

LAW OFFICES
BISKIND, HUNT & TAYLOR, P.L.C.

KARRIN KUNASEK TAYLOR, P.C.
DIRECT: 602/955-3452
E-MAIL: KARRINT@BISKINDLAW.COM

August 10, 2001

VIA HAND DELIVERY

Kurt Jones, AICP
Project Coordination Manager
CITY OF SCOTTSDALE
3939 Drinkwater Blvd.
Scottsdale, AZ 85251

**Re: DC Ranch; Natural Area Open Space Calculations ("NAOS")
Boundary Adjustment**

Dear Kurt:

The purpose of this letter is to request your written concurrence that the current plans for DC Ranch meet or exceed all NAOS requirements pursuant to the Second Amendment to Development Agreement dated October 19, 1998 (the "Development Agreement"). Pursuant to current plans, with adjacent plats, DC Ranch has committed 671 acres of Conservation Area (CA) and Conservation Open Space (COS). This acreage, in addition to the NAOS provided in the two golf courses at DC Ranch (214 acres) and the Reata Wash Corridor (157 acres) far exceed the minimum required NAOS for DC Ranch (690 acres required/1042 acres provided).

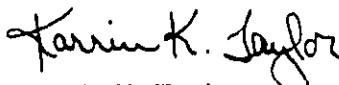
As contemplated in the Development Agreement, the location of the boundaries of the NAOS areas is general in nature. The final boundaries of NAOS areas are to be established once the final planning for the planning units within DC Ranch has been completed. Attached is an NAOS Calculations exhibit prepared by Swaback Partners dated August 10, 2001 ("NAOS Calculations") along with NAOS open space calculations graphics dated June 21, 2001 ("NAOS Graphics") depicting the general boundaries of the NAOS areas.

As the DC Ranch team has discussed with you, we seek to obtain your acknowledgement that the minimum requirements for NAOS at DC Ranch are satisfied as set forth on the NAOS Calculations and NAOS Graphics. Your acknowledgement below is made with the understanding that refinements to boundaries will be set by common tract or easement at the time of final plat approval as contemplated in the Development Agreement.

Kurt Jones, AICP
August 10, 2001
Page 2 of 2

Please acknowledge confirmation of your concurrence with the foregoing and the attached NAOS Calculations and NAOS Graphics by signing below and on the attachments as indicated and returning the original of this letter and the attachments to us. Should you have any questions please do not hesitate to call. Thank you.

Sincerely,


Karrin K. Taylor

Approved:


Kurt Jones, AICP
Project Coordination Manager
City of Scottsdale

KKT:me
enclosures

cc (via e-mail, w/o encls): Terry DeQuina, DMB Associates
Trevor Barger, Swaback Partners, PLLC

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15-PP-2006
9-14-06

15- PP-2006

09-26-2006

Preliminary Plat - Site Plan

1. Parcels are not lots.
2. Tract "B" not identified as to purpose or ownership.
3. Existing R.O.W for Union Hills Drive north of parcel 1.1 not identified.
4. Preliminary plat ~~does not need~~ line types and weights should emphasize the overall property boundary, the lot lines, the easements and tracts. A site data table versus curve table & line tables would be more useful.
5. Is TrailSide view not being dedicated at this time - labeled as "proposed roadway" and "future R.O.W."
6. Row width for existing 91st St, ^{& new Union Hills Drive} would be helpful. Row widths ~~were~~ ^{was} provided for Pima Road.
7. Why was the Scenic Corridor divided between a Tract "A" and an easement?
8. Water & sewer lines do not need to be shown with the plat.
9. Qualifying that all the parking areas and landscaped areas are commonly held by note would be helpful.

Application

- fees July 2006 fees paid?

Owner Contact

Ron Henry

DC Ranch LLC

7600 E. Doubletree Ranch Rd.

Scottsdale, AZ 85258

Bing Hu

H & S International

17785 N. Pacesetter Way

Scottsdale, AZ 85255

~~TO ACCESS~~

Parcel 1.1 - 18 AC±

Tracts - private access scenic corridors
utility corridors

9-14-06

Site Plan

Too much information

No key or legend to explain shading, line types or symbols

Curve & line tables could go - site data table would be useful

Identify Tracts A/B - purpose & ownership

Lettering & wording overlapping - legibility

Future parking garage - more specifics or remove - or label subject to future review and approval by city -

label as such - right now it is confusing the site plan with double lines

two access locations from Pima Rd not in Master Plan.

Conceptual Landscape & Wall Plan

9-14-06

1. Legend does not identify tree symbol & what it means
2. Elements of the landscaping shaded out should be provided so it is complete even if there are enlargements
3. Wall details were left as multiple choice based on character sheet provided
4. Water features not elaborated on anywhere and specifics not routed to water conservation
5. Wall for Bldgs A/B adj. scenic corridor along Union Hills Drive - needs to be broken up
6. ~~No~~ lawn areas shown - ~~or shading~~.
not evident that any exist.
7. Please bring forward the EDMP/UDCAP
8. Passive outdoor seating areas - where?
provide symbol in legend
9. relate wall details to ~~the~~ typicals offered.
10. Provision of quantities: types when?

9-14-06

Slope Analysis over Topography

What are the calculations for 0-2
2-5

5-8 etc.

as portrayed leading to open space amount
for site.

WOOD/PATEL

LAND DEVELOPMENT • WATER RESOURCES • WATER/WASTEWATER • TRANSPORTATION/TRAFFIC • SURVEYING • CONSTRUCTION MANAGEMENT

Darrel E. Wood, P.E., R.L.S.
Ashok C. Patel, P.E., R.L.S., CFM
Gordon W. R. Wark, P.E.
James S. Campbell, P.E.
Thomas R. Gettings, R.L.S.
Timothy A. Huval, P.E.
Michael T. Young, P.E.
Peter Hemingway, P.E.
Jeffrey R. Minch, P.E.
Robert D. Gofonia, P.E., R.L.S.
Gerald R. Copeland, P.E., R.L.S.
Patrick W. Marum, P.E.

September 8, 2006

Mr. Douglas L. Mann, P.E.
Water Resources Engineer
City of Scottsdale Water Resources
9388 East San Salvador Drive
Scottsdale, AZ 85258

15-PP-2006
9-14-06

Phone: (480) 312-5636
Fax: (480) 312-5615

Re: **DC Ranch Parcel 1.1**
Water Distribution Basis of Design
WP #062762

Dear Mr. Mann:

The existing Zone 5 storage reservoir provides the potable water storage for the DC Ranch Parcel 1.1 development.

The water system for DC Ranch Parcel 1.1 was analyzed in the amended *Planning Unit I and Second Amendment to Planning Units III, V, and VI Potable Water System Study*, dated August 29, 2002. The land uses, demands, and pipe locations have been updated to their current and proposed condition. The demands for the site are included in the attached spreadsheet named *Water Demands*.

The proposed water system consists of 8-inch waterlines that will provide potable water service to all 12 proposed buildings within Parcel 1.1. The proposed 8-inch waterlines will connect to proposed waterlines in three (3) locations: (1.) 12-inch Zone 4 waterline in the Trailside View alignment (commercial access road) just east of Pima Road – Node J-438, (2.) 12-inch waterline on the north side of Parcel 1.2 – Node J-294, and (3.) 12-inch waterline on the south side of Parcel 1.2 – Node J-296.

The estimated average day demand for Parcel 1.1 is 60 gallons per minute (gpm), the maximum day demand for the proposed development totals 119 gpm, and the peak hour demand is 209 gpm. This demand was put broken up into 3 nodes on the site to represent the actual service locations. Nodes J-435, J-436, and J-437 represent these locations.

Attached are the results of the maximum day plus fire flow tests and peak hour test along with an exhibit illustrating the specified node locations and pipeline sizes.

As indicated by the results of the water system modeling, adequate maximum day demand pressures and fire flow requirements have been met at all service junctions. Pressures during maximum day plus fire flow demands at nodes J-435 and J-436 are 110-psi and 117-psi respectively. These nodes are at the lower end of Pressure Zone 5. The pressure for the maximum day plus fire flow demand for node J-437 is 39-psi. This node is at the high end of Pressure Zone 4. Fire flow rates of 1,500 gpm have been met at the specified nodes. All pressures exceed the 30-psi minimum requirement during the maximum day plus fire flow scenario.



Mr. Douglas L. Mann
City of Scottsdale Water Resources Dept.
DC Ranch Parcels 1.1
Water Distribution Basis of Design
WP #062762

September 8, 2006
Page 2

Pressures within the development may require individual pressure reducing valves, fire pumps, or other required potable water devices. This will depend on building use development and should be determined by a mechanical engineer.

Thank you for your prompt review of the water system analysis provided for DC Ranch Parcel 1.1.

If you have any questions, please feel free to contact us.

Sincerely,

WOOD, PATEL & ASSOCIATES, INC.


Timothy A. Huval, P.E.
Executive Vice President



TAH/kk

Enclosure(s)

WATER DEMANDS

Project: DC Ranch Parcel 1.1
Location: City of Scottsdale, Arizona
Date: September 11, 2006
References: DC Ranch Planning Unit I and Second Ammendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

			NON-RESIDENTIAL Commercial/Retail		NON-RESIDENTIAL								
Node	SUB-AREA	LAND USE	AREA (SF)	ADF/ SF (GPD)	ADF SUB- TOTAL (GPD)	MAX DAY FACTOR	MAX DAY SUB- TOTAL (GPD)	PEAK HOUR FACTOR	PEAK HOUR SUB- TOTAL (GPD)	TOTAL ADF (GPD)	MAX DAY TOTAL (GPD)	PEAK HOUR TOTAL (GPD)	
Parcel 1.1													
J-437	2.1	12 - BUILDING K BANK, FF=1626, 5000 SF	5,000	0.8	4,000	2	8,000	3.5	14,000	4,000	8,000	14,000	
TOTAL SUB-AREA 2.1 (J-437)					4,000		8,000		14,000	4,000	8,000	14,000	TOTAL SUB-AREA 2.1 (J-437)
J-436	2.3	19 - BUILDING D GROCERY STORE, FF=1642, 18000 SF; 18 - BUILDING E IN-LINE RETAIL, FF=1638, 11450 SF	29,450	0.8	23,560	2	47,120	3.5	82,460	23,560	47,120	82,460	
J-436	2.3	22 - BUILDING A RETAIL PAD, FF=1641, 2700 SF; 23 - BUILDING A RESTAURANT, FF=1641, 4200 SF	6,900	0.8	5,520	2	11,040	3.5	19,320	5,520	11,040	19,320	
J-436	2.3	21 - BUILDING B RETAIL, FF=1642, 6600 SF	6,600	0.8	5,280	2	10,560	3.5	18,480	5,280	10,560	18,480	
J-436	2.3	20 - BUILDING C IN-LINE RETAIL, FF=1642, 4500 SF	4,500	0.8	3,600	2	7,200	3.5	12,600	3,600	7,200	12,600	
J-436	2.3	17 - BUILDING F RETAIL, FF=1634, 6500 SF	6,500	0.8	5,200	2	10,400	3.5	18,200	5,200	10,400	18,200	
TOTAL SUB-AREA 2.3 (J-436)					43,160		86,320		151,060	43,160	86,320	151,060	TOTAL SUB-AREA 2.3 (J-436)
J-435	2.2	14 - BUILDING I IN-LINE RESTAURAN, FF=1633, 3500 SF; 15 - BUILDING H IN-LINE RETAIL, FF=1634, 7100 SF; 16-BUILDING G RETAIL OR DINNER HOUSE, FF=1633, 6000 SF	16,600	0.8	13,280	2	26,560	3.5	46,480	13,280	26,560	46,480	
J-435	2.2	13 - BUILDING J OFFICE, FF=1634 GFF=1618, 31800 SF	31,800	0.8	25,440	2	50,880	3.5	89,040	25,440	50,880	89,040	
TOTAL SUB-AREA 2.2 (J-435)					38,720		77,440		135,520	38,720	77,440	135,520	TOTAL SUB-AREA 2.2 (J-435)

PARCEL 1.1 TOTAL	COMM SF	TOTAL FLOW OUT OF DC RANCH 1.1 (GPD)	85,880	171,760	300,580
	107,350	TOTAL FLOW OUT OF DC RANCH 1.1 (GPM)	60	119	209

WOOD/PATEL

CIVIL ENGINEERS * HYDROLOGISTS * LAND SURVEYORS * CONSTRUCTION MANAGERS

WATER DEMANDS - Reference

Project: *DC Ranch Parcel 1.1*
Location: City of Scottsdale, Arizona
Date: September 1, 2006
References: DC Ranch Planning Unit I and Second Amendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

Project Number: 062732
Project Engineer: Tim Huval, P.E.

Land Use	Average Day Flow		Type
Six-Pack (12-22 DU/AC)	227.6	GPD / DU	Residential
High Density Condo	185.3	GPD / DU	Residential
Commercial/Retail	0.8	GPD / SF	Service/Employment

Maximum Head Loss 8.0 FT/1000 FT (Avg and Max Day Flow Conditions)
10.0 FT/1000 FT (Peak Hour Flow Conditions)
Maximum Pipe Velocity 10 FPS
Minimum Pressure 50.0 PSI (Normal Use Conditions)
30.0 PSI (Fire Flow Conditions)

Max Day Factor 2 times Average Day
Peak Hour Factor 3.5 times Average Day

Pressure Zone	Ground Elevation		
	HGL	Min	Max
4	1790	1510	1650
5	1910	1650	1790
6	2050	1790	1920
7	2180	1920	2050
8	2325	2050	2180
9	2455	2180	2310
10	2585	2310	2440
11	2715	2440	2570
12	2845	2570	2700
13	2975	2700	2830

Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Parcel 1.1

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-87	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	109.84	30.00	46.21	J-208	N/A	2.16	Z-6 Purr
J-92	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	94.78	30.00	46.22	J-208	N/A	2.16	Z-6 Purr
J-93	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	101.22	30.00	46.21	J-208	N/A	2.16	Z-6 Purr
J-94	Zone-5	2	true	true	500.00	600.00	501.37	601.37	30.00	124.05	30.00	46.23	J-208	N/A	2.16	Z-6 Purr
J-95	Zone-5	2	true	true	500.00	600.00	508.66	608.66	30.00	53.42	30.00	46.24	J-208	N/A	2.16	Z-6 Purr
J-96	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	49.08	30.00	46.24	J-208	N/A	2.16	Z-6 Purr
J-111	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	49.03	30.00	46.24	J-208	N/A	2.16	Z-6 Purr
J-148	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	54.00	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-149	Zone-5	2	true	true	500.00	600.00	532.80	632.80	30.00	59.87	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-151	Zone-5	2	true	true	500.00	600.00	555.16	655.16	30.00	64.28	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-154	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	52.12	30.00	46.33	J-208	N/A	2.16	Z-6 Purr
J-171	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	71.95	30.00	42.69	J-208	N/A	2.16	Z-6 Purr
J-194	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	54.29	30.00	46.29	J-208	N/A	2.16	Z-6 Purr
J-195	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	58.62	30.00	46.29	J-208	N/A	2.16	Z-6 Purr
J-196	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	71.73	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-197	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	86.91	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-198	Zone-5	2	true	true	1,500.00	1,600.00	1,505.40	1,605.40	30.00	82.03	30.00	45.51	J-208	N/A	2.16	Z-6 Purr
J-199	Zone-5	2	true	true	500.00	1,600.00	517.20	1,617.20	30.00	85.52	30.00	45.39	J-208	N/A	2.16	Z-6 Purr
J-200	Zone-5	2	true	true	500.00	600.00	507.82	607.82	30.00	70.06	30.00	45.69	J-208	N/A	2.16	Z-6 Purr
J-203	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	73.40	30.00	45.57	J-208	N/A	2.16	Z-6 Purr
J-204	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	70.12	30.00	45.51	J-208	N/A	2.16	Z-6 Purr
J-207	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	53.54	30.00	45.54	J-208	N/A	2.16	Z-6 Purr
J-208	Zone-5	2	true	true	500.00	600.00	510.13	610.13	30.00	45.40	30.00	49.57	J-111	N/A	2.16	Z-6 Purr
J-210	Zone-5	2	true	true	500.00	600.00	505.47	605.47	30.00	60.81	30.00	45.88	J-208	N/A	2.16	Z-6 Purr
J-211	Zone-5	2	true	true	500.00	600.00	502.06	602.06	30.00	71.93	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-212	Zone-5	2	true	true	500.00	600.00	505.15	605.15	30.00	72.32	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-213	Zone-5	2	true	true	500.00	600.00	504.63	604.63	30.00	70.49	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-214	Zone-5	2	true	true	500.00	600.00	504.64	604.64	30.00	53.52	30.00	46.26	J-208	N/A	2.16	Z-6 Purr
J-215	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	94.54	30.00	46.17	J-208	N/A	2.16	Z-6 Purr
J-216	Zone-5	2	true	true	500.00	600.00	507.73	607.73	30.00	79.41	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-217	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	90.80	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-218	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	93.16	30.00	45.59	J-208	N/A	2.16	Z-6 Purr
J-219	Zone-5	2	true	true	500.00	600.00	504.64	604.64	30.00	90.19	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-220	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	80.40	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-221	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	120.18	30.00	46.20	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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09/07/06 04:03:01 PM

© Bentley Systems, Inc. Haestad Methods Solution Center Watertown, CT 06795 USA +1-203-755-1666

Project Engineer: Gordon Wark, P.E.

