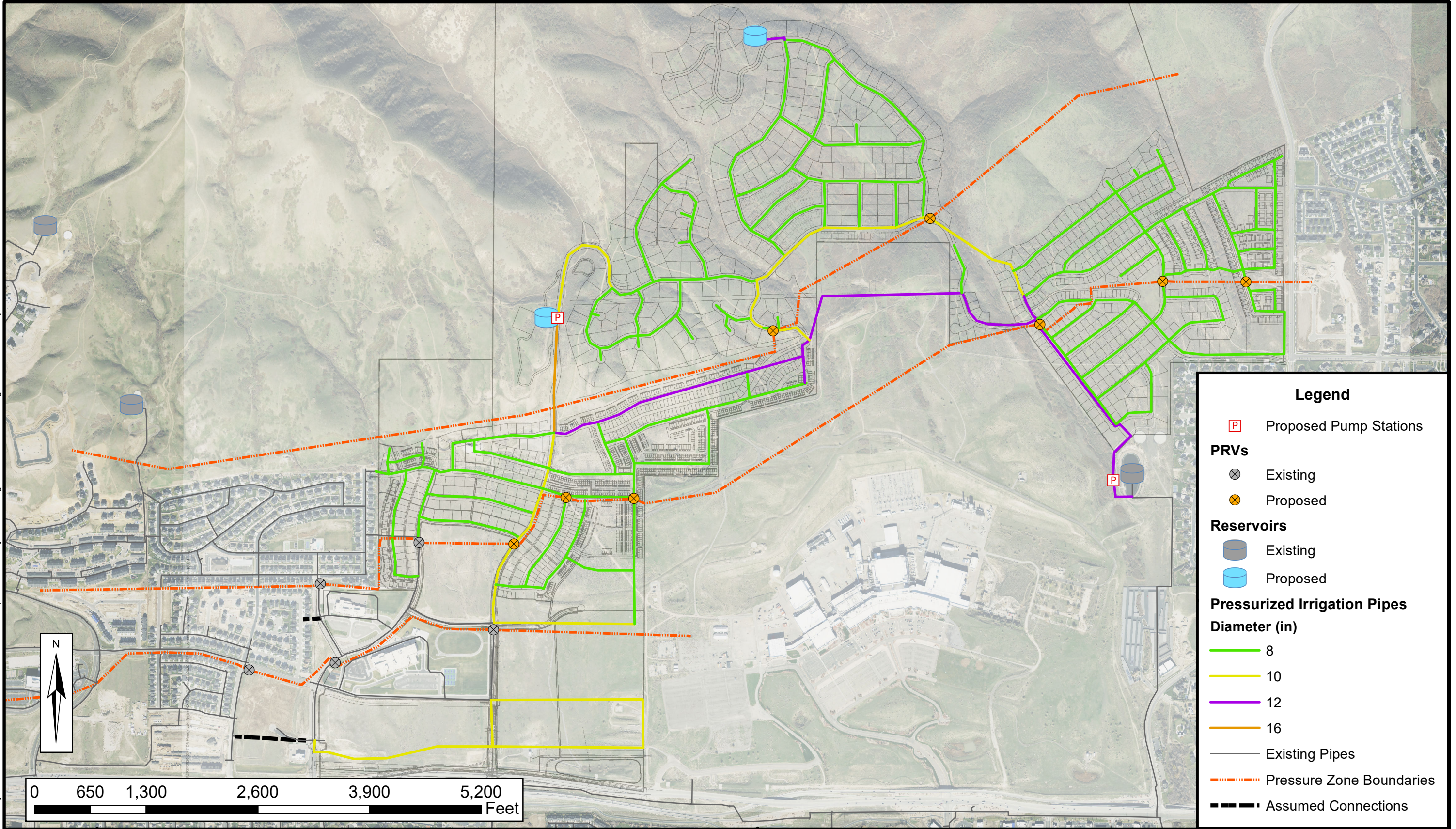
Pressure Reducing Stations

For the three lower pressure zones the plan includes six new pressure reducing stations (PRVs) and 3 existing PRVs that will provide redundancy to the pressure zones. For long term redundancy and efficiency, it is recommended that all pressure zones be connected to existing pressure zones and the PRVs be set to only open in an emergency.