WaterCAD v7.0 [07.00.049.00]

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-222	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	101.05	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-275	Zone-5	2	true	true	500.00	600.00	530.57	630.57	30.00	63.72	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-280	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	118.46	30.00	46.20	J-208	N/A	2.16	Z-6 Purr
J-281	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	116.26	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-282	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	109.73	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-283	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	108.85	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-284	Zone-5	2	true	true	500.00	600.00	516.55	616.55	30.00	106.80	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-285	Zone-5	2	true	true	500.00	600.00	510.71	610.71	30.00	102.91	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-286	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	56.57	30.00	57.43	J-401	N/A	2.16	Z-6 Purr
J-287	Zone-5	2	true	true	500.00	600.00	514.39	614.39	30.00	113.39	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-288	Zone-5	2	true	true	500.00	600.00	519.01	619.01	30.00	113.42	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-289	Zone-4	2	true	true	500.00	600.00	519.01	619.01	30.00	60.87	30.00	56.58	J-286	N/A	2.16	Z-6 Purr
J-290	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	63.74	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-291	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	70.99	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-292	Zone-4	2	true	true	500.00	600.00	508.74	608.74	30.00	67.59	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-293	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	117.33	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-294	Zone-5	2	true	true	1,500.00	1,600.00	1,527.05	1,627.05	30.00	115.52	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-296	Zone-5	2	true	true	1,500.00	1,600.00	1,533.70	1,633.70	30.00	117.90	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-297	Zone-4	2	true	true	500.00	600.00	500.90	600.90	30.00	62.66	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-299	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	72.28	30.00	56.64	J-286	N/A	2.16	Z-6 Purr
J-300	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	66.04	30.00	56.67	J-286	N/A	2.16	Z-6 Purr
J-301	Zone-4	2	true	true	500.00	1,600.00	509.00	1,609.00	30.00	63.58	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-302	Zone-4	2	true	true	1,500.00	1,600.00	1,525.37	1,625.37	30.00	71.71	30.00	56.45	J-286	N/A	2.16	Z-6 Purr
J-303	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	70.10	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-304	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	71.77	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-305	Zone-4	2	true	true	500.00	600.00	517.06	617.06	30.00	73.76	30.00	56.64	J-286	N/A	2.16	Z-6 Purr
J-306	Zone-4	2	true	true	500.00	600.00	508.75	608.75	30.00	72.64	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-307	Zone-4	2	true	true	500.00	600.00	517.06	617.06	30.00	64.83	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-308	Zone-5	2	true	true	500.00	600.00	513.27	613.27	30.00	107.62	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-317	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	77.00	30.00	42.76	J-208	N/A	2.16	Z-6 Purr
J-318	Zone-5	2	true	true	1,500.00	1,600.00	1,511.96	1,611.96	30.00	69.80	30.00	42.56	J-208	N/A	2.16	Z-6 Purr
J-319	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	62.93	30.00	42.69	J-208	N/A	2.16	Z-6 Purr
J-320	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	56.77	30.00	42.69	J-208	N/A	2.16	Z-6 Purr
J-321	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	73.52	30.00	42.64	J-208	N/A	2.16	Z-6 Purr
J-322	Zone-5	2	true	true	1,500.00	1,600.00	1,520.48	1,620.48	30.00	49.26	30.00	42.64	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-323	Zone-5	2	true	true	1,500.00	1,600.00	500.00	1,600.00	30.00	65.00	30.00	42.63	J-208	N/A	2.16	Z-6 Purr
J-324	Zone-5	2	true	true	1,500.00	1,600.00	500.42	1,600.42	30.00	59.83	30.00	42.63	J-208	N/A	2.16	Z-6 Purr
J-328	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	72.55	30.00	45.53	J-208	N/A	2.16	Z-6 Purr
J-345	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	78.95	30.00	56.37	J-286	N/A	2.16	Z-6 Purr
J-346	Zone-5	2	true	true	500.00	600.00	502.70	602.70	30.00	63.61	30.00	45.48	J-208	N/A	2.16	Z-6 Purr
J-350	Zone-4	2	true	true	500.00	600.00	534.99	634.99	30.00	64.38	30.00	56.64	J-286	N/A	2.16	Z-6 Purr
J-351	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	63.07	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-352	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	119.61	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-355	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	62.51	30.00	46.29	J-208	N/A	2.16	Z-6 Purr
J-357	Zone-5	2	true	true	500.00	600.00	501.56	601.56	30.00	73.55	30.00	45.69	J-208	N/A	2.16	Z-6 Purr
J-358	Zone-5	2	true	true	1,500.00	1,600.00	500.00	1,600.00	30.00	95.59	30.00	45.59	J-208	N/A	2.16	Z-6 Purr
J-359	Zone-4	2	true	true	500.00	600.00	524.59	624.59	30.00	56.03	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-360	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	113.00	30.00	45.65	J-208	N/A	2.16	Z-6 Purr
J-361	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	111.17	30.00	45.65	J-208	N/A	2.16	Z-6 Purr
J-362	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	57.91	30.00	56.18	J-286	N/A	2.16	Z-6 Purr
J-363	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	66.12	30.00	56.34	J-286	N/A	2.16	Z-6 Purr
J-364	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	73.55	30.00	56.37	J-286	N/A	2.16	Z-6 Purr
J-365	Zone-4	2	true	true	1,500.00	1,600.00	537.00	1,637.00	30.00	63.48	30.00	56.65	J-286	N/A	2.16	Z-6 Purr
J-366	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	117.19	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-378	Zone-4	2	true	true	500.00	600.00	515.88	615.88	30.00	66.40	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-379	Zone-4	2	true	true	500.00	600.00	512.34	612.34	30.00	54.88	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-380	Zone-4	2	true	true	500.00	1,600.00	521.06	1,621.06	30.00	65.42	30.00	56.36	J-286	N/A	2.16	Z-6 Purr
J-381	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	120.12	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-382	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	117.90	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-383	Zone-5	2	true	true	500.00	1,600.00	509.42	1,609.42	30.00	110.55	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-384	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	115.57	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-385	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	117.99	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-386	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	63.45	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-387	Zone-4	2	true	true	500.00	1,600.00	509.00	1,609.00	30.00	62.01	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-388	Zone-4	2	true	true	500.00	600.00	509.42	609.42	30.00	57.97	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-389	Zone-4	2	true	true	500.00	600.00	509.42	609.42	30.00	59.99	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-390	Zone-5	2	true	true	500.00	600.00	505.14	605.14	30.00	103.51	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-391	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	115.52	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-392	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	113.45	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-393	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	112.62	30.00	45.66	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-394	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	107.50	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-395	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	111.83	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-396	Zone-4	2	true	true	500.00	1,600.00	509.42	1,609.42	30.00	49.85	30.00	56.07	J-388	N/A	2.16	Z-6 Purr
J-397	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	59.16	30.00	56.20	J-388	N/A	2.16	Z-6 Purr
J-398	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	59.97	30.00	56.35	J-388	N/A	2.16	Z-6 Purr
J-399	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	60.20	30.00	56.40	J-388	N/A	2.16	Z-6 Purr
J-400	Zone-4	2	true	true	500.00	1,600.00	509.42	1,609.42	30.00	61.61	30.00	56.59	J-388	N/A	2.16	Z-6 Purr
J-401	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	49.15	30.00	56.13	J-286	N/A	2.16	Z-6 Purr
J-402	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	56.29	30.00	54.13	J-401	N/A	2.16	Z-6 Purr
J-403	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	61.24	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-407	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	46.11	30.00	41.93	J-208	N/A	2.16	Z-6 Purr
J-408	Zone-5	2	true	true	500.00	1,600.00	507.90	1,607.90	30.00	56.94	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-409	Zone-5	2	true	true	500.00	1,600.00	507.90	1,607.90	30.00	68.08	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-410	Zone-5	2	true	true	500.00	1,600.00	503.61	1,603.61	30.00	77.93	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-411	Zone-5	2	true	true	500.00	1,600.00	506.18	1,606.18	30.00	69.32	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-412	Zone-5	2	true	true	500.00	1,600.00	508.24	1,608.24	30.00	67.44	30.00	45.68	J-208	N/A	2.16	Z-6 Purr
J-413	Zone-5	2	true	true	500.00	1,600.00	503.09	1,603.09	30.00	73.04	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-414	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	69.98	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-416	Zone-5	2	true	true	500.00	1,600.00	509.28	1,609.28	30.00	82.74	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-417	Zone-5	2	true	true	500.00	1,600.00	504.12	1,604.12	30.00	77.54	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-418	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	79.48	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-419	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	86.90	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-422	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	47.11	30.00	45.68	J-208	N/A	2.16	Z-6 Purr
J-425	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	73.11	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-426	Zone-5	2	true	true	500.00	600.00	503.12	603.12	30.00	93.77	30.00	45.99	J-208	N/A	2.16	Z-6 Purr
J-427	Zone-5	2	true	true	500.00	1,600.00	507.82	1,607.82	30.00	81.71	30.00	45.48	J-208	N/A	2.16	Z-6 Purr
J-428	Zone-5	2	true	true	500.00	1,600.00	505.50	1,605.50	30.00	77.66	30.00	43.19	J-208	N/A	2.16	Z-6 Purr
J-429	Zone-5	2	true	true	500.00	1,600.00	508.60	1,608.60	30.00	60.14	30.00	43.19	J-208	N/A	2.16	Z-6 Purr
J-430	Zone-5	2	true	true	500.00	1,600.00	503.12	1,603.12	30.00	68.16	30.00	45.42	J-208	N/A	2.16	Z-6 Purr
J-431	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	45.01	30.00	45.96	J-208	N/A	2.16	Z-6 Purr
J-432	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	48.32	30.00	45.71	J-208	N/A	2.16	Z-6 Purr
J-433	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	62.14	30.00	45.71	J-208	N/A	2.16	Z-6 Purr
J-434	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	113.97	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-435	Zone-5	2	true	true	1,500.00	1,600.00	553.77	1,653.77	30.00	116.56	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-436	Zone-5	2	true	true	1,500.00	1,600.00	559.94	1,659.94	30.00	109.90	30.00	45.67	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-437	Zone-4	2	true	true	1,500.00	1,600.00	1,505.55	1,605.55	30.00	39.39	30.00	56.65	J-286	N/A	2.16	Z-6 Purr
J-438	Zone-4	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	64.09	30.00	56.65	J-286	N/A	2.16	Z-6 Purr

**Scenario: Peak Hour
Steady State Analysis
Junction Report**

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-87	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.17	109.97
J-92	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.37	94.91
J-93	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.24	101.35
J-94	1,627.00	Zone-5	Demand	1.93	DC Ranch	1.93	1,914.19	124.25
J-95	1,790.00	Zone-5	Demand	12.23	DC Ranch	12.23	1,914.07	53.68
J-96	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.04	49.34
J-111	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.04	49.34
J-148	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.04	54.10
J-149	1,770.00	Zone-5	Demand	46.31	DC Ranch	46.31	1,910.01	60.58
J-151	1,760.00	Zone-5	Demand	77.88	DC Ranch	77.88	1,910.01	64.90
J-154	1,790.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.79	52.26
J-171	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.93	80.88
J-194	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.87	54.46
J-195	1,775.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.87	58.79
J-196	1,745.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	73.05
J-197	1,710.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.86	88.20
J-198	1,720.00	Zone-5	Demand	9.45	DC Ranch	9.45	1,913.81	83.85
J-199	1,710.00	Zone-5	Demand	24.29	DC Ranch	24.29	1,913.74	88.15
J-200	1,747.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,911.87	71.33
J-203	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.87	74.36
J-204	1,748.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.88	70.90
J-207	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.17	54.59
J-208	1,805.00	Zone-5	Demand	13.37	DC Ranch	13.37	1,911.77	46.20
J-210	1,770.00	Zone-5	Demand	9.57	DC Ranch	9.57	1,911.89	61.39
J-211	1,745.00	Zone-5	Demand	3.61	DC Ranch	3.61	1,913.62	72.95
J-212	1,743.00	Zone-5	Demand	9.02	DC Ranch	9.02	1,913.62	73.82
J-213	1,747.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.62	72.09
J-214	1,782.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,911.64	56.09
J-215	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.87	94.70
J-216	1,727.00	Zone-5	Demand	13.53	DC Ranch	13.53	1,913.64	80.75
J-217	1,690.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.86	96.85
J-218	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	94.69
J-219	1,702.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.68	91.58
J-220	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	81.71
J-221	1,635.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.10	120.75
J-222	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.90	101.20
J-275	1,760.00	Zone-5	Demand	43.16	DC Ranch	43.16	1,910.01	64.90
J-280	1,640.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.10	118.59
J-281	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.00	116.38
J-282	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.93	109.86
J-283	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.92	109.86
J-284	1,660.00	Zone-5	Demand	23.37	DC Ranch	23.37	1,913.91	109.85
J-285	1,670.00	Zone-5	Demand	15.12	DC Ranch	15.12	1,913.91	105.53
J-286	1,637.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.01	56.68
J-287	1,649.00	Zone-5	Demand	25.17	DC Ranch	25.17	1,913.76	114.55
J-288	1,649.00	Zone-5	Demand	33.29	DC Ranch	33.29	1,913.70	114.52
J-289	1,626.00	Zone-4	Demand	33.29	DC Ranch	33.29	1,767.98	61.43
J-290	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.94	64.00
J-291	1,603.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	71.35
J-292	1,610.00	Zone-4	Demand	15.30	DC Ranch	15.30	1,767.90	68.31
J-293	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.77	117.58
J-294	1,642.00	Zone-5	Demand	47.33	DC Ranch	47.33	1,913.76	117.58

Title: DC Ranch

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Haestad Methods Solution Center

Watertown, CT 06795 USA

Project Engineer: Gordon Wark, P.E.

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Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-296	1,636.00	Zone-5	Demand	58.98	DC Ranch	58.98	1,913.67	120.14
J-297	1,623.00	Zone-4	Demand	1.27	DC Ranch	1.27	1,768.01	62.74
J-299	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	72.65
J-300	1,615.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	66.19
J-301	1,613.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.98	67.05
J-302	1,590.00	Zone-4	Demand	35.81	DC Ranch	35.81	1,767.89	76.96
J-303	1,605.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	70.48
J-304	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.89	72.64
J-305	1,595.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.89	74.80
J-306	1,595.00	Zone-4	Demand	12.35	DC Ranch	12.35	1,767.89	74.80
J-307	1,610.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.82	68.28
J-308	1,662.00	Zone-5	Demand	23.22	DC Ranch	23.22	1,913.77	108.93
J-317	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.96	83.05
J-318	1,740.00	Zone-5	Demand	16.89	DC Ranch	16.89	1,911.90	74.37
J-319	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.93	74.39
J-320	1,750.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.93	70.06
J-321	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.91	83.03
J-322	1,740.00	Zone-5	Demand	28.92	DC Ranch	28.92	1,911.89	74.37
J-323	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.91	74.38
J-324	1,740.00	Zone-5	Demand	0.59	DC Ranch	0.59	1,911.91	74.38
J-328	1,742.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.87	73.50
J-345	1,569.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	86.06
J-346	1,763.00	Zone-5	Demand	3.80	DC Ranch	3.80	1,911.85	64.40
J-350	1,610.00	Zone-4	Demand	49.40	DC Ranch	49.40	1,767.80	68.27
J-351	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.93	64.00
J-352	1,636.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.68	120.14
J-355	1,766.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.87	62.68
J-357	1,735.00	Zone-5	Demand	2.74	DC Ranch	2.74	1,911.87	76.52
J-358	1,689.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	97.28
J-359	1,632.00	Zone-4	Demand	34.72	DC Ranch	34.72	1,767.91	58.80
J-360	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.77	115.42
J-361	1,652.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.81	113.27
J-362	1,632.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	58.83
J-363	1,611.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.92	67.89
J-364	1,591.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	76.54
J-365	1,614.00	Zone-4	Demand	64.75	DC Ranch	64.75	1,767.99	66.62
J-366	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.74	117.57
J-378	1,608.00	Zone-4	Demand	26.74	DC Ranch	26.74	1,767.92	69.19
J-379	1,631.00	Zone-4	Demand	21.60	DC Ranch	21.60	1,767.88	59.22
J-380	1,600.00	Zone-4	Demand	36.86	DC Ranch	36.86	1,767.89	72.64
J-381	1,631.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.67	122.30
J-382	1,640.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	118.41
J-383	1,648.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	114.95
J-384	1,645.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	116.25
J-385	1,639.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	118.84
J-386	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.00	64.03
J-387	1,616.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.98	65.76
J-388	1,632.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.97	58.83
J-389	1,627.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.97	60.99
J-390	1,669.00	Zone-5	Demand	9.00	DC Ranch	9.00	1,913.76	105.90
J-391	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.69	116.25
J-392	1,638.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.70	119.28

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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Scenario: Peak Hour Steady State Analysis Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-393	1,641.50	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.70	117.77
J-394	1,649.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.71	114.53
J-395	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.72	116.26
J-396	1,631.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.97	59.26
J-397	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	61.86
J-398	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-399	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-400	1,619.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	64.46
J-401	1,635.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	57.54
J-402	1,630.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	59.70
J-403	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	61.86
J-407	1,795.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.81	50.54
J-408	1,990.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,178.02	81.35
J-409	1,987.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,178.03	82.65
J-410	1,720.00	Zone-5	Demand	6.31	DC Ranch	6.31	1,913.63	83.78
J-411	1,703.00	Zone-5	Demand	10.82	DC Ranch	10.82	1,913.65	91.14
J-412	1,747.00	Zone-5	Demand	14.42	DC Ranch	14.42	1,913.62	72.09
J-413	1,732.00	Zone-5	Demand	5.41	DC Ranch	5.41	1,913.63	78.58
J-414	1,733.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.62	78.15
J-416	1,707.00	Zone-5	Demand	16.23	DC Ranch	16.23	1,913.67	89.42
J-417	1,715.00	Zone-5	Demand	7.21	DC Ranch	7.21	1,913.65	85.95
J-418	1,715.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.64	85.94
J-419	1,702.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.69	91.59
J-422	1,760.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.62	66.46
J-425	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.87	74.36
J-426	1,695.00	Zone-5	Demand	5.46	DC Ranch	5.46	1,913.56	94.56
J-427	1,720.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,913.80	83.85
J-428	1,720.00	Zone-5	Demand	10.00	DC Ranch	10.00	1,912.20	83.16
J-429	1,720.00	Zone-5	Demand	15.05	DC Ranch	15.05	1,912.19	83.15
J-430	1,748.00	Zone-5	Demand	5.47	DC Ranch	5.47	1,913.13	71.44
J-431	1,782.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.25	55.92
J-432	1,765.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.51	64.25
J-433	1,753.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.51	69.45
J-434	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.88	115.47
J-435	1,632.00	Zone-5	Demand	94.11	DC Ranch	94.11	1,913.58	121.83
J-436	1,641.00	Zone-5	Demand	104.90	DC Ranch	104.90	1,913.57	117.93
J-437	1,626.00	Zone-4	Demand	9.72	DC Ranch	9.72	1,767.99	61.43
J-438	1,614.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	66.62

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-448	442.00	8.0	Ductile Iro	130.0	0.00	Open	208.27	2,716.46	2,716.02	0.44	1.00	1.33
P-449	766.00	12.0	Ductile Iro	130.0	0.00	Open	-185.79	1,913.67	1,913.76	0.09	0.11	0.53
P-451	756.00	6.0	Ductile Iro	130.0	0.00	Open	-12.91	1,767.80	1,767.82	0.02	0.02	0.15
P-453	887.00	8.0	Ductile Iro	130.0	0.00	Open	16.67	2,049.91	2,049.90	0.01	0.01	0.11
P-456	582.00	8.0	Ductile Iro	130.0	0.00	Open	208.27	2,716.02	2,715.43	0.58	1.00	1.33
P-457	423.00	8.0	Ductile Iro	130.0	0.00	Open	-18.43	2,049.87	2,049.87	0.00	0.01	0.12
P-458	344.00	8.0	Ductile Iro	130.0	0.00	Open	-10.64	2,049.87	2,049.87	0.00	0.00	0.07
P-459	563.00	8.0	Ductile Iro	130.0	0.00	Open	-15.33	2,049.87	2,049.88	0.00	0.01	0.10
P-461	212.00	8.0	Ductile Iro	130.0	0.00	Open	7.05	2,049.86	2,049.86	0.00	0.00	0.04
P-462	100.00	6.0	Ductile Iro	130.0	0.00	Open	44.66	2,985.08	2,985.06	0.02	0.23	0.51
P-463	227.00	8.0	Ductile Iro	130.0	0.00	Open	-11.74	2,049.86	2,049.87	0.00	0.01	0.07
P-464	336.00	6.0	Ductile Iro	130.0	0.00	Open	5.70	2,985.06	2,985.05	0.00	0.01	0.06
P-465	151.00	8.0	Ductile Iro	130.0	0.00	Open	-17.30	2,049.86	2,049.87	0.00	0.01	0.11
P-466	211.00	8.0	Ductile Iro	130.0	0.00	Open	34.89	2,049.86	2,049.86	0.01	0.04	0.22
P-467	330.00	8.0	Ductile Iro	130.0	0.00	Open	30.20	2,049.86	2,049.85	0.01	0.03	0.19
P-468	358.00	8.0	Ductile Iro	130.0	0.00	Open	-10.54	2,049.86	2,049.87	0.00	0.00	0.07
P-469	329.00	8.0	Ductile Iro	130.0	0.00	Open	-2.30	2,049.87	2,049.87	0.00	0.00	0.01
P-470	256.00	8.0	Ductile Iro	130.0	0.00	Open	-22.29	2,049.85	2,049.85	0.00	0.02	0.14
P-471	672.00	8.0	Ductile Iro	130.0	0.00	Open	-26.04	2,049.85	2,049.87	0.01	0.02	0.17
P-472	250.00	8.0	Ductile Iro	130.0	0.00	Open	-18.49	2,049.80	2,049.80	0.00	0.01	0.12
P-474	884.00	6.0	Ductile Iro	130.0	0.00	Open	40.03	2,845.05	2,844.88	0.17	0.19	0.45
P-475	215.00	8.0	Ductile Iro	130.0	0.00	Open	-20.29	2,049.80	2,049.80	0.00	0.01	0.13
P-476	281.00	6.0	Ductile Iro	130.0	0.00	Open	34.33	2,844.88	2,844.84	0.04	0.14	0.39
P-477	415.00	6.0	Ductile Iro	130.0	0.00	Open	26.73	2,844.84	2,844.81	0.04	0.09	0.30
P-478	502.00	8.0	Ductile Iro	130.0	0.00	Open	3.19	2,049.80	2,049.80	0.00	0.00	0.02
P-479	533.00	8.0	Ductile Iro	130.0	0.00	Open	-4.84	2,049.80	2,049.80	0.00	0.00	0.03
P-480	327.00	8.0	Ductile Iro	130.0	0.00	Open	-12.86	2,049.80	2,049.80	0.00	0.01	0.08
P-481	154.00	8.0	Ductile Iro	130.0	0.00	Open	78.74	2,178.96	2,178.93	0.03	0.16	0.50
P-485	154.00	6.0	Ductile Iro	130.0	0.00	Open	22.93	2,844.81	2,844.79	0.01	0.07	0.26
P-486	434.00	6.0	Ductile Iro	130.0	0.00	Open	15.85	2,325.01	2,325.00	0.01	0.03	0.18
P-487	130.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-488	277.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-489	427.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-490	711.00	6.0	Ductile Iro	130.0	0.00	Open	17.08	2,180.01	2,179.99	0.03	0.04	0.19
P-491	176.00	6.0	Ductile Iro	130.0	0.00	Open	17.08	2,179.99	2,179.98	0.01	0.04	0.19
P-492	478.00	8.0	Ductile Iro	130.0	0.00	Open	43.69	2,324.74	2,324.71	0.03	0.06	0.28
P-493	342.00	8.0	Ductile Iro	130.0	0.00	Open	60.66	2,324.73	2,324.69	0.03	0.10	0.39
P-494	2,368.00	8.0	Ductile Iro	130.0	0.00	Open	104.35	2,324.69	2,324.04	0.66	0.28	0.67
P-495	373.00	8.0	Ductile Iro	130.0	0.00	Open	43.69	2,324.71	2,324.69	0.02	0.05	0.28
P-496	352.00	8.0	Ductile Iro	130.0	0.00	Open	15.85	2,324.74	2,324.74	0.00	0.01	0.10
P-497	260.00	6.0	Ductile Iro	130.0	0.00	Open	4.44	2,325.02	2,325.02	0.00	0.00	0.05
P-498	288.00	8.0	Ductile Iro	130.0	0.00	Open	5.35	2,325.02	2,325.02	0.00	0.00	0.03
P-500	149.00	8.0	Ductile Iro	130.0	0.00	Open	3.17	2,458.07	2,458.07	0.00	0.00	0.02
P-501	917.00	6.0	Ductile Iro	130.0	0.00	Open	3.53	2,715.03	2,715.02	0.00	0.00	0.04
P-502	445.00	12.0	Ductile Iro	130.0	0.00	Open	180.19	2,050.41	2,050.36	0.05	0.11	0.51
P-503	260.00	12.0	Ductile Iro	130.0	0.00	Open	126.84	2,050.36	2,050.35	0.01	0.06	0.36
P-504	824.00	12.0	Ductile Iro	130.0	0.00	Open	96.58	2,050.35	2,050.32	0.03	0.03	0.27
P-505	939.00	8.0	Ductile Iro	130.0	0.00	Open	10.87	1,910.01	1,910.01	0.00	0.00	0.07
P-506	1,193.00	8.0	Ductile Iro	130.0	0.00	Open	-32.30	1,910.01	1,910.04	0.04	0.03	0.21
P-507	707.00	12.0	Ductile Iro	130.0	0.00	Open	335.08	2,049.88	2,049.65	0.24	0.33	0.95
P-508	228.00	12.0	Ductile Iro	130.0	0.00	Open	314.73	2,049.65	2,049.58	0.07	0.30	0.89

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-509	1,466.00	12.0	Ductile Iro	130.0	0.00	Open	212.67	2,049.58	2,049.37	0.21	0.14	0.60
P-510	549.00	12.0	Ductile Iro	130.0	0.00	Open	224.80	2,050.53	2,050.44	0.09	0.16	0.64
P-511	265.00	12.0	Ductile Iro	130.0	0.00	Open	201.32	2,050.44	2,050.41	0.03	0.13	0.57
P-512	250.00	12.0	Ductile Iro	130.0	0.00	Open	83.58	2,050.05	2,050.05	0.01	0.03	0.24
P-513	403.00	12.0	Ductile Iro	130.0	0.00	Open	33.37	2,050.05	2,050.05	0.00	0.00	0.09
P-514	1,050.00	12.0	Ductile Iro	130.0	0.00	Open	0.00	1,914.10	1,914.10	0.00	0.00	0.00
P-515	567.00	6.0	Ductile Iro	130.0	0.00	Open	13.30	2,715.02	2,715.01	0.01	0.02	0.15
P-516	1,078.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.10	1,914.00	0.10	0.09	0.84
P-517	1,688.00	30.0	Ductile Iro	130.0	0.00	Open	1,206.48	1,914.00	1,913.93	0.07	0.04	0.55
P-518	263.00	8.0	Ductile Iro	130.0	0.00	Open	38.49	1,913.93	1,913.92	0.01	0.04	0.25
P-519	635.00	8.0	Ductile Iro	130.0	0.00	Open	23.37	1,913.92	1,913.91	0.01	0.02	0.15
P-520	511.00	8.0	Ductile Iro	130.0	0.00	Open	15.12	1,913.92	1,913.91	0.00	0.01	0.10
P-521	785.00	6.0	Ductile Iro	130.0	0.00	Open	13.30	2,585.06	2,585.04	0.02	0.02	0.15
P-522	136.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,585.04	2,585.04	0.00	0.00	0.00
P-523	684.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,457.88	2,457.88	0.00	0.00	0.00
P-527	246.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.05	2,715.04	0.02	0.08	0.28
P-528	631.00	8.0	Ductile Iro	130.0	0.00	Open	22.82	1,767.91	1,767.90	0.01	0.02	0.15
P-531	421.00	12.0	Ductile Iro	130.0	0.00	Open	317.02	1,913.88	1,913.76	0.13	0.30	0.90
P-532	151.00	6.0	Ductile Iro	130.0	0.00	Open	23.07	2,715.04	2,715.02	0.01	0.07	0.26
P-533	324.00	6.0	Ductile Iro	130.0	0.00	Open	5.39	2,715.02	2,715.02	0.00	0.00	0.06
P-534	569.00	6.0	Ductile Iro	130.0	0.00	Open	7.60	2,715.02	2,715.02	0.00	0.01	0.09
P-536	518.00	6.0	Ductile Iro	130.0	0.00	Open	3.80	2,715.02	2,715.02	0.00	0.00	0.04
P-537	1,583.00	12.0	Ductile Iro	130.0	0.00	Open	-112.64	1,767.91	1,767.98	0.07	0.04	0.32
P-538	371.00	8.0	Ductile Iro	130.0	0.00	Open	0.48	1,767.98	1,767.98	0.00	0.00	0.00
P-540	412.00	8.0	Ductile Iro	130.0	0.00	Open	40.46	1,767.91	1,767.89	0.02	0.05	0.26
P-541	945.00	12.0	Ductile Iro	130.0	0.00	Open	35.69	1,767.91	1,767.90	0.01	0.01	0.10
P-542	346.00	8.0	Ductile Iro	130.0	0.00	Open	31.78	1,767.90	1,767.89	0.01	0.03	0.20
P-543	366.00	8.0	Ductile Iro	130.0	0.00	Open	19.43	1,767.89	1,767.89	0.00	0.01	0.12
P-544	408.00	8.0	Ductile Iro	130.0	0.00	Open	12.35	1,767.89	1,767.89	0.00	0.01	0.08
P-546	491.00	12.0	Ductile Iro	130.0	0.00	Open	-33.07	1,767.90	1,767.91	0.00	0.00	0.09
P-547	1,468.00	30.0	Ductile Iro	130.0	0.00	Open	848.39	1,913.93	1,913.90	0.03	0.02	0.39
P-549	534.00	6.0	Ductile Iro	130.0	0.00	Open	36.99	1,767.90	1,767.82	0.09	0.17	0.42
P-550	379.00	8.0	Ductile Iro	130.0	0.00	Open	6.35	2,049.90	2,049.90	0.00	0.00	0.04
P-551	648.00	8.0	Ductile Iro	130.0	0.00	Open	6.35	2,049.90	2,049.90	0.00	0.00	0.04
P-552	334.00	8.0	Ductile Iro	130.0	0.00	Open	-6.88	2,049.91	2,049.91	0.00	0.00	0.04
P-553	462.00	8.0	Ductile Iro	130.0	0.00	Open	-13.61	2,049.91	2,049.91	0.00	0.01	0.09
P-554	311.00	8.0	Ductile Iro	130.0	0.00	Open	-31.34	2,049.87	2,049.87	0.01	0.03	0.20
P-555	228.00	8.0	Ductile Iro	130.0	0.00	Open	-31.34	2,049.87	2,049.88	0.01	0.03	0.20
P-556	290.00	8.0	Ductile Iro	130.0	0.00	Open	208.27	2,715.43	2,715.14	0.29	1.00	1.33
P-557	255.00	8.0	Ductile Iro	130.0	0.00	Open	86.00	2,458.07	2,458.02	0.05	0.19	0.55
P-558	803.00	6.0	Ductile Iro	130.0	0.00	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-559	374.00	6.0	Ductile Iro	130.0	0.00	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-560	287.00	6.0	Ductile Iro	130.0	0.00	Open	25.27	2,325.05	2,325.03	0.02	0.08	0.29
P-561	910.00	6.0	Ductile Iro	130.0	0.00	Open	19.02	2,325.03	2,324.98	0.04	0.05	0.22
P-562	1,758.00	6.0	Ductile Iro	130.0	0.00	Open	-6.25	2,325.02	2,325.03	0.01	0.01	0.07
P-563	457.00	8.0	Ductile Iro	130.0	0.00	Open	44.29	2,458.02	2,457.99	0.03	0.06	0.28
P-564	575.00	6.0	Ductile Iro	130.0	0.00	Open	25.27	2,457.99	2,457.95	0.05	0.08	0.29
P-565	195.00	8.0	Ductile Iro	130.0	0.00	Open	138.64	2,715.14	2,715.05	0.09	0.47	0.88
P-566	475.00	8.0	Ductile Iro	130.0	0.00	Open	42.80	1,911.96	1,911.93	0.03	0.05	0.27
P-567	251.00	12.0	Ductile Iro	130.0	0.00	Open	-173.23	1,911.88	1,911.90	0.02	0.10	0.49
P-568	383.00	8.0	Ductile Iro	130.0	0.00	Open	-73.81	1,911.90	1,911.96	0.06	0.15	0.47

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-569	134.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,911.93	1,911.93	0.00	0.00	0.00
P-570	97.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,911.93	1,911.93	0.00	0.00	0.00
P-572	477.00	8.0	Ductile Iro	130.0	0.00	Open	42.80	1,911.93	1,911.91	0.03	0.05	0.27
P-573	199.00	6.0	Ductile Iro	130.0	0.00	Open	28.92	1,911.91	1,911.89	0.02	0.10	0.33
P-574	97.00	8.0	Ductile Iro	130.0	0.00	Open	13.89	1,911.91	1,911.91	0.00	0.01	0.09
P-575	274.00	8.0	Ductile Iro	130.0	0.00	Open	0.59	1,911.91	1,911.91	0.00	0.00	0.00
P-577	755.00	8.0	Ductile Iro	130.0	0.00	Open	13.30	1,911.91	1,911.90	0.00	0.01	0.08
P-582	205.00	8.0	Ductile Iro	130.0	0.00	Open	-27.98	1,911.87	1,911.87	0.01	0.02	0.18
P-583	199.00	8.0	Ductile Iro	130.0	0.00	Open	-27.98	1,911.87	1,911.88	0.00	0.02	0.18
P-585	76.00	8.0	Ductile Iro	130.0	0.00	Open	-1.34	2,458.21	2,458.21	0.00	0.00	0.01
P-586	422.00	6.0	Ductile Iro	130.0	0.00	Open	3.80	2,585.05	2,585.05	0.00	0.00	0.04
P-587	75.00	8.0	Ductile Iro	130.0	0.00	Open	-24.63	2,049.90	2,049.91	0.00	0.02	0.16
P-588	108.00	8.0	Ductile Iro	130.0	0.00	Open	-53.50	2,049.91	2,049.91	0.01	0.08	0.34
P-589	470.00	8.0	Ductile Iro	130.0	0.00	Open	25.23	2,049.91	2,049.90	0.01	0.02	0.16
P-590	807.00	8.0	Ductile Iro	130.0	0.00	Open	78.74	2,050.05	2,049.91	0.13	0.16	0.50
P-591	467.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	2,049.90	2,049.90	0.00	0.00	0.00
P-592	161.00	8.0	Ductile Iro	130.0	0.00	Open	3.54	2,049.89	2,049.89	0.00	0.00	0.02
P-593	522.00	8.0	Ductile Iro	130.0	0.00	Open	-18.78	2,049.89	2,049.90	0.01	0.01	0.12
P-594	268.00	8.0	Ductile Iro	130.0	0.00	Open	-22.33	2,049.88	2,049.89	0.00	0.02	0.14
P-595	102.00	8.0	Ductile Iro	130.0	0.00	Open	-24.63	2,049.90	2,049.90	0.00	0.02	0.16
P-596	396.00	8.0	Ductile Iro	130.0	0.00	Open	-10.78	2,049.90	2,049.90	0.00	0.00	0.07
P-597	251.00	8.0	Ductile Iro	130.0	0.00	Open	-24.63	2,049.90	2,049.90	0.00	0.02	0.16
P-598	249.00	8.0	Ductile Iro	130.0	0.00	Open	13.85	2,049.90	2,049.90	0.00	0.01	0.09
P-599	347.00	8.0	Ductile Iro	130.0	0.00	Open	-6.74	2,049.91	2,049.91	0.00	0.00	0.04
P-600	186.00	8.0	Ductile Iro	130.0	0.00	Open	-6.86	2,049.91	2,049.91	0.00	0.00	0.04
P-601	508.00	8.0	Ductile Iro	130.0	0.00	Open	6.53	2,049.91	2,049.91	0.00	0.00	0.04
P-602	56.00	8.0	Ductile Iro	130.0	0.00	Open	-31.51	2,049.91	2,049.91	0.00	0.03	0.20
P-603	51.00	8.0	Ductile Iro	130.0	0.00	Open	24.64	2,049.91	2,049.91	0.00	0.02	0.16
P-604	578.00	8.0	Ductile Iro	130.0	0.00	Open	11.25	2,049.91	2,049.91	0.00	0.00	0.07
P-605	377.00	8.0	Ductile Iro	130.0	0.00	Open	-13.39	2,049.91	2,049.91	0.00	0.01	0.09
P-606	141.00	8.0	Ductile Iro	130.0	0.00	Open	-56.15	2,049.91	2,049.93	0.01	0.09	0.36
P-607	340.00	24.0	Ductile Iro	130.0	0.00	Open	1,414.49	1,910.05	1,910.00	0.06	0.16	1.00
P-608	127.00	24.0	Ductile Iro	130.0	0.00	Open	885.79	1,910.00	1,909.99	0.01	0.07	0.63
P-609	242.00	24.0	Ductile Iro	130.0	0.00	Open	-528.70	1,909.99	1,910.00	0.01	0.03	0.37
P-613	184.00	12.0	Ductile Iro	130.0	0.00	Open	281.15	2,050.05	2,050.01	0.04	0.24	0.80
P-614	574.00	8.0	Ductile Iro	130.0	0.00	Open	0.94	2,180.56	2,180.56	0.00	0.00	0.01
P-615	209.00	16.0	Ductile Iro	130.0	0.00	Open	768.85	2,180.56	2,180.48	0.08	0.38	1.23
P-616	2,729.00	16.0	Ductile Iro	130.0	0.00	Open	487.70	2,180.48	2,180.03	0.45	0.17	0.78
P-617	321.00	12.0	Ductile Iro	130.0	0.00	Open	281.15	2,180.48	2,180.40	0.08	0.24	0.80
P-618	278.00	8.0	Ductile Iro	130.0	0.00	Open	-6.29	2,180.56	2,180.56	0.00	0.00	0.04
P-619	330.00	8.0	Ductile Iro	130.0	0.00	Open	33.03	2,049.88	2,049.87	0.01	0.03	0.21
P-620	108.00	8.0	Ductile Iro	130.0	0.00	Open	12.49	2,049.87	2,049.87	0.00	0.00	0.08
P-621	389.00	8.0	Ductile Iro	130.0	0.00	Open	20.54	2,049.87	2,049.87	0.01	0.01	0.13
P-622	160.00	8.0	Ductile Iro	130.0	0.00	Open	8.06	2,049.80	2,049.80	0.00	0.00	0.05
P-623	448.00	8.0	Ductile Iro	130.0	0.00	Open	11.21	2,049.80	2,049.80	0.00	0.00	0.07
P-624	148.00	8.0	Ductile Iro	130.0	0.00	Open	-0.59	2,049.80	2,049.80	0.00	0.00	0.00
P-625	376.00	8.0	Ductile Iro	130.0	0.00	Open	-3.74	2,049.80	2,049.80	0.00	0.00	0.02
P-626	395.00	8.0	Ductile Iro	130.0	0.00	Open	-3.15	2,049.80	2,049.80	0.00	0.00	0.02
P-627	156.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,715.07	2,715.07	0.00	0.00	0.00
P-629	364.00	12.0	Ductile Iro	130.0	0.00	Open	-145.24	1,911.85	1,911.88	0.03	0.07	0.41
P-630	391.00	6.0	Ductile Iro	130.0	0.00	Open	9.49	2,049.80	2,049.80	0.01	0.01	0.11