For the upper pressure zone, the plan includes two new PRVs that can be used for redundancy and allow water to flow from the upper to the lower pressure zones if needed in an emergency.

The pressure reducing stations will use a 20-foot by 18-foot buried concrete vault that will

Date: 6/28/2023
Document Path: H:\Projects\432 - DR Horton\07.300 - Inverness Development Water System\GIS\Figure 1 - Pressurized Irrigation Distribution System.mxd



Legend

- P Proposed Pump Stations
- PRVs**
 - ⊗ Existing
 - ⊗ Proposed
- Reservoirs**
 - Existing
 - Proposed
- Pressurized Irrigation Pipes**
Diameter (in)
 - 8
 - 10
 - 12
 - 16
- Existing Pipes
- Pressure Zone Boundaries
- Assumed Connections



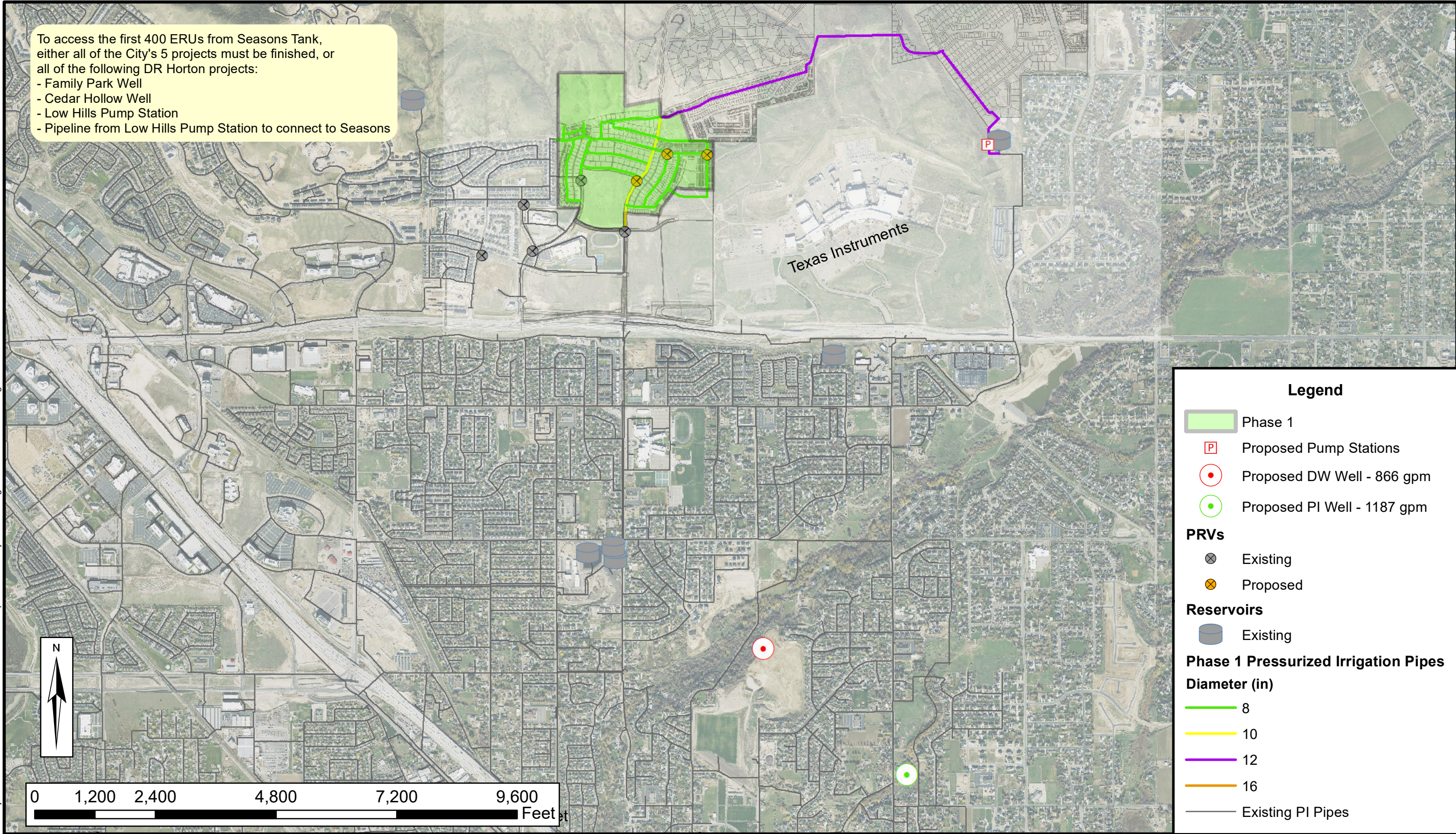
**DR HORTON
SKYE AND INVERNESS DEVELOPMENT**