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-631	454.00	6.0	Ductile Iro	130.0	0.00	Open	-7.59	2,049.79	2,049.80	0.00	0.01	0.09
P-632	331.00	8.0	Ductile Iro	130.0	0.00	Open	-11.32	2,049.81	2,049.82	0.00	0.00	0.07
P-633	488.00	8.0	Ductile Iro	130.0	0.00	Open	-27.51	2,049.82	2,049.83	0.01	0.02	0.18
P-634	126.00	8.0	Ductile Iro	130.0	0.00	Open	16.19	2,049.82	2,049.82	0.00	0.01	0.10
P-635	274.00	24.0	Ductile Iro	130.0	0.00	Open	2,716.86	1,914.37	1,914.52	0.15	0.55	1.93
P-636	166.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.07	2,715.05	0.01	0.08	0.28
P-637	1,359.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.37	1,914.24	0.12	0.09	0.84
P-638	844.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.24	1,914.17	0.08	0.09	0.84
P-639	748.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.17	1,914.10	0.07	0.09	0.84
P-640	100.00	6.0	Ductile Iro	130.0	0.00	Open	38.96	2,985.06	2,985.04	0.02	0.18	0.44
P-641	689.00	6.0	Ductile Iro	130.0	0.00	Open	-36.49	1,767.80	1,767.91	0.11	0.16	0.41
P-646	607.00	12.0	Ductile Iro	130.0	0.00	Open	-341.89	2,178.35	2,178.56	0.21	0.35	0.97
P-649	104.00	6.0	Ductile Iro	130.0	0.00	Open	38.96	2,985.04	2,985.02	0.02	0.18	0.44
P-650	97.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,844.88	2,844.88	0.00	0.00	0.00
P-651	125.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.14	2,715.13	0.01	0.08	0.28
P-652	829.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.13	2,715.07	0.07	0.08	0.28
P-653	279.00	6.0	Ductile Iro	130.0	0.00	Open	44.66	2,715.14	2,715.08	0.07	0.23	0.51
P-654	105.00	6.0	Ductile Iro	130.0	0.00	Open	22.53	2,715.06	2,715.05	0.01	0.07	0.26
P-655	573.00	6.0	Ductile Iro	130.0	0.00	Open	16.83	2,715.05	2,715.03	0.02	0.04	0.19
P-656	518.00	6.0	Ductile Iro	130.0	0.00	Open	5.70	2,715.05	2,715.05	0.00	0.01	0.06
P-657	625.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,844.81	2,844.81	0.00	0.00	0.00
P-658	209.00	8.0	Ductile Iro	130.0	0.00	Open	26.74	1,767.94	1,767.93	0.00	0.02	0.17
P-659	578.00	8.0	Ductile Iro	130.0	0.00	Open	26.74	1,767.93	1,767.92	0.01	0.02	0.17
P-660	766.00	8.0	Ductile Iro	130.0	0.00	Open	28.66	1,767.92	1,767.90	0.02	0.03	0.18
P-661	1,137.00	8.0	Ductile Iro	130.0	0.00	Open	21.60	1,767.90	1,767.88	0.02	0.02	0.14
P-662	949.00	8.0	Ductile Iro	130.0	0.00	Open	22.27	1,767.90	1,767.89	0.02	0.02	0.14
P-663	804.00	8.0	Ductile Iro	130.0	0.00	Open	-14.59	1,767.89	1,767.90	0.01	0.01	0.09
P-665	506.00	12.0	Ductile Iro	130.0	0.00	Open	244.88	1,913.77	1,913.67	0.09	0.19	0.69
P-668	329.00	12.0	Ductile Iro	130.0	0.00	Open	124.20	1,768.00	1,767.98	0.02	0.05	0.35
P-669	440.00	8.0	Ductile Iro	130.0	0.00	Open	-29.25	1,913.67	1,913.68	0.01	0.03	0.19
P-670	316.00	8.0	Ductile Iro	130.0	0.00	Open	-34.81	1,913.68	1,913.69	0.01	0.04	0.22
P-671	405.00	8.0	Ductile Iro	130.0	0.00	Open	17.17	1,913.69	1,913.69	0.00	0.01	0.11
P-672	483.00	8.0	Ductile Iro	130.0	0.00	Open	16.57	1,913.69	1,913.69	0.00	0.01	0.11
P-673	722.00	8.0	Ductile Iro	130.0	0.00	Open	10.93	1,913.69	1,913.68	0.00	0.00	0.07
P-674	244.00	8.0	Ductile Iro	130.0	0.00	Open	-10.84	1,913.69	1,913.69	0.00	0.00	0.07
P-676	500.00	8.0	Ductile Iro	130.0	0.00	Open	31.02	1,768.00	1,767.98	0.01	0.03	0.20
P-677	357.00	8.0	Ductile Iro	130.0	0.00	Open	15.27	1,767.98	1,767.98	0.00	0.01	0.10
P-684	923.00	8.0	Ductile Iro	130.0	0.00	Open	42.19	1,913.81	1,913.77	0.05	0.05	0.27
P-685	347.00	8.0	Ductile Iro	130.0	0.00	Open	9.00	1,913.77	1,913.76	0.00	0.00	0.06
P-686	232.00	12.0	Ductile Iro	130.0	0.00	Open	11.70	1,913.67	1,913.67	0.00	0.00	0.03
P-688	135.00	12.0	Ductile Iro	130.0	0.00	Open	262.20	1,913.77	1,913.74	0.03	0.21	0.74
P-689	382.00	8.0	Ductile Iro	130.0	0.00	Open	-84.37	1,913.69	1,913.77	0.07	0.19	0.54
P-690	265.00	6.0	Ductile Iro	130.0	0.00	Open	6.01	2,715.02	2,715.02	0.00	0.01	0.07
P-691	272.00	8.0	Ductile Iro	130.0	0.00	Open	15.90	1,913.69	1,913.69	0.00	0.01	0.10
P-692	195.00	8.0	Ductile Iro	130.0	0.00	Open	15.90	1,913.69	1,913.69	0.00	0.01	0.10
P-693	559.00	8.0	Ductile Iro	130.0	0.00	Open	-27.33	1,913.69	1,913.70	0.01	0.02	0.17
P-694	214.00	8.0	Ductile Iro	130.0	0.00	Open	-27.33	1,913.70	1,913.70	0.01	0.02	0.17
P-696	378.00	8.0	Ductile Iro	130.0	0.00	Open	8.90	1,913.70	1,913.70	0.00	0.00	0.06
P-697	250.00	8.0	Ductile Iro	130.0	0.00	Open	-24.39	1,913.70	1,913.71	0.00	0.02	0.16
P-698	218.00	8.0	Ductile Iro	130.0	0.00	Open	60.62	1,913.74	1,913.72	0.02	0.10	0.39
P-699	290.00	8.0	Ductile Iro	130.0	0.00	Open	36.23	1,913.72	1,913.70	0.01	0.04	0.23

Title: DC Ranch

q:\...model-overall dc ranch_9_06_2006.wcd

09/07/06 04:12:08 Bentley Systems, Inc. Haestad Methods Solution Center Watertown, CT 06795 USA +1-203-755-1666

Project Engineer: Gordon Wark, P.E.

WaterCAD v7.0 [07.00.049.00]

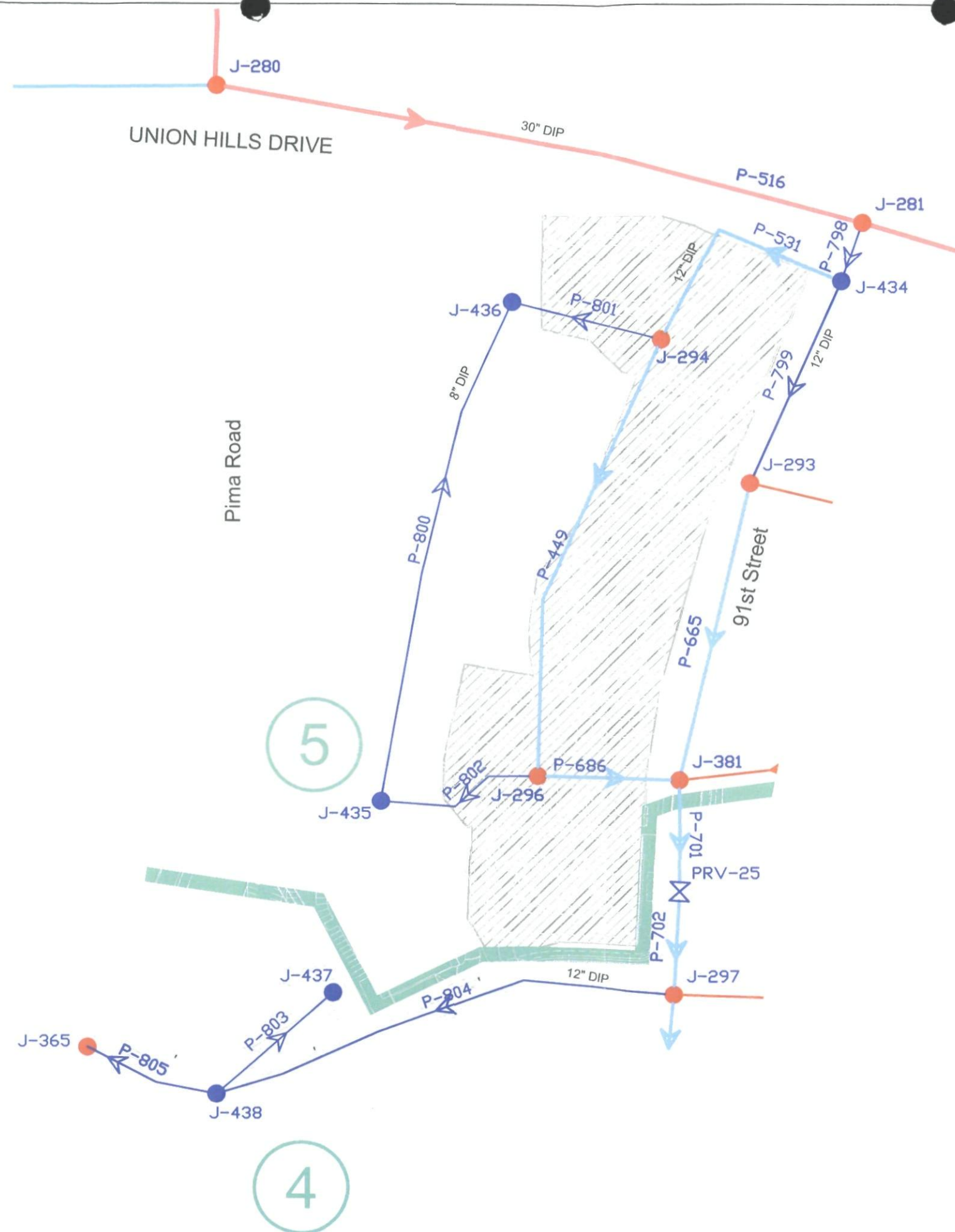
Page 4 of 6

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-700	412.00	8.0	Ductile Iro	130.0	0.00	Open	-24.39	1,913.71	1,913.72	0.01	0.02	0.16
P-701	185.00	12.0	Ductile Iro	130.0	0.00	Open	285.84	1,913.67	1,913.63	0.05	0.25	0.81
P-702	172.00	12.0	Ductile Iro	130.0	0.00	Open	285.84	1,768.05	1,768.01	0.04	0.25	0.81
P-703	327.00	8.0	Ductile Iro	130.0	0.00	Open	54.88	1,768.01	1,767.98	0.03	0.08	0.35
P-706	818.00	8.0	Ductile Iro	130.0	0.00	Open	-12.85	1,767.97	1,767.98	0.00	0.01	0.08
P-707	288.00	8.0	Ductile Iro	130.0	0.00	Open	5.39	1,767.97	1,767.97	0.00	0.00	0.03
P-708	725.00	8.0	Ductile Iro	130.0	0.00	Open	-11.10	1,767.97	1,767.98	0.00	0.00	0.07
P-709	132.00	8.0	Ductile Iro	130.0	0.00	Open	-1.91	1,767.98	1,767.98	0.00	0.00	0.01
P-710	417.00	8.0	Ductile Iro	130.0	0.00	Open	-11.08	1,767.98	1,767.98	0.00	0.00	0.07
P-711	161.00	8.0	Ductile Iro	130.0	0.00	Open	-9.19	1,767.98	1,767.98	0.00	0.00	0.06
P-712	234.00	8.0	Ductile Iro	130.0	0.00	Open	7.33	1,767.98	1,767.98	0.00	0.00	0.05
P-713	148.00	8.0	Ductile Iro	130.0	0.00	Open	-16.51	1,767.98	1,767.98	0.00	0.01	0.11
P-714	458.00	8.0	Ductile Iro	130.0	0.00	Open	36.10	1,768.01	1,767.99	0.02	0.04	0.23
P-715	284.00	8.0	Ductile Iro	130.0	0.00	Open	36.09	1,767.99	1,767.98	0.01	0.04	0.23
P-716	264.00	8.0	Ductile Iro	130.0	0.00	Open	-0.00	1,767.99	1,767.99	0.00	0.00	0.00
P-717	52.00	12.0	Ductile Iro	130.0	0.00	Open	201.58	1,913.74	1,913.73	0.01	0.13	0.57
P-718	278.00	12.0	Ductile Iro	130.0	0.00	Open	201.58	1,768.04	1,768.01	0.04	0.13	0.57
P-719	460.00	12.0	Ductile Iro	130.0	0.00	Open	168.29	1,767.98	1,767.94	0.04	0.09	0.48
P-721	126.00	12.0	Ductile Iro	130.0	0.00	Open	155.22	1,768.01	1,768.00	0.01	0.08	0.44
P-722	1,092.00	8.0	Ductile Iro	130.0	0.00	Open	-9.03	1,767.97	1,767.98	0.00	0.00	0.06
P-723	304.00	8.0	Ductile Iro	130.0	0.00	Open	16.49	1,767.98	1,767.97	0.00	0.01	0.11
P-724	70.00	8.0	Ductile Iro	130.0	0.00	Open	-25.52	1,767.98	1,767.98	0.00	0.02	0.16
P-725	609.00	6.0	Ductile Iro	130.0	0.00	Open	8.30	2,456.88	2,456.87	0.01	0.01	0.09
P-727	417.00	6.0	Ductile Iro	130.0	0.00	Open	20.77	2,456.90	2,456.88	0.02	0.06	0.24
P-728	486.00	8.0	Ductile Iro	130.0	0.00	Open	32.77	2,456.49	2,456.48	0.02	0.03	0.21
P-729	291.00	6.0	Ductile Iro	130.0	0.00	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-730	264.00	6.0	Ductile Iro	130.0	0.00	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-731	219.00	6.0	Ductile Iro	130.0	0.00	Open	-63.19	2,456.78	2,456.88	0.10	0.44	0.72
P-732	132.00	6.0	Ductile Iro	130.0	0.00	Open	-70.08	2,456.88	2,456.95	0.07	0.54	0.80
P-733	754.00	6.0	Ductile Iro	130.0	0.00	Open	-6.89	2,456.88	2,456.88	0.01	0.01	0.08
P-734	318.00	12.0	Ductile Iro	130.0	0.00	Open	-179.03	1,911.77	1,911.81	0.03	0.10	0.51
P-735	685.00	12.0	Ductile Iro	130.0	0.00	Open	-141.45	1,911.81	1,911.85	0.05	0.07	0.40
P-737	940.00	8.0	Ductile Iro	130.0	0.00	Open	-16.82	2,049.82	2,049.82	0.01	0.01	0.11
P-739	343.00	8.0	Ductile Iro	130.0	0.00	Open	13.83	2,324.92	2,324.91	0.00	0.01	0.09
P-741	20.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	2,049.80	2,049.80	0.00	0.00	0.00
P-742	20.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,911.81	1,911.81	0.00	0.00	0.00
P-743	513.00	12.0	Ductile Iro	130.0	0.00	Open	-300.40	2,177.89	2,178.03	0.14	0.27	0.85
P-744	996.00	12.0	Ductile Iro	130.0	0.00	Open	-328.06	2,178.03	2,178.35	0.32	0.32	0.93
P-745	517.00	8.0	Ductile Iro	130.0	0.00	Open	-13.83	2,178.02	2,178.03	0.00	0.01	0.09
P-746	997.00	8.0	Ductile Iro	130.0	0.00	Open	18.69	1,913.87	1,913.86	0.01	0.01	0.12
P-749	341.00	8.0	Ductile Iro	130.0	0.00	Open	-26.75	1,913.63	1,913.64	0.01	0.02	0.17
P-750	765.00	6.0	Ductile Iro	130.0	0.00	Open	15.66	1,913.68	1,913.65	0.03	0.03	0.18
P-751	673.00	6.0	Ductile Iro	130.0	0.00	Open	4.84	1,913.65	1,913.65	0.00	0.00	0.05
P-753	93.00	8.0	Ductile Iro	130.0	0.00	Open	-30.24	1,913.62	1,913.62	0.00	0.03	0.19
P-754	463.00	6.0	Ductile Iro	130.0	0.00	Open	-5.23	1,913.62	1,913.62	0.00	0.00	0.06
P-755	393.00	8.0	Ductile Iro	130.0	0.00	Open	-33.22	1,913.62	1,913.63	0.01	0.03	0.21
P-756	316.00	8.0	Ductile Iro	130.0	0.00	Open	-22.99	1,913.62	1,913.62	0.01	0.02	0.15
P-757	571.00	8.0	Ductile Iro	130.0	0.00	Open	-22.99	1,913.62	1,913.63	0.01	0.02	0.15
P-759	846.00	8.0	Ductile Iro	130.0	0.00	Open	6.03	2,049.85	2,049.85	0.00	0.00	0.04
P-760	441.00	8.0	Ductile Iro	130.0	0.00	Open	6.03	2,050.03	2,050.03	0.00	0.00	0.04
P-761	1,712.00	8.0	Ductile Iro	130.0	0.00	Open	23.68	1,913.67	1,913.64	0.03	0.02	0.15

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-762	814.00	6.0	Ductile Iro	130.0	0.00	Open	-16.60	1,913.64	1,913.67	0.03	0.04	0.19
P-763	380.00	8.0	Ductile Iro	130.0	0.00	Open	-11.89	1,913.63	1,913.63	0.00	0.00	0.08
P-764	201.00	8.0	Ductile Iro	130.0	0.00	Open	-41.19	1,913.63	1,913.64	0.01	0.05	0.26
P-765	618.00	6.0	Ductile Iro	130.0	0.00	Open	-18.50	1,913.65	1,913.68	0.03	0.05	0.21
P-766	83.00	6.0	Ductile Iro	130.0	0.00	Open	-16.14	1,913.64	1,913.65	0.00	0.04	0.18
P-767	87.00	6.0	Ductile Iro	130.0	0.00	Open	-42.29	1,913.68	1,913.69	0.02	0.21	0.48
P-768	263.00	8.0	Ductile Iro	130.0	0.00	Open	56.50	1,913.69	1,913.67	0.02	0.09	0.36
P-769	619.00	6.0	Ductile Iro	130.0	0.00	Open	-25.05	1,913.64	1,913.69	0.05	0.08	0.28
P-770	340.00	6.0	Ductile Iro	130.0	0.00	Open	11.44	2,049.81	2,049.80	0.01	0.02	0.13
P-771	606.00	6.0	Ductile Iro	130.0	0.00	Open	-7.81	2,049.80	2,049.80	0.01	0.01	0.09
P-772	573.00	8.0	Ductile Iro	130.0	0.00	Open	-0.00	1,913.62	1,913.62	0.00	0.00	0.00
P-773	917.00	8.0	Ductile Iro	130.0	0.00	Closed	0.00	1,912.25	1,910.87	0.00	0.00	0.00
P-775	820.00	8.0	Ductile Iro	130.0	0.00	Closed	0.00	1,913.62	1,912.25	0.00	0.00	0.00
P-776	100.00	6.0	Ductile Iro	130.0	0.00	Open	7.81	2,049.80	2,049.80	0.00	0.01	0.09
P-777	318.00	6.0	Ductile Iro	130.0	0.00	Open	11.44	2,049.80	2,049.80	0.01	0.02	0.13
P-778	366.00	8.0	Ductile Iro	130.0	0.00	Open	143.70	1,913.74	1,913.56	0.18	0.50	0.92
P-780	324.00	8.0	Ductile Iro	130.0	0.00	Open	-9.60	1,911.87	1,911.87	0.00	0.00	0.06
P-781	507.00	8.0	Ductile Iro	130.0	0.00	Open	9.60	1,911.87	1,911.87	0.00	0.00	0.06
P-782	645.00	12.0	Ductile Iro	130.0	0.00	Closed	0.00	1,911.87	1,913.80	0.00	0.00	0.00
P-783	194.00	12.0	Ductile Iro	130.0	0.00	Open	-120.12	1,913.80	1,913.81	0.01	0.05	0.34
P-784	1,490.00	8.0	Ductile Iro	130.0	0.00	Open	-37.59	1,911.81	1,911.87	0.06	0.04	0.24
P-785	1,006.00	8.0	Ductile Iro	130.0	0.00	Open	244.67	1,913.56	1,912.20	1.35	1.35	1.56
P-786	710.00	8.0	Ductile Iro	130.0	0.00	Open	116.62	1,912.20	1,911.96	0.24	0.34	0.74
P-787	1,100.00	8.0	Ductile Iro	130.0	0.00	Open	-103.01	1,911.90	1,912.20	0.30	0.27	0.66
P-788	919.00	8.0	Ductile Iro	130.0	0.00	Open	15.05	1,912.20	1,912.19	0.01	0.01	0.10
P-789	582.00	8.0	Ductile Iro	130.0	0.00	Open	-314.05	1,911.89	1,913.13	1.24	2.14	2.00
P-790	830.00	8.0	Ductile Iro	130.0	0.00	Open	106.44	1,913.80	1,913.56	0.24	0.29	0.68
P-792	325.00	8.0	Ductile Iro	130.0	0.00	Open	-319.52	1,913.13	1,913.85	0.72	2.21	2.04
P-793	254.00	6.0	Ductile Iro	130.0	0.00	Open	-120.41	1,910.87	1,911.25	0.37	1.47	1.37
P-794	266.00	6.0	Ductile Iro	130.0	0.00	Open	-120.41	1,911.25	1,911.64	0.39	1.47	1.37
P-795	457.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,913.51	1,913.51	0.00	0.00	0.00
P-796	1,129.00	6.0	Ductile Iro	130.0	0.00	Open	-128.53	1,911.64	1,913.51	1.87	1.66	1.46
P-797	252.00	8.0	Ductile Iro	130.0	0.00	Open	-128.53	1,913.51	1,913.62	0.10	0.41	0.82
P-798	102.00	12.0	Ductile Iro	130.0	0.00	Open	646.28	1,914.00	1,913.88	0.12	1.13	1.83
P-799	366.00	12.0	Ductile Iro	130.0	0.00	Open	329.25	1,913.88	1,913.77	0.12	0.32	0.93
P-800	860.00	8.0	Ductile Iro	130.0	0.00	Open	20.99	1,913.58	1,913.57	0.01	0.01	0.13
P-801	252.00	6.0	Ductile Iro	130.0	0.00	Open	-83.91	1,913.57	1,913.76	0.19	0.75	0.95
P-802	275.00	8.0	Ductile Iro	130.0	0.00	Open	-115.10	1,913.58	1,913.67	0.09	0.33	0.73
P-803	253.00	6.0	Ductile Iro	130.0	0.00	Open	-9.72	1,767.99	1,767.99	0.00	0.01	0.11
P-804	780.00	12.0	Ductile Iro	130.0	0.00	Open	74.47	1,768.01	1,767.99	0.02	0.02	0.21
P-805	224.00	12.0	Ductile Iro	130.0	0.00	Open	64.75	1,767.99	1,767.99	0.00	0.02	0.18



Water Distribution Plan for Parcel 1.1

—	6" DIA. WATER
—	8" DIA. WATER
—	12" DIA. WATER
—	16" DIA. WATER
—	18" DIA. WATER
—	20" DIA. WATER
—	24" DIA. WATER
—	30" DIA. WATER

J-105 WATERCAD NODE/JUNCTION

P-318 (9) WATERCAD PIPE/LINK (ZONE)

5 PRESSURE ZONE

PRESSURE ZONE BOUNDARY

NOT APART OF PROJECT



1 inch = 200 ft.

Notes:

Lotting and roadway layouts are conceptual and subject to change. Pressure zone line boundaries are based on natural topography and may be adjusted with design of finish floor elevation of each lot.

Individual booster pumps may be required where inadequate pressure is available for individual lots.

The waterline layout is a conceptual design illustrating the pipe size necessary to serve each parcel and is not specific to its location.

Project Number: 062762

Date: September 6, 2006

WOOD/PATEL
Civil Engineers
Hydrologists
Land Surveyors
Construction Managers
(602) 335-8500

DC Ranch LLC
1600 East Doubletree
Ranch Road, Suite 300
Phoenix, Arizona 85016
(602) 956-7877
(602) 956-7961 FAX

Q:\DC_Ranch\Water\Overall Water Model\06_06_2006 Model-Overall DC Ranch_9_06_2006.dwg

Fee

\$2,100.00 + \$14.00/lot

WOOD/PATEL

LAND DEVELOPMENT • WATER RESOURCES • WATER/WASTEWATER • TRANSPORTATION/TRAFFIC • SURVEYING • CONSTRUCTION MANAGEMENT

Darrel E. Wood, P.E., R.L.S.
Ashok C. Patel, P.E., R.L.S., CFM
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James S. Campbell, P.E.
Thomas R. Gertings, R.L.S.
Timothy A. Huval, P.E.
Michael T. Young, P.E.
Peter Hemingway, P.E.
Jeffrey R. Minch, P.E.
Robert D. Gofonia, P.E., R.L.S.
Gerald R. Copeland, P.E., R.L.S.
Patrick W. Marum, P.E.

September 8, 2006

Mr. Douglas L. Mann, P.E.
Water Resources Engineer
City of Scottsdale Water Resources
9388 East San Salvador Drive
Scottsdale, AZ 85258

15-PP-2006
9-14-06

Phone: (480) 312-5636
Fax: (480) 312-5615

Re: **DC Ranch Parcel 1.1**
Water Distribution Basis of Design
WP #062762

Dear Mr. Mann:

The existing Zone 5 storage reservoir provides the potable water storage for the DC Ranch Parcel 1.1 development.

The water system for DC Ranch Parcel 1.1 was analyzed in the amended *Planning Unit I and Second Amendment to Planning Units III, V, and VI Potable Water System Study*, dated August 29, 2002. The land uses, demands, and pipe locations have been updated to their current and proposed condition. The demands for the site are included in the attached spreadsheet named *Water Demands*.

The proposed water system consists of 8-inch waterlines that will provide potable water service to all 12 proposed buildings within Parcel 1.1. The proposed 8-inch waterlines will connect to proposed waterlines in three (3) locations: (1.) 12-inch Zone 4 waterline in the Trailside View alignment (commercial access road) just east of Pima Road – Node J-438, (2.) 12-inch waterline on the north side of Parcel 1.2 – Node J-294, and (3.) 12-inch waterline on the south side of Parcel 1.2 – Node J-296.

The estimated average day demand for Parcel 1.1 is 60 gallons per minute (gpm), the maximum day demand for the proposed development totals 119 gpm, and the peak hour demand is 209 gpm. This demand was put broken up into 3 nodes on the site to represent the actual service locations. Nodes J-435, J-436, and J-437 represent these locations.

Attached are the results of the maximum day plus fire flow tests and peak hour test along with an exhibit illustrating the specified node locations and pipeline sizes.

As indicated by the results of the water system modeling, adequate maximum day demand pressures and fire flow requirements have been met at all service junctions. Pressures during maximum day plus fire flow demands at nodes J-435 and J-436 are 110-psi and 117-psi respectively. These nodes are at the lower end of Pressure Zone 5. The pressure for the maximum day plus fire flow demand for node J-437 is 39-psi. This node is at the high end of Pressure Zone 4. Fire flow rates of 1,500 gpm have been met at the specified nodes. All pressures exceed the 30-psi minimum requirement during the maximum day plus fire flow scenario.



Mr. Douglas L. Mann
City of Scottsdale Water Resources Dept.
DC Ranch Parcels 1.1
Water Distribution Basis of Design
WP #062762

September 8, 2006
Page 2

Pressures within the development may require individual pressure reducing valves, fire pumps, or other required potable water devices. This will depend on building use development and should be determined by a mechanical engineer.

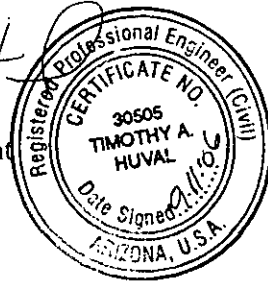
Thank you for your prompt review of the water system analysis provided for DC Ranch Parcel 1.1.

If you have any questions, please feel free to contact us.

Sincerely,

WOOD, PATEL & ASSOCIATES, INC.


Timothy A. Huval, P.E.
Executive Vice President



TAH/kk

Enclosure(s)

WATER DEMANDS

Project: DC Ranch Parcel 1.1
Location: City of Scottsdale, Arizona
Date: September 11, 2006
References: DC Ranch Planning Unit I and Second Ammendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

			NON-RESIDENTIAL Commercial/Retail		NON-RESIDENTIAL								
Node	SUB-AREA	LAND USE	AREA (SF)	ADF/ SF (GPD)	ADF SUB- TOTAL (GPD)	MAX DAY FACTOR	MAX DAY SUB- TOTAL (GPD)	PEAK HOUR FACTOR	PEAK HOUR SUB- TOTAL (GPD)	TOTAL ADF (GPD)	MAX DAY TOTAL (GPD)	PEAK HOUR TOTAL (GPD)	
Parcel 1.1													
J-437	2.1	12 - BUILDING K BANK, FF=1626, 5000 SF	5,000	0.8	4,000	2	8,000	3.5	14,000	4,000	8,000	14,000	
TOTAL SUB-AREA 2.1 (J-437)					4,000		8,000		14,000	4,000	8,000	14,000	TOTAL SUB-AREA 2.1 (J-437)
J-436	2.3	19 - BUILDING D GROCERY STORE, FF=1642, 18000 SF; 18 - BUILDING E IN-LINE RETAIL, FF=1638, 11450 SF	29,450	0.8	23,560	2	47,120	3.5	82,460	23,560	47,120	82,460	
J-436	2.3	22 - BUILDING A RETAIL PAD, FF=1641, 2700 SF; 23 - BUILDING A RESTAURANT, FF=1641, 4200 SF	6,900	0.8	5,520	2	11,040	3.5	19,320	5,520	11,040	19,320	
J-436	2.3	21 - BUILDING B RETAIL, FF=1642, 6600 SF	6,600	0.8	5,280	2	10,560	3.5	18,480	5,280	10,560	18,480	
J-436	2.3	20 - BUILDING C IN-LINE RETAIL, FF=1642, 4500 SF	4,500	0.8	3,600	2	7,200	3.5	12,600	3,600	7,200	12,600	
J-436	2.3	17 - BUILDING F RETAIL, FF=1634, 6500 SF	6,500	0.8	5,200	2	10,400	3.5	18,200	5,200	10,400	18,200	
TOTAL SUB-AREA 2.3 (J-436)					43,160		86,320		151,060	43,160	86,320	151,060	TOTAL SUB-AREA 2.3 (J-436)
J-435	2.2	14 - BUILDING I IN-LINE RESTAURAN, FF=1633, 3500 SF; 15 - BUILDING H IN-LINE RETAIL, FF=1634, 7100 SF; 16-BUILDING G RETAIL OR DINNER HOUSE, FF=1633, 6000 SF	16,600	0.8	13,280	2	26,560	3.5	46,480	13,280	26,560	46,480	
J-435	2.2	13 - BUILDING J OFFICE, FF=1634 GFF=1618, 31800 SF	31,800	0.8	25,440	2	50,880	3.5	89,040	25,440	50,880	89,040	
TOTAL SUB-AREA 2.2 (J-435)					38,720		77,440		135,520	38,720	77,440	135,520	TOTAL SUB-AREA 2.2 (J-435)

PARCEL 1.1 TOTAL	COMM SF 107,350	TOTAL FLOW OUT OF DC RANCH 1.1 (GPD) TOTAL FLOW OUT OF DC RANCH 1.1 (GPM)	85,880 60	171,760 119	300,580 209
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WOOD/PATEL

CIVIL ENGINEERS * HYDROLOGISTS * LAND SURVEYORS * CONSTRUCTION MANAGERS

WATER DEMANDS - Reference

Project: *DC Ranch Parcel 1.1*
Location: City of Scottsdale, Arizona
Date: September 1, 2006
References: DC Ranch Planning Unit I and Second Amendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

Project Number: 062732
Project Engineer: Tim Huval, P.E.