**PRESSURIZED IRRIGATION
DISTRIBUTION SYSTEM**

**FIGURE
1**

To access the first 400 ERUs from Seasons Tank, either all of the City's 5 projects must be finished, or all of the following DR Horton projects:

- Family Park Well
- Cedar Hollow Well
- Low Hills Pump Station
- Pipeline from Low Hills Pump Station to connect to Seasons



Legend

- Phase 1
- Proposed Pump Stations
- Proposed DW Well - 866 gpm
- Proposed PI Well - 1187 gpm

PRVs

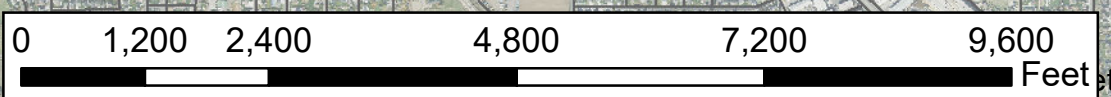
- Existing
- Proposed

Reservoirs

- Existing

Phase 1 Pressurized Irrigation Pipes Diameter (in)

- 8
- 10
- 12
- 16
- Existing PI Pipes



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SKYE AREA PLAN**

**PRESSURIZED IRRIGATION
DR HORTON INFRASTRUCTURE REQUIRED FOR PHASE 1 (400 ERUs)**

**FIGURE
2.1**

contain valves for both the culinary water system and the PI system. The vaults will be constructed outside the street right-of-way in a public utility easement according to Lehi City standards.

Distribution Pipelines

Distribution pipelines ranging from 8-inches to 16-inches in diameter will provide for distribution of PI water throughout the Skye development in accordance with Lehi City pressure requirements (see Figure 1). Distribution pipelines 12-inches in diameter and smaller will use PVC C-900 pipe materials for all pipelines within Lehi City street rights-of-way. Pipelines 16-inches in diameter and pipelines constructed within easements on privately-owned land will use Class 350 Ductile Iron Pipe.

Recommended System Enhancements

Even though not required, there are recommended connections made with the Skye development to the west with the existing PI water system (see Figure 1). Making pressure zones compatible and combining them with these connections would allow for more redundancy, reduced pumping and reduced energy demand, and provide easier operation across the pressure zones.

Project Phasing

The long-term plan for the Skye development includes four potential phases as shown in Figures 2.1, 2.2, and 2.3.