Land Use	Average Day Flow	Type
Six-Pack (12-22 DU/AC)	227.6 GPD / DU	Residential
High Density Condo	185.3 GPD / DU	Residential
Commercial/Retail	0.8 GPD / SF	Service/Employment

Maximum Head Loss 8.0 FT/1000 FT (Avg and Max Day Flow Conditions)
10.0 FT/1000 FT (Peak Hour Flow Conditions)

Maximum Pipe Velocity 10 FPS

Minimum Pressure 50.0 PSI (Normal Use Conditions)
30.0 PSI (Fire Flow Conditions)

Max Day Factor 2 times Average Day

Peak Hour Factor 3.5 times Average Day

Pressure Zone	Ground Elevation		
	HGL	Min	Max
4	1790	1510	1650
5	1910	1650	1790
6	2050	1790	1920
7	2180	1920	2050
8	2325	2050	2180
9	2455	2180	2310
10	2585	2310	2440
11	2715	2440	2570
12	2845	2570	2700
13	2975	2700	2830

Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Parcel 111

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-87	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	109.84	30.00	46.21	J-208	N/A	2.16	Z-6 Purr
J-92	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	94.78	30.00	46.22	J-208	N/A	2.16	Z-6 Purr
J-93	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	101.22	30.00	46.21	J-208	N/A	2.16	Z-6 Purr
J-94	Zone-5	2	true	true	500.00	600.00	501.37	601.37	30.00	124.05	30.00	46.23	J-208	N/A	2.16	Z-6 Purr
J-95	Zone-5	2	true	true	500.00	600.00	508.66	608.66	30.00	53.42	30.00	46.24	J-208	N/A	2.16	Z-6 Purr
J-96	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	49.08	30.00	46.24	J-208	N/A	2.16	Z-6 Purr
J-111	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	49.03	30.00	46.24	J-208	N/A	2.16	Z-6 Purr
J-148	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	54.00	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-149	Zone-5	2	true	true	500.00	600.00	532.80	632.80	30.00	59.87	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-151	Zone-5	2	true	true	500.00	600.00	555.16	655.16	30.00	64.28	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-154	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	52.12	30.00	46.33	J-208	N/A	2.16	Z-6 Purr
J-171	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	71.95	30.00	42.69	J-208	N/A	2.16	Z-6 Purr
J-194	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	54.29	30.00	46.29	J-208	N/A	2.16	Z-6 Purr
J-195	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	58.62	30.00	46.29	J-208	N/A	2.16	Z-6 Purr
J-196	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	71.73	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-197	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	86.91	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-198	Zone-5	2	true	true	1,500.00	1,600.00	1,505.40	1,605.40	30.00	82.03	30.00	45.51	J-208	N/A	2.16	Z-6 Purr
J-199	Zone-5	2	true	true	500.00	1,600.00	517.20	1,617.20	30.00	85.52	30.00	45.39	J-208	N/A	2.16	Z-6 Purr
J-200	Zone-5	2	true	true	500.00	600.00	507.82	607.82	30.00	70.06	30.00	45.69	J-208	N/A	2.16	Z-6 Purr
J-203	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	73.40	30.00	45.57	J-208	N/A	2.16	Z-6 Purr
J-204	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	70.12	30.00	45.51	J-208	N/A	2.16	Z-6 Purr
J-207	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	53.54	30.00	45.54	J-208	N/A	2.16	Z-6 Purr
J-208	Zone-5	2	true	true	500.00	600.00	510.13	610.13	30.00	45.40	30.00	49.57	J-111	N/A	2.16	Z-6 Purr
J-210	Zone-5	2	true	true	500.00	600.00	505.47	605.47	30.00	60.81	30.00	45.88	J-208	N/A	2.16	Z-6 Purr
J-211	Zone-5	2	true	true	500.00	600.00	502.06	602.06	30.00	71.93	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-212	Zone-5	2	true	true	500.00	600.00	505.15	605.15	30.00	72.32	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-213	Zone-5	2	true	true	500.00	600.00	504.63	604.63	30.00	70.49	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-214	Zone-5	2	true	true	500.00	600.00	504.64	604.64	30.00	53.52	30.00	46.26	J-208	N/A	2.16	Z-6 Purr
J-215	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	94.54	30.00	46.17	J-208	N/A	2.16	Z-6 Purr
J-216	Zone-5	2	true	true	500.00	600.00	507.73	607.73	30.00	79.41	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-217	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	90.80	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-218	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	93.16	30.00	45.59	J-208	N/A	2.16	Z-6 Purr
J-219	Zone-5	2	true	true	500.00	600.00	504.64	604.64	30.00	90.19	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-220	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	80.40	30.00	45.61	J-208	N/A	2.16	Z-6 Purr
J-221	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	120.18	30.00	46.20	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-222	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	101.05	30.00	46.18	J-208	N/A	2.16	Z-6 Purr
J-275	Zone-5	2	true	true	500.00	600.00	530.57	630.57	30.00	63.72	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-280	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	118.46	30.00	46.20	J-208	N/A	2.16	Z-6 Purr
J-281	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	116.26	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-282	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	109.73	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-283	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	108.85	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-284	Zone-5	2	true	true	500.00	600.00	516.55	616.55	30.00	106.80	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-285	Zone-5	2	true	true	500.00	600.00	510.71	610.71	30.00	102.91	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-286	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	56.57	30.00	57.43	J-401	N/A	2.16	Z-6 Purr
J-287	Zone-5	2	true	true	500.00	600.00	514.39	614.39	30.00	113.39	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-288	Zone-5	2	true	true	500.00	600.00	519.01	619.01	30.00	113.42	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-289	Zone-4	2	true	true	500.00	600.00	519.01	619.01	30.00	60.87	30.00	56.58	J-286	N/A	2.16	Z-6 Purr
J-290	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	63.74	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-291	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	70.99	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-292	Zone-4	2	true	true	500.00	600.00	508.74	608.74	30.00	67.59	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-293	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	117.33	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-294	Zone-5	2	true	true	1,500.00	1,600.00	1,527.05	1,627.05	30.00	115.52	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-296	Zone-5	2	true	true	1,500.00	1,600.00	1,533.70	1,633.70	30.00	117.90	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-297	Zone-4	2	true	true	500.00	600.00	500.90	600.90	30.00	62.66	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-299	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	72.28	30.00	56.64	J-286	N/A	2.16	Z-6 Purr
J-300	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	66.04	30.00	56.67	J-286	N/A	2.16	Z-6 Purr
J-301	Zone-4	2	true	true	500.00	1,600.00	509.00	1,609.00	30.00	63.58	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-302	Zone-4	2	true	true	1,500.00	1,600.00	1,525.37	1,625.37	30.00	71.71	30.00	56.45	J-286	N/A	2.16	Z-6 Purr
J-303	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	70.10	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-304	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	71.77	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-305	Zone-4	2	true	true	500.00	600.00	517.06	617.06	30.00	73.76	30.00	56.64	J-286	N/A	2.16	Z-6 Purr
J-306	Zone-4	2	true	true	500.00	600.00	508.75	608.75	30.00	72.64	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-307	Zone-4	2	true	true	500.00	600.00	517.06	617.06	30.00	64.83	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-308	Zone-5	2	true	true	500.00	600.00	513.27	613.27	30.00	107.62	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-317	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	77.00	30.00	42.76	J-208	N/A	2.16	Z-6 Purr
J-318	Zone-5	2	true	true	1,500.00	1,600.00	1,511.96	1,611.96	30.00	69.80	30.00	42.56	J-208	N/A	2.16	Z-6 Purr
J-319	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	62.93	30.00	42.69	J-208	N/A	2.16	Z-6 Purr
J-320	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	56.77	30.00	42.69	J-208	N/A	2.16	Z-6 Purr
J-321	Zone-5	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	73.52	30.00	42.64	J-208	N/A	2.16	Z-6 Purr
J-322	Zone-5	2	true	true	1,500.00	1,600.00	1,520.48	1,620.48	30.00	49.26	30.00	42.64	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-323	Zone-5	2	true	true	1,500.00	1,600.00	500.00	1,600.00	30.00	65.00	30.00	42.63	J-208	N/A	2.16	Z-6 Purr
J-324	Zone-5	2	true	true	1,500.00	1,600.00	500.42	1,600.42	30.00	59.83	30.00	42.63	J-208	N/A	2.16	Z-6 Purr
J-328	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	72.55	30.00	45.53	J-208	N/A	2.16	Z-6 Purr
J-345	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	78.95	30.00	56.37	J-286	N/A	2.16	Z-6 Purr
J-346	Zone-5	2	true	true	500.00	600.00	502.70	602.70	30.00	63.61	30.00	45.48	J-208	N/A	2.16	Z-6 Purr
J-350	Zone-4	2	true	true	500.00	600.00	534.99	634.99	30.00	64.38	30.00	56.64	J-286	N/A	2.16	Z-6 Purr
J-351	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	63.07	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-352	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	119.61	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-355	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	62.51	30.00	46.29	J-208	N/A	2.16	Z-6 Purr
J-357	Zone-5	2	true	true	500.00	600.00	501.56	601.56	30.00	73.55	30.00	45.69	J-208	N/A	2.16	Z-6 Purr
J-358	Zone-5	2	true	true	1,500.00	1,600.00	500.00	1,600.00	30.00	95.59	30.00	45.59	J-208	N/A	2.16	Z-6 Purr
J-359	Zone-4	2	true	true	500.00	600.00	524.59	624.59	30.00	56.03	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-360	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	113.00	30.00	45.65	J-208	N/A	2.16	Z-6 Purr
J-361	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	111.17	30.00	45.65	J-208	N/A	2.16	Z-6 Purr
J-362	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	57.91	30.00	56.18	J-286	N/A	2.16	Z-6 Purr
J-363	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	66.12	30.00	56.34	J-286	N/A	2.16	Z-6 Purr
J-364	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	73.55	30.00	56.37	J-286	N/A	2.16	Z-6 Purr
J-365	Zone-4	2	true	true	1,500.00	1,600.00	537.00	1,637.00	30.00	63.48	30.00	56.65	J-286	N/A	2.16	Z-6 Purr
J-366	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	117.19	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-378	Zone-4	2	true	true	500.00	600.00	515.88	615.88	30.00	66.40	30.00	56.60	J-286	N/A	2.16	Z-6 Purr
J-379	Zone-4	2	true	true	500.00	600.00	512.34	612.34	30.00	54.88	30.00	56.62	J-286	N/A	2.16	Z-6 Purr
J-380	Zone-4	2	true	true	500.00	1,600.00	521.06	1,621.06	30.00	65.42	30.00	56.36	J-286	N/A	2.16	Z-6 Purr
J-381	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	120.12	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-382	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	117.90	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-383	Zone-5	2	true	true	500.00	1,600.00	509.42	1,609.42	30.00	110.55	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-384	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	115.57	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-385	Zone-5	2	true	true	500.00	600.00	509.42	609.42	30.00	117.99	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-386	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	63.45	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-387	Zone-4	2	true	true	500.00	1,600.00	509.00	1,609.00	30.00	62.01	30.00	56.63	J-286	N/A	2.16	Z-6 Purr
J-388	Zone-4	2	true	true	500.00	600.00	509.42	609.42	30.00	57.97	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-389	Zone-4	2	true	true	500.00	600.00	509.42	609.42	30.00	59.99	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-390	Zone-5	2	true	true	500.00	600.00	505.14	605.14	30.00	103.51	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-391	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	115.52	30.00	46.19	J-208	N/A	2.16	Z-6 Purr
J-392	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	113.45	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-393	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	112.62	30.00	45.66	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-394	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	107.50	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-395	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	111.83	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-396	Zone-4	2	true	true	500.00	1,600.00	509.42	1,609.42	30.00	49.85	30.00	56.07	J-388	N/A	2.16	Z-6 Purr
J-397	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	59.16	30.00	56.20	J-388	N/A	2.16	Z-6 Purr
J-398	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	59.97	30.00	56.35	J-388	N/A	2.16	Z-6 Purr
J-399	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	60.20	30.00	56.40	J-388	N/A	2.16	Z-6 Purr
J-400	Zone-4	2	true	true	500.00	1,600.00	509.42	1,609.42	30.00	61.61	30.00	56.59	J-388	N/A	2.16	Z-6 Purr
J-401	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	49.15	30.00	56.13	J-286	N/A	2.16	Z-6 Purr
J-402	Zone-4	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	56.29	30.00	54.13	J-401	N/A	2.16	Z-6 Purr
J-403	Zone-4	2	true	true	500.00	600.00	500.00	600.00	30.00	61.24	30.00	56.68	J-286	N/A	2.16	Z-6 Purr
J-407	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	46.11	30.00	41.93	J-208	N/A	2.16	Z-6 Purr
J-408	Zone-5	2	true	true	500.00	1,600.00	507.90	1,607.90	30.00	56.94	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-409	Zone-5	2	true	true	500.00	1,600.00	507.90	1,607.90	30.00	68.08	30.00	46.53	J-208	N/A	2.16	Z-6 Purr
J-410	Zone-5	2	true	true	500.00	1,600.00	503.61	1,603.61	30.00	77.93	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-411	Zone-5	2	true	true	500.00	1,600.00	506.18	1,606.18	30.00	69.32	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-412	Zone-5	2	true	true	500.00	1,600.00	508.24	1,608.24	30.00	67.44	30.00	45.68	J-208	N/A	2.16	Z-6 Purr
J-413	Zone-5	2	true	true	500.00	1,600.00	503.09	1,603.09	30.00	73.04	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-414	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	69.98	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-416	Zone-5	2	true	true	500.00	1,600.00	509.28	1,609.28	30.00	82.74	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-417	Zone-5	2	true	true	500.00	1,600.00	504.12	1,604.12	30.00	77.54	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-418	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	79.48	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-419	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	86.90	30.00	45.66	J-208	N/A	2.16	Z-6 Purr
J-422	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	47.11	30.00	45.68	J-208	N/A	2.16	Z-6 Purr
J-425	Zone-5	2	true	true	500.00	600.00	500.00	600.00	30.00	73.11	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-426	Zone-5	2	true	true	500.00	600.00	503.12	603.12	30.00	93.77	30.00	45.99	J-208	N/A	2.16	Z-6 Purr
J-427	Zone-5	2	true	true	500.00	1,600.00	507.82	1,607.82	30.00	81.71	30.00	45.48	J-208	N/A	2.16	Z-6 Purr
J-428	Zone-5	2	true	true	500.00	1,600.00	505.50	1,605.50	30.00	77.66	30.00	43.19	J-208	N/A	2.16	Z-6 Purr
J-429	Zone-5	2	true	true	500.00	1,600.00	508.60	1,608.60	30.00	60.14	30.00	43.19	J-208	N/A	2.16	Z-6 Purr
J-430	Zone-5	2	true	true	500.00	1,600.00	503.12	1,603.12	30.00	68.16	30.00	45.42	J-208	N/A	2.16	Z-6 Purr
J-431	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	45.01	30.00	45.96	J-208	N/A	2.16	Z-6 Purr
J-432	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	48.32	30.00	45.71	J-208	N/A	2.16	Z-6 Purr
J-433	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	62.14	30.00	45.71	J-208	N/A	2.16	Z-6 Purr
J-434	Zone-5	2	true	true	500.00	1,600.00	500.00	1,600.00	30.00	113.97	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-435	Zone-5	2	true	true	1,500.00	1,600.00	553.77	1,653.77	30.00	116.56	30.00	45.67	J-208	N/A	2.16	Z-6 Purr
J-436	Zone-5	2	true	true	1,500.00	1,600.00	559.94	1,659.94	30.00	109.90	30.00	45.67	J-208	N/A	2.16	Z-6 Purr

Title: DC Ranch

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-437	Zone-4	2	true	true	1,500.00	1,600.00	1,505.55	1,605.55	30.00	39.39	30.00	56.65	J-286	N/A	2.16	Z-6 Purr
J-438	Zone-4	2	true	true	1,500.00	1,600.00	1,500.00	1,600.00	30.00	64.09	30.00	56.65	J-286	N/A	2.16	Z-6 Purr

Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-87	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.17	109.97
J-92	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.37	94.91
J-93	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.24	101.35
J-94	1,627.00	Zone-5	Demand	1.93	DC Ranch	1.93	1,914.19	124.25
J-95	1,790.00	Zone-5	Demand	12.23	DC Ranch	12.23	1,914.07	53.68
J-96	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.04	49.34
J-111	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.04	49.34
J-148	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.04	54.10
J-149	1,770.00	Zone-5	Demand	46.31	DC Ranch	46.31	1,910.01	60.58
J-151	1,760.00	Zone-5	Demand	77.88	DC Ranch	77.88	1,910.01	64.90
J-154	1,790.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.79	52.26
J-171	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.93	80.88
J-194	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.87	54.46
J-195	1,775.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.87	58.79
J-196	1,745.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	73.05
J-197	1,710.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.86	88.20
J-198	1,720.00	Zone-5	Demand	9.45	DC Ranch	9.45	1,913.81	83.85
J-199	1,710.00	Zone-5	Demand	24.29	DC Ranch	24.29	1,913.74	88.15
J-200	1,747.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,911.87	71.33
J-203	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.87	74.36
J-204	1,748.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.88	70.90
J-207	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.17	54.59
J-208	1,805.00	Zone-5	Demand	13.37	DC Ranch	13.37	1,911.77	46.20
J-210	1,770.00	Zone-5	Demand	9.57	DC Ranch	9.57	1,911.89	61.39
J-211	1,745.00	Zone-5	Demand	3.61	DC Ranch	3.61	1,913.62	72.95
J-212	1,743.00	Zone-5	Demand	9.02	DC Ranch	9.02	1,913.62	73.82
J-213	1,747.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.62	72.09
J-214	1,782.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,911.64	56.09
J-215	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.87	94.70
J-216	1,727.00	Zone-5	Demand	13.53	DC Ranch	13.53	1,913.64	80.75
J-217	1,690.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.86	96.85
J-218	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	94.69
J-219	1,702.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.68	91.58
J-220	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	81.71
J-221	1,635.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.10	120.75
J-222	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.90	101.20
J-275	1,760.00	Zone-5	Demand	43.16	DC Ranch	43.16	1,910.01	64.90
J-280	1,640.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.10	118.59
J-281	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.00	116.38
J-282	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.93	109.86
J-283	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.92	109.86
J-284	1,660.00	Zone-5	Demand	23.37	DC Ranch	23.37	1,913.91	109.85
J-285	1,670.00	Zone-5	Demand	15.12	DC Ranch	15.12	1,913.91	105.53
J-286	1,637.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.01	56.68
J-287	1,649.00	Zone-5	Demand	25.17	DC Ranch	25.17	1,913.76	114.55
J-288	1,649.00	Zone-5	Demand	33.29	DC Ranch	33.29	1,913.70	114.52
J-289	1,626.00	Zone-4	Demand	33.29	DC Ranch	33.29	1,767.98	61.43
J-290	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.94	64.00
J-291	1,603.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	71.35
J-292	1,610.00	Zone-4	Demand	15.30	DC Ranch	15.30	1,767.90	68.31
J-293	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.77	117.58
J-294	1,642.00	Zone-5	Demand	47.33	DC Ranch	47.33	1,913.76	117.58

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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**Scenario: Peak Hour
Steady State Analysis
Junction Report**

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand Calculated (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-296	1,636.00	Zone-5	Demand	58.98	DC Ranch	58.98	1,913.67	120.14
J-297	1,623.00	Zone-4	Demand	1.27	DC Ranch	1.27	1,768.01	62.74
J-299	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	72.65
J-300	1,615.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	66.19
J-301	1,613.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.98	67.05
J-302	1,590.00	Zone-4	Demand	35.81	DC Ranch	35.81	1,767.89	76.96
J-303	1,605.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	70.48
J-304	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.89	72.64
J-305	1,595.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.89	74.80
J-306	1,595.00	Zone-4	Demand	12.35	DC Ranch	12.35	1,767.89	74.80
J-307	1,610.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.82	68.28
J-308	1,662.00	Zone-5	Demand	23.22	DC Ranch	23.22	1,913.77	108.93
J-317	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.96	83.05
J-318	1,740.00	Zone-5	Demand	16.89	DC Ranch	16.89	1,911.90	74.37
J-319	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.93	74.39
J-320	1,750.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.93	70.06
J-321	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.91	83.03
J-322	1,740.00	Zone-5	Demand	28.92	DC Ranch	28.92	1,911.89	74.37
J-323	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.91	74.38
J-324	1,740.00	Zone-5	Demand	0.59	DC Ranch	0.59	1,911.91	74.38
J-328	1,742.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.87	73.50
J-345	1,569.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	86.06
J-346	1,763.00	Zone-5	Demand	3.80	DC Ranch	3.80	1,911.85	64.40
J-350	1,610.00	Zone-4	Demand	49.40	DC Ranch	49.40	1,767.80	68.27
J-351	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.93	64.00
J-352	1,636.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.68	120.14
J-355	1,766.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.87	62.68
J-357	1,735.00	Zone-5	Demand	2.74	DC Ranch	2.74	1,911.87	76.52
J-358	1,689.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	97.28
J-359	1,632.00	Zone-4	Demand	34.72	DC Ranch	34.72	1,767.91	58.80
J-360	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.77	115.42
J-361	1,652.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.81	113.27
J-362	1,632.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	58.83
J-363	1,611.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.92	67.89
J-364	1,591.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	76.54
J-365	1,614.00	Zone-4	Demand	64.75	DC Ranch	64.75	1,767.99	66.62
J-366	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.74	117.57
J-378	1,608.00	Zone-4	Demand	26.74	DC Ranch	26.74	1,767.92	69.19
J-379	1,631.00	Zone-4	Demand	21.60	DC Ranch	21.60	1,767.88	59.22
J-380	1,600.00	Zone-4	Demand	36.86	DC Ranch	36.86	1,767.89	72.64
J-381	1,631.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.67	122.30
J-382	1,640.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	118.41
J-383	1,648.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	114.95
J-384	1,645.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	116.25
J-385	1,639.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.69	118.84
J-386	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.00	64.03
J-387	1,616.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.98	65.76
J-388	1,632.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.97	58.83
J-389	1,627.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.97	60.99
J-390	1,669.00	Zone-5	Demand	9.00	DC Ranch	9.00	1,913.76	105.90
J-391	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.69	116.25
J-392	1,638.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.70	119.28

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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**Scenario: Peak Hour
Steady State Analysis
Junction Report**

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-393	1,641.50	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.70	117.77
J-394	1,649.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.71	114.53
J-395	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.72	116.26
J-396	1,631.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.97	59.26
J-397	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	61.86
J-398	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-399	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-400	1,619.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	64.46
J-401	1,635.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	57.54
J-402	1,630.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	59.70
J-403	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	61.86
J-407	1,795.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.81	50.54
J-408	1,990.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,178.02	81.35
J-409	1,987.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,178.03	82.65
J-410	1,720.00	Zone-5	Demand	6.31	DC Ranch	6.31	1,913.63	83.78
J-411	1,703.00	Zone-5	Demand	10.82	DC Ranch	10.82	1,913.65	91.14
J-412	1,747.00	Zone-5	Demand	14.42	DC Ranch	14.42	1,913.62	72.09
J-413	1,732.00	Zone-5	Demand	5.41	DC Ranch	5.41	1,913.63	78.58
J-414	1,733.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.62	78.15
J-416	1,707.00	Zone-5	Demand	16.23	DC Ranch	16.23	1,913.67	89.42
J-417	1,715.00	Zone-5	Demand	7.21	DC Ranch	7.21	1,913.65	85.95
J-418	1,715.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.64	85.94
J-419	1,702.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.69	91.59
J-422	1,760.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.62	66.46
J-425	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.87	74.36
J-426	1,695.00	Zone-5	Demand	5.46	DC Ranch	5.46	1,913.56	94.56
J-427	1,720.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,913.80	83.85
J-428	1,720.00	Zone-5	Demand	10.00	DC Ranch	10.00	1,912.20	83.16
J-429	1,720.00	Zone-5	Demand	15.05	DC Ranch	15.05	1,912.19	83.15
J-430	1,748.00	Zone-5	Demand	5.47	DC Ranch	5.47	1,913.13	71.44
J-431	1,782.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.25	55.92
J-432	1,765.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.51	64.25
J-433	1,753.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.51	69.45
J-434	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.88	115.47
J-435	1,632.00	Zone-5	Demand	94.11	DC Ranch	94.11	1,913.58	121.83
J-436	1,641.00	Zone-5	Demand	104.90	DC Ranch	104.90	1,913.57	117.93
J-437	1,626.00	Zone-4	Demand	9.72	DC Ranch	9.72	1,767.99	61.43
J-438	1,614.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	66.62

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-448	442.00	8.0	Ductile Iro	130.0	0.00	Open	208.27	2,716.46	2,716.02	0.44	1.00	1.33
P-449	766.00	12.0	Ductile Iro	130.0	0.00	Open	-185.79	1,913.67	1,913.76	0.09	0.11	0.53
P-451	756.00	6.0	Ductile Iro	130.0	0.00	Open	-12.91	1,767.80	1,767.82	0.02	0.02	0.15
P-453	887.00	8.0	Ductile Iro	130.0	0.00	Open	16.67	2,049.91	2,049.90	0.01	0.01	0.11
P-456	582.00	8.0	Ductile Iro	130.0	0.00	Open	208.27	2,716.02	2,715.43	0.58	1.00	1.33
P-457	423.00	8.0	Ductile Iro	130.0	0.00	Open	-18.43	2,049.87	2,049.87	0.00	0.01	0.12
P-458	344.00	8.0	Ductile Iro	130.0	0.00	Open	-10.64	2,049.87	2,049.87	0.00	0.00	0.07
P-459	563.00	8.0	Ductile Iro	130.0	0.00	Open	-15.33	2,049.87	2,049.88	0.00	0.01	0.10
P-461	212.00	8.0	Ductile Iro	130.0	0.00	Open	7.05	2,049.86	2,049.86	0.00	0.00	0.04
P-462	100.00	6.0	Ductile Iro	130.0	0.00	Open	44.66	2,985.08	2,985.06	0.02	0.23	0.51
P-463	227.00	8.0	Ductile Iro	130.0	0.00	Open	-11.74	2,049.86	2,049.87	0.00	0.01	0.07
P-464	336.00	6.0	Ductile Iro	130.0	0.00	Open	5.70	2,985.06	2,985.05	0.00	0.01	0.06
P-465	151.00	8.0	Ductile Iro	130.0	0.00	Open	-17.30	2,049.86	2,049.87	0.00	0.01	0.11
P-466	211.00	8.0	Ductile Iro	130.0	0.00	Open	34.89	2,049.86	2,049.86	0.01	0.04	0.22
P-467	330.00	8.0	Ductile Iro	130.0	0.00	Open	30.20	2,049.86	2,049.85	0.01	0.03	0.19
P-468	358.00	8.0	Ductile Iro	130.0	0.00	Open	-10.54	2,049.86	2,049.87	0.00	0.00	0.07
P-469	329.00	8.0	Ductile Iro	130.0	0.00	Open	-2.30	2,049.87	2,049.87	0.00	0.00	0.01
P-470	256.00	8.0	Ductile Iro	130.0	0.00	Open	-22.29	2,049.85	2,049.85	0.00	0.02	0.14
P-471	672.00	8.0	Ductile Iro	130.0	0.00	Open	-26.04	2,049.85	2,049.87	0.01	0.02	0.17
P-472	250.00	8.0	Ductile Iro	130.0	0.00	Open	-18.49	2,049.80	2,049.80	0.00	0.01	0.12
P-474	884.00	6.0	Ductile Iro	130.0	0.00	Open	40.03	2,845.05	2,844.88	0.17	0.19	0.45
P-475	215.00	8.0	Ductile Iro	130.0	0.00	Open	-20.29	2,049.80	2,049.80	0.00	0.01	0.13
P-476	281.00	6.0	Ductile Iro	130.0	0.00	Open	34.33	2,844.88	2,844.84	0.04	0.14	0.39
P-477	415.00	6.0	Ductile Iro	130.0	0.00	Open	26.73	2,844.84	2,844.81	0.04	0.09	0.30
P-478	502.00	8.0	Ductile Iro	130.0	0.00	Open	3.19	2,049.80	2,049.80	0.00	0.00	0.02
P-479	533.00	8.0	Ductile Iro	130.0	0.00	Open	-4.84	2,049.80	2,049.80	0.00	0.00	0.03
P-480	327.00	8.0	Ductile Iro	130.0	0.00	Open	-12.86	2,049.80	2,049.80	0.00	0.01	0.08
P-481	154.00	8.0	Ductile Iro	130.0	0.00	Open	78.74	2,178.96	2,178.93	0.03	0.16	0.50
P-485	154.00	6.0	Ductile Iro	130.0	0.00	Open	22.93	2,844.81	2,844.79	0.01	0.07	0.26
P-486	434.00	6.0	Ductile Iro	130.0	0.00	Open	15.85	2,325.01	2,325.00	0.01	0.03	0.18
P-487	130.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-488	277.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-489	427.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-490	711.00	6.0	Ductile Iro	130.0	0.00	Open	17.08	2,180.01	2,179.99	0.03	0.04	0.19
P-491	176.00	6.0	Ductile Iro	130.0	0.00	Open	17.08	2,179.99	2,179.98	0.01	0.04	0.19
P-492	478.00	8.0	Ductile Iro	130.0	0.00	Open	43.69	2,324.74	2,324.71	0.03	0.06	0.28
P-493	342.00	8.0	Ductile Iro	130.0	0.00	Open	60.66	2,324.73	2,324.69	0.03	0.10	0.39
P-494	2,368.00	8.0	Ductile Iro	130.0	0.00	Open	104.35	2,324.69	2,324.04	0.66	0.28	0.67
P-495	373.00	8.0	Ductile Iro	130.0	0.00	Open	43.69	2,324.71	2,324.69	0.02	0.05	0.28
P-496	352.00	8.0	Ductile Iro	130.0	0.00	Open	15.85	2,324.74	2,324.74	0.00	0.01	0.10
P-497	260.00	6.0	Ductile Iro	130.0	0.00	Open	4.44	2,325.02	2,325.02	0.00	0.00	0.05
P-498	288.00	8.0	Ductile Iro	130.0	0.00	Open	5.35	2,325.02	2,325.02	0.00	0.00	0.03
P-500	149.00	8.0	Ductile Iro	130.0	0.00	Open	3.17	2,458.07	2,458.07	0.00	0.00	0.02
P-501	917.00	6.0	Ductile Iro	130.0	0.00	Open	3.53	2,715.03	2,715.02	0.00	0.00	0.04
P-502	445.00	12.0	Ductile Iro	130.0	0.00	Open	180.19	2,050.41	2,050.36	0.05	0.11	0.51
P-503	260.00	12.0	Ductile Iro	130.0	0.00	Open	126.84	2,050.36	2,050.35	0.01	0.06	0.36
P-504	824.00	12.0	Ductile Iro	130.0	0.00	Open	96.58	2,050.35	2,050.32	0.03	0.03	0.27
P-505	939.00	8.0	Ductile Iro	130.0	0.00	Open	10.87	1,910.01	1,910.01	0.00	0.00	0.07
P-506	1,193.00	8.0	Ductile Iro	130.0	0.00	Open	-32.30	1,910.01	1,910.04	0.04	0.03	0.21
P-507	707.00	12.0	Ductile Iro	130.0	0.00	Open	335.08	2,049.88	2,049.65	0.24	0.33	0.95
P-508	228.00	12.0	Ductile Iro	130.0	0.00	Open	314.73	2,049.65	2,049.58	0.07	0.30	0.89

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-509	1,466.00	12.0	Ductile Iro	130.0	0.00	Open	212.67	2,049.58	2,049.37	0.21	0.14	0.60
P-510	549.00	12.0	Ductile Iro	130.0	0.00	Open	224.80	2,050.53	2,050.44	0.09	0.16	0.64
P-511	265.00	12.0	Ductile Iro	130.0	0.00	Open	201.32	2,050.44	2,050.41	0.03	0.13	0.57
P-512	250.00	12.0	Ductile Iro	130.0	0.00	Open	83.58	2,050.05	2,050.05	0.01	0.03	0.24
P-513	403.00	12.0	Ductile Iro	130.0	0.00	Open	33.37	2,050.05	2,050.05	0.00	0.00	0.09
P-514	1,050.00	12.0	Ductile Iro	130.0	0.00	Open	0.00	1,914.10	1,914.10	0.00	0.00	0.00
P-515	567.00	6.0	Ductile Iro	130.0	0.00	Open	13.30	2,715.02	2,715.01	0.01	0.02	0.15
P-516	1,078.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.10	1,914.00	0.10	0.09	0.84
P-517	1,688.00	30.0	Ductile Iro	130.0	0.00	Open	1,206.48	1,914.00	1,913.93	0.07	0.04	0.55
P-518	263.00	8.0	Ductile Iro	130.0	0.00	Open	38.49	1,913.93	1,913.92	0.01	0.04	0.25
P-519	635.00	8.0	Ductile Iro	130.0	0.00	Open	23.37	1,913.92	1,913.91	0.01	0.02	0.15
P-520	511.00	8.0	Ductile Iro	130.0	0.00	Open	15.12	1,913.92	1,913.91	0.00	0.01	0.10
P-521	785.00	6.0	Ductile Iro	130.0	0.00	Open	13.30	2,585.06	2,585.04	0.02	0.02	0.15
P-522	136.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,585.04	2,585.04	0.00	0.00	0.00
P-523	684.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,457.88	2,457.88	0.00	0.00	0.00
P-527	246.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.05	2,715.04	0.02	0.08	0.28
P-528	631.00	8.0	Ductile Iro	130.0	0.00	Open	22.82	1,767.91	1,767.90	0.01	0.02	0.15
P-531	421.00	12.0	Ductile Iro	130.0	0.00	Open	317.02	1,913.88	1,913.76	0.13	0.30	0.90
P-532	151.00	6.0	Ductile Iro	130.0	0.00	Open	23.07	2,715.04	2,715.02	0.01	0.07	0.26
P-533	324.00	6.0	Ductile Iro	130.0	0.00	Open	5.39	2,715.02	2,715.02	0.00	0.00	0.06
P-534	569.00	6.0	Ductile Iro	130.0	0.00	Open	7.60	2,715.02	2,715.02	0.00	0.01	0.09
P-536	518.00	6.0	Ductile Iro	130.0	0.00	Open	3.80	2,715.02	2,715.02	0.00	0.00	0.04
P-537	1,583.00	12.0	Ductile Iro	130.0	0.00	Open	-112.64	1,767.91	1,767.98	0.07	0.04	0.32
P-538	371.00	8.0	Ductile Iro	130.0	0.00	Open	0.48	1,767.98	1,767.98	0.00	0.00	0.00
P-540	412.00	8.0	Ductile Iro	130.0	0.00	Open	40.46	1,767.91	1,767.89	0.02	0.05	0.26
P-541	945.00	12.0	Ductile Iro	130.0	0.00	Open	35.69	1,767.91	1,767.90	0.01	0.01	0.10
P-542	346.00	8.0	Ductile Iro	130.0	0.00	Open	31.78	1,767.90	1,767.89	0.01	0.03	0.20
P-543	366.00	8.0	Ductile Iro	130.0	0.00	Open	19.43	1,767.89	1,767.89	0.00	0.01	0.12
P-544	408.00	8.0	Ductile Iro	130.0	0.00	Open	12.35	1,767.89	1,767.89	0.00	0.01	0.08
P-546	491.00	12.0	Ductile Iro	130.0	0.00	Open	-33.07	1,767.90	1,767.91	0.00	0.00	0.09
P-547	1,468.00	30.0	Ductile Iro	130.0	0.00	Open	848.39	1,913.93	1,913.90	0.03	0.02	0.39
P-549	534.00	6.0	Ductile Iro	130.0	0.00	Open	36.99	1,767.90	1,767.82	0.09	0.17	0.42
P-550	379.00	8.0	Ductile Iro	130.0	0.00	Open	6.35	2,049.90	2,049.90	0.00	0.00	0.04
P-551	648.00	8.0	Ductile Iro	130.0	0.00	Open	6.35	2,049.90	2,049.90	0.00	0.00	0.04
P-552	334.00	8.0	Ductile Iro	130.0	0.00	Open	-6.88	2,049.91	2,049.91	0.00	0.00	0.04
P-553	462.00	8.0	Ductile Iro	130.0	0.00	Open	-13.61	2,049.91	2,049.91	0.00	0.01	0.09
P-554	311.00	8.0	Ductile Iro	130.0	0.00	Open	-31.34	2,049.87	2,049.87	0.01	0.03	0.20
P-555	228.00	8.0	Ductile Iro	130.0	0.00	Open	-31.34	2,049.87	2,049.88	0.01	0.03	0.20
P-556	290.00	8.0	Ductile Iro	130.0	0.00	Open	208.27	2,715.43	2,715.14	0.29	1.00	1.33
P-557	255.00	8.0	Ductile Iro	130.0	0.00	Open	86.00	2,458.07	2,458.02	0.05	0.19	0.55
P-558	803.00	6.0	Ductile Iro	130.0	0.00	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-559	374.00	6.0	Ductile Iro	130.0	0.00	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-560	287.00	6.0	Ductile Iro	130.0	0.00	Open	25.27	2,325.05	2,325.03	0.02	0.08	0.29
P-561	910.00	6.0	Ductile Iro	130.0	0.00	Open	19.02	2,325.03	2,324.98	0.04	0.05	0.22
P-562	1,758.00	6.0	Ductile Iro	130.0	0.00	Open	-6.25	2,325.02	2,325.03	0.01	0.01	0.07
P-563	457.00	8.0	Ductile Iro	130.0	0.00	Open	44.29	2,458.02	2,457.99	0.03	0.06	0.28
P-564	575.00	6.0	Ductile Iro	130.0	0.00	Open	25.27	2,457.99	2,457.95	0.05	0.08	0.29
P-565	195.00	8.0	Ductile Iro	130.0	0.00	Open	138.64	2,715.14	2,715.05	0.09	0.47	0.88
P-566	475.00	8.0	Ductile Iro	130.0	0.00	Open	42.80	1,911.96	1,911.93	0.03	0.05	0.27
P-567	251.00	12.0	Ductile Iro	130.0	0.00	Open	-173.23	1,911.88	1,911.90	0.02	0.10	0.49
P-568	383.00	8.0	Ductile Iro	130.0	0.00	Open	-73.81	1,911.90	1,911.96	0.06	0.15	0.47