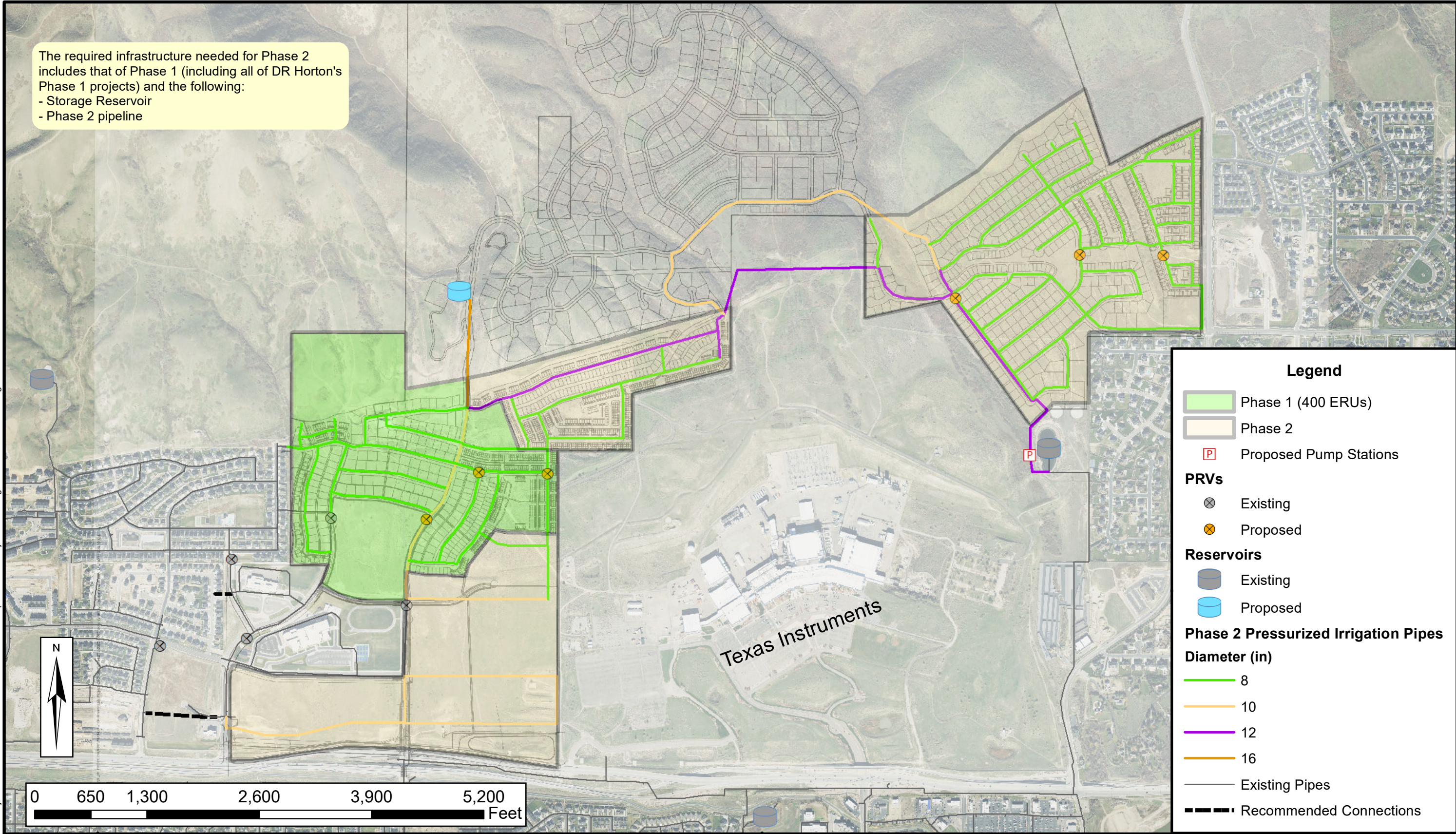
Phase 1 represents the area to be constructed first (see Figure 2.1). This phase includes 56 irrigated acres and relies on borrowing storage capacity in the Seasons PI reservoir for 56 irrigated acres. To access this storage capacity, the City’s five projects must be completed **or** all of DR Horton’s projects listed in Table 1 must be finished.