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-569	134.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,911.93	1,911.93	0.00	0.00	0.00
P-570	97.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,911.93	1,911.93	0.00	0.00	0.00
P-572	477.00	8.0	Ductile Iro	130.0	0.00	Open	42.80	1,911.93	1,911.91	0.03	0.05	0.27
P-573	199.00	6.0	Ductile Iro	130.0	0.00	Open	28.92	1,911.91	1,911.89	0.02	0.10	0.33
P-574	97.00	8.0	Ductile Iro	130.0	0.00	Open	13.89	1,911.91	1,911.91	0.00	0.01	0.09
P-575	274.00	8.0	Ductile Iro	130.0	0.00	Open	0.59	1,911.91	1,911.91	0.00	0.00	0.00
P-577	755.00	8.0	Ductile Iro	130.0	0.00	Open	13.30	1,911.91	1,911.90	0.00	0.01	0.08
P-582	205.00	8.0	Ductile Iro	130.0	0.00	Open	-27.98	1,911.87	1,911.87	0.01	0.02	0.18
P-583	199.00	8.0	Ductile Iro	130.0	0.00	Open	-27.98	1,911.87	1,911.88	0.00	0.02	0.18
P-585	76.00	8.0	Ductile Iro	130.0	0.00	Open	-1.34	2,458.21	2,458.21	0.00	0.00	0.01
P-586	422.00	6.0	Ductile Iro	130.0	0.00	Open	3.80	2,585.05	2,585.05	0.00	0.00	0.04
P-587	75.00	8.0	Ductile Iro	130.0	0.00	Open	-24.63	2,049.90	2,049.91	0.00	0.02	0.16
P-588	108.00	8.0	Ductile Iro	130.0	0.00	Open	-53.50	2,049.91	2,049.91	0.01	0.08	0.34
P-589	470.00	8.0	Ductile Iro	130.0	0.00	Open	25.23	2,049.91	2,049.90	0.01	0.02	0.16
P-590	807.00	8.0	Ductile Iro	130.0	0.00	Open	78.74	2,050.05	2,049.91	0.13	0.16	0.50
P-591	467.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	2,049.90	2,049.90	0.00	0.00	0.00
P-592	161.00	8.0	Ductile Iro	130.0	0.00	Open	3.54	2,049.89	2,049.89	0.00	0.00	0.02
P-593	522.00	8.0	Ductile Iro	130.0	0.00	Open	-18.78	2,049.89	2,049.90	0.01	0.01	0.12
P-594	268.00	8.0	Ductile Iro	130.0	0.00	Open	-22.33	2,049.88	2,049.89	0.00	0.02	0.14
P-595	102.00	8.0	Ductile Iro	130.0	0.00	Open	-24.63	2,049.90	2,049.90	0.00	0.02	0.16
P-596	396.00	8.0	Ductile Iro	130.0	0.00	Open	-10.78	2,049.90	2,049.90	0.00	0.00	0.07
P-597	251.00	8.0	Ductile Iro	130.0	0.00	Open	-24.63	2,049.90	2,049.90	0.00	0.02	0.16
P-598	249.00	8.0	Ductile Iro	130.0	0.00	Open	13.85	2,049.90	2,049.90	0.00	0.01	0.09
P-599	347.00	8.0	Ductile Iro	130.0	0.00	Open	-6.74	2,049.91	2,049.91	0.00	0.00	0.04
P-600	186.00	8.0	Ductile Iro	130.0	0.00	Open	-6.86	2,049.91	2,049.91	0.00	0.00	0.04
P-601	508.00	8.0	Ductile Iro	130.0	0.00	Open	6.53	2,049.91	2,049.91	0.00	0.00	0.04
P-602	56.00	8.0	Ductile Iro	130.0	0.00	Open	-31.51	2,049.91	2,049.91	0.00	0.03	0.20
P-603	51.00	8.0	Ductile Iro	130.0	0.00	Open	24.64	2,049.91	2,049.91	0.00	0.02	0.16
P-604	578.00	8.0	Ductile Iro	130.0	0.00	Open	11.25	2,049.91	2,049.91	0.00	0.00	0.07
P-605	377.00	8.0	Ductile Iro	130.0	0.00	Open	-13.39	2,049.91	2,049.91	0.00	0.01	0.09
P-606	141.00	8.0	Ductile Iro	130.0	0.00	Open	-56.15	2,049.91	2,049.93	0.01	0.09	0.36
P-607	340.00	24.0	Ductile Iro	130.0	0.00	Open	1,414.49	1,910.05	1,910.00	0.06	0.16	1.00
P-608	127.00	24.0	Ductile Iro	130.0	0.00	Open	885.79	1,910.00	1,909.99	0.01	0.07	0.63
P-609	242.00	24.0	Ductile Iro	130.0	0.00	Open	-528.70	1,909.99	1,910.00	0.01	0.03	0.37
P-613	184.00	12.0	Ductile Iro	130.0	0.00	Open	281.15	2,050.05	2,050.01	0.04	0.24	0.80
P-614	574.00	8.0	Ductile Iro	130.0	0.00	Open	0.94	2,180.56	2,180.56	0.00	0.00	0.01
P-615	209.00	16.0	Ductile Iro	130.0	0.00	Open	768.85	2,180.56	2,180.48	0.08	0.38	1.23
P-616	2,729.00	16.0	Ductile Iro	130.0	0.00	Open	487.70	2,180.48	2,180.03	0.45	0.17	0.78
P-617	321.00	12.0	Ductile Iro	130.0	0.00	Open	281.15	2,180.48	2,180.40	0.08	0.24	0.80
P-618	278.00	8.0	Ductile Iro	130.0	0.00	Open	-6.29	2,180.56	2,180.56	0.00	0.00	0.04
P-619	330.00	8.0	Ductile Iro	130.0	0.00	Open	33.03	2,049.88	2,049.87	0.01	0.03	0.21
P-620	108.00	8.0	Ductile Iro	130.0	0.00	Open	12.49	2,049.87	2,049.87	0.00	0.00	0.08
P-621	389.00	8.0	Ductile Iro	130.0	0.00	Open	20.54	2,049.87	2,049.87	0.01	0.01	0.13
P-622	160.00	8.0	Ductile Iro	130.0	0.00	Open	8.06	2,049.80	2,049.80	0.00	0.00	0.05
P-623	448.00	8.0	Ductile Iro	130.0	0.00	Open	11.21	2,049.80	2,049.80	0.00	0.00	0.07
P-624	148.00	8.0	Ductile Iro	130.0	0.00	Open	-0.59	2,049.80	2,049.80	0.00	0.00	0.00
P-625	376.00	8.0	Ductile Iro	130.0	0.00	Open	-3.74	2,049.80	2,049.80	0.00	0.00	0.02
P-626	395.00	8.0	Ductile Iro	130.0	0.00	Open	-3.15	2,049.80	2,049.80	0.00	0.00	0.02
P-627	156.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,715.07	2,715.07	0.00	0.00	0.00
P-629	364.00	12.0	Ductile Iro	130.0	0.00	Open	-145.24	1,911.85	1,911.88	0.03	0.07	0.41
P-630	391.00	6.0	Ductile Iro	130.0	0.00	Open	9.49	2,049.80	2,049.80	0.01	0.01	0.11

Title: DC Ranch

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09/07/06 04:12:08 Bentley Systems, Inc. Haestad Methods Solution Center Watertown, CT 06795 USA +1-203-755-1666

Project Engineer: Gordon Wark, P.E.

WaterCAD v7.0 [07.00.049.00]

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**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

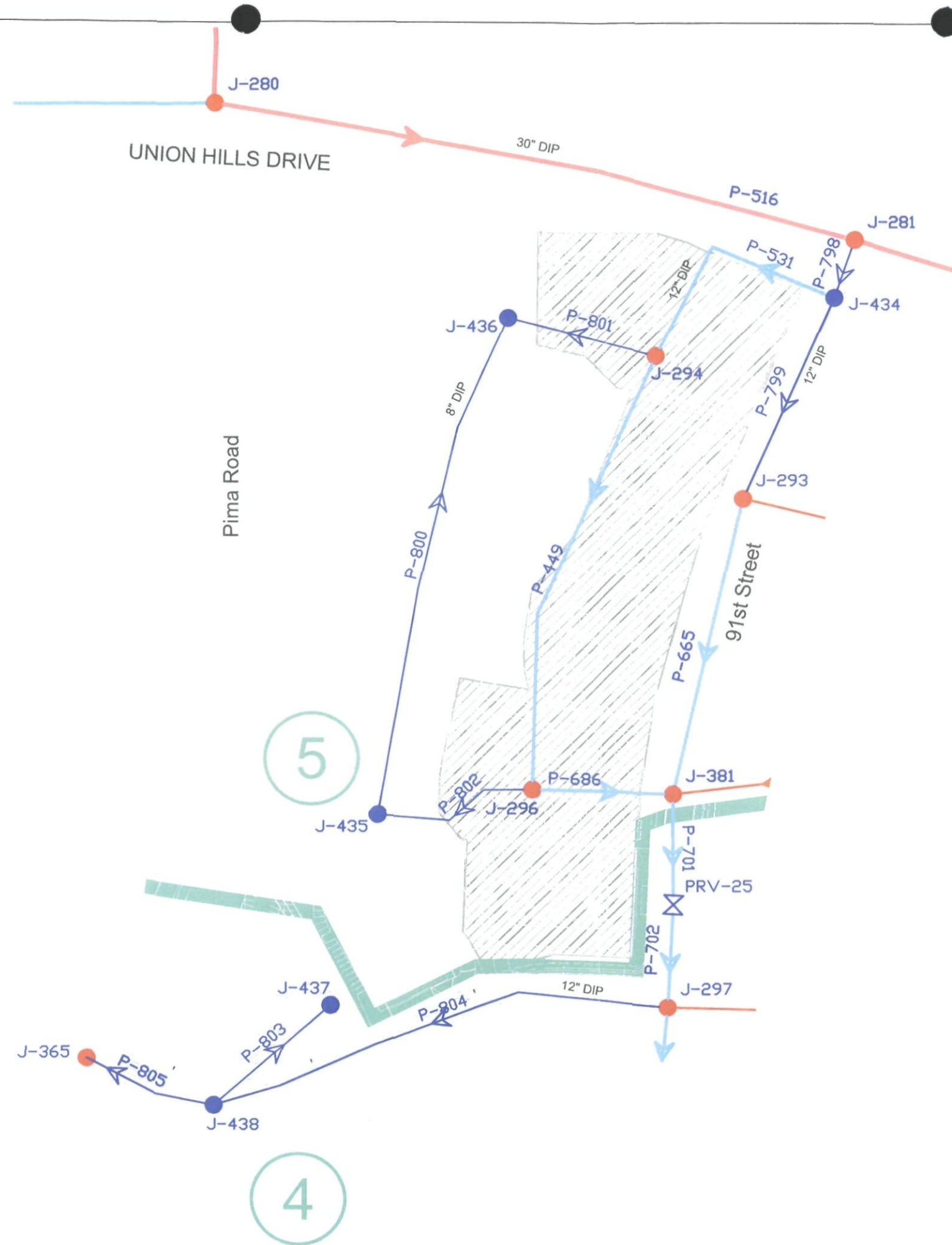
Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-631	454.00	6.0	Ductile Iro	130.0	0.00	Open	-7.59	2,049.79	2,049.80	0.00	0.01	0.09
P-632	331.00	8.0	Ductile Iro	130.0	0.00	Open	-11.32	2,049.81	2,049.82	0.00	0.00	0.07
P-633	488.00	8.0	Ductile Iro	130.0	0.00	Open	-27.51	2,049.82	2,049.83	0.01	0.02	0.18
P-634	126.00	8.0	Ductile Iro	130.0	0.00	Open	16.19	2,049.82	2,049.82	0.00	0.01	0.10
P-635	274.00	24.0	Ductile Iro	130.0	0.00	Open	2,716.86	1,914.37	1,914.52	0.15	0.55	1.93
P-636	166.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.07	2,715.05	0.01	0.08	0.28
P-637	1,359.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.37	1,914.24	0.12	0.09	0.84
P-638	844.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.24	1,914.17	0.08	0.09	0.84
P-639	748.00	30.0	Ductile Iro	130.0	0.00	Open	1,852.76	1,914.17	1,914.10	0.07	0.09	0.84
P-640	100.00	6.0	Ductile Iro	130.0	0.00	Open	38.96	2,985.06	2,985.04	0.02	0.18	0.44
P-641	689.00	6.0	Ductile Iro	130.0	0.00	Open	-36.49	1,767.80	1,767.91	0.11	0.16	0.41
P-646	607.00	12.0	Ductile Iro	130.0	0.00	Open	-341.89	2,178.35	2,178.56	0.21	0.35	0.97
P-649	104.00	6.0	Ductile Iro	130.0	0.00	Open	38.96	2,985.04	2,985.02	0.02	0.18	0.44
P-650	97.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,844.88	2,844.88	0.00	0.00	0.00
P-651	125.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.14	2,715.13	0.01	0.08	0.28
P-652	829.00	6.0	Ductile Iro	130.0	0.00	Open	24.97	2,715.13	2,715.07	0.07	0.08	0.28
P-653	279.00	6.0	Ductile Iro	130.0	0.00	Open	44.66	2,715.14	2,715.08	0.07	0.23	0.51
P-654	105.00	6.0	Ductile Iro	130.0	0.00	Open	22.53	2,715.06	2,715.05	0.01	0.07	0.26
P-655	573.00	6.0	Ductile Iro	130.0	0.00	Open	16.83	2,715.05	2,715.03	0.02	0.04	0.19
P-656	518.00	6.0	Ductile Iro	130.0	0.00	Open	5.70	2,715.05	2,715.05	0.00	0.01	0.06
P-657	625.00	6.0	Ductile Iro	130.0	0.00	Open	0.00	2,844.81	2,844.81	0.00	0.00	0.00
P-658	209.00	8.0	Ductile Iro	130.0	0.00	Open	26.74	1,767.94	1,767.93	0.00	0.02	0.17
P-659	578.00	8.0	Ductile Iro	130.0	0.00	Open	26.74	1,767.93	1,767.92	0.01	0.02	0.17
P-660	766.00	8.0	Ductile Iro	130.0	0.00	Open	28.66	1,767.92	1,767.90	0.02	0.03	0.18
P-661	1,137.00	8.0	Ductile Iro	130.0	0.00	Open	21.60	1,767.90	1,767.88	0.02	0.02	0.14
P-662	949.00	8.0	Ductile Iro	130.0	0.00	Open	22.27	1,767.90	1,767.89	0.02	0.02	0.14
P-663	804.00	8.0	Ductile Iro	130.0	0.00	Open	-14.59	1,767.89	1,767.90	0.01	0.01	0.09
P-665	506.00	12.0	Ductile Iro	130.0	0.00	Open	244.88	1,913.77	1,913.67	0.09	0.19	0.69
P-668	329.00	12.0	Ductile Iro	130.0	0.00	Open	124.20	1,768.00	1,767.98	0.02	0.05	0.35
P-669	440.00	8.0	Ductile Iro	130.0	0.00	Open	-29.25	1,913.67	1,913.68	0.01	0.03	0.19
P-670	316.00	8.0	Ductile Iro	130.0	0.00	Open	-34.81	1,913.68	1,913.69	0.01	0.04	0.22
P-671	405.00	8.0	Ductile Iro	130.0	0.00	Open	17.17	1,913.69	1,913.69	0.00	0.01	0.11
P-672	483.00	8.0	Ductile Iro	130.0	0.00	Open	16.57	1,913.69	1,913.69	0.00	0.01	0.11
P-673	722.00	8.0	Ductile Iro	130.0	0.00	Open	10.93	1,913.69	1,913.68	0.00	0.00	0.07
P-674	244.00	8.0	Ductile Iro	130.0	0.00	Open	-10.84	1,913.69	1,913.69	0.00	0.00	0.07
P-676	500.00	8.0	Ductile Iro	130.0	0.00	Open	31.02	1,768.00	1,767.98	0.01	0.03	0.20
P-677	357.00	8.0	Ductile Iro	130.0	0.00	Open	15.27	1,767.98	1,767.98	0.00	0.01	0.10
P-684	923.00	8.0	Ductile Iro	130.0	0.00	Open	42.19	1,913.81	1,913.77	0.05	0.05	0.27
P-685	347.00	8.0	Ductile Iro	130.0	0.00	Open	9.00	1,913.77	1,913.76	0.00	0.00	0.06
P-686	232.00	12.0	Ductile Iro	130.0	0.00	Open	11.70	1,913.67	1,913.67	0.00	0.00	0.03
P-688	135.00	12.0	Ductile Iro	130.0	0.00	Open	262.20	1,913.77	1,913.74	0.03	0.21	0.74
P-689	382.00	8.0	Ductile Iro	130.0	0.00	Open	-84.37	1,913.69	1,913.77	0.07	0.19	0.54
P-690	265.00	6.0	Ductile Iro	130.0	0.00	Open	6.01	2,715.02	2,715.02	0.00	0.01	0.07
P-691	272.00	8.0	Ductile Iro	130.0	0.00	Open	15.90	1,913.69	1,913.69	0.00	0.01	0.10
P-692	195.00	8.0	Ductile Iro	130.0	0.00	Open	15.90	1,913.69	1,913.69	0.00	0.01	0.10
P-693	559.00	8.0	Ductile Iro	130.0	0.00	Open	-27.33	1,913.69	1,913.70	0.01	0.02	0.17
P-694	214.00	8.0	Ductile Iro	130.0	0.00	Open	-27.33	1,913.70	1,913.70	0.01	0.02	0.17
P-696	378.00	8.0	Ductile Iro	130.0	0.00	Open	8.90	1,913.70	1,913.70	0.00	0.00	0.06
P-697	250.00	8.0	Ductile Iro	130.0	0.00	Open	-24.39	1,913.70	1,913.71	0.00	0.02	0.16
P-698	218.00	8.0	Ductile Iro	130.0	0.00	Open	60.62	1,913.74	1,913.72	0.02	0.10	0.39
P-699	290.00	8.0	Ductile