**Table 1
Projects Required to be Completed Before Accessing 56 Irrigated Acres (400 ERUs)
from Seasons Tank**

Entity	Required Infrastructure
Lehi City	Violetto PI Reservoir
	Violetto PI Pump Station
	Flight Park Reservoir (PI)
	Point of the Mountain Well (PI)
	Sand Pit Well (DW)
OR	
DR Horton	Family Park Well (2200 N 600 E) (DW)
	Cedar Hollow Well (1500 N 1200 E) (PI)
	Low Hills Pump Station (DW & PI)
	Pipelines from Low Hills Pump Station to connect to Seasons Tank

The required infrastructure needed for Phase 2 includes that of Phase 1 (including all of DR Horton's Phase 1 projects) and the following:

- Storage Reservoir
- Phase 2 pipeline



Legend

- Phase 1 (400 ERUs)
- Phase 2
- Proposed Pump Stations

PRVs

- Existing
- Proposed

Reservoirs

- Existing
- Proposed

Phase 2 Pressurized Irrigation Pipes Diameter (in)

- 8
- 10
- 12
- 16

Existing Pipes

Recommended Connections

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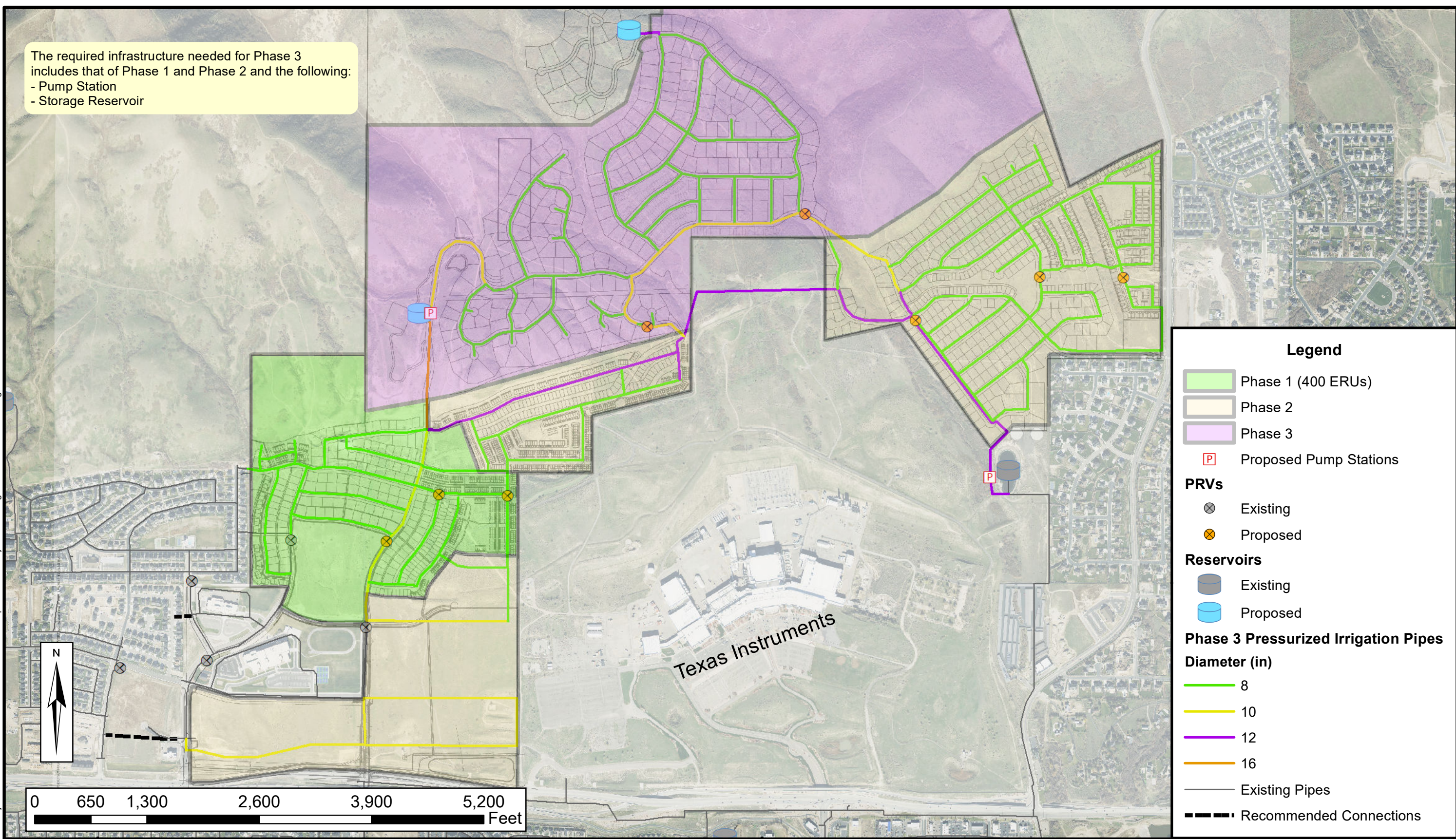
**DR HORTON
SKYE AREA PLAN**

**PRESSURIZED IRRIGATION
DR HORTON INFRASTRUCTURE REQUIRED FOR PHASE 2**

**FIGURE
2.2**

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The required infrastructure needed for Phase 3 includes that of Phase 1 and Phase 2 and the following:
- Pump Station
- Storage Reservoir



Legend

- Phase 1 (400 ERUs)
- Phase 2
- Phase 3
- Proposed Pump Stations
- PRVs**
 - Existing
 - Proposed
- Reservoirs**
 - Existing
 - Proposed
- Phase 3 Pressurized Irrigation Pipes**
Diameter (in)
 - 8
 - 10
 - 12
 - 16
- Existing Pipes
- Recommended Connections



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SKYE AREA PLAN**

**PRESSURIZED IRRIGATION
DR HORTON INFRASTRUCTURE REQUIRED FOR PHASE 3**

**FIGURE
2.3**

Phase 2 represents the rest of the lower three pressure zones of the Skye development and includes an additional 162 irrigated acres to the 56 irrigated acres for a total of 218 irrigated acres. The infrastructure required for Phase 2 includes all of DR Horton's projects shown in Table 1, plus the 1.3-million-gallon (4.0 acre-feet) water storage reservoir and redundant pipelines (see Figure 2.2). This pipeline would go up through the upper Skye area to provide redundancy for the east side of Phase 2. This pipeline would initially have lower pressure and no homes connected on it until Phase 3 when it would then have higher pressure but continue to provide redundancy through PRVs.

Phase 3 represents the upper Skye area that is located north of Phases 1 and 2 and includes 122 irrigated acres. The infrastructure required for Phase 3 includes all the infrastructure required for Phase 2 plus a storage reservoir and pump station to serve the upper pressure zone (see Figure 2.3). Capacity for these phases has been included in determining source, transmission, pump stations, and storage capacities as listed in Table 2.

**Table 2 - Skye Area Pressurized Irrigation Water System
Design Criteria and System Requirements**

	Lehi City Design Criteria	Results	Phase
Irrigated Acres:		56 irr. acres	1
		162 irr. acres	2
		122 irr. acres	3
		- irr. acres	4
		339 irr. acres	Total
Average Flow:	3.5 gpm/acre	194 gpm	1
		565 gpm	2
		427 gpm	3
		- gpm	4
		1,187 gpm	Total
Peak Hourly Flow:	6.78 gpm/acre	376 gpm	1
		1,095 gpm	2
		827 gpm	3
		- gpm	4
		2,298 gpm	Total
Irrigation Storage:	5,040 gal./acre	279,720 gal.	1
		813,960 gal.	2
		614,880 gal.	3
		- gal.	4
		1,093,680 gal.	Total of 1 and 2
		614,880 gal.	Total of 3 and 4
Source:	3.5 gpm/acre	194 gpm	1
		565 gpm	2
		427 gpm	3
		- gpm	4
		1,187 gpm	Total
Fire Storage ¹ :	1,500 gpm - 2 hrs.	180,000 gal.	
Total Storage:		1,273,680 gal.	Total of 1 and 2
Total Storage:		794,880 gal.	Total of 3 and 4
Fire Flow²:	1,500 gpm	1,500 gpm	

1. Assumes all commercial and civic buildings are sprinklered

2. Residential only. Assumes all commercial and civic buildings are sprinklered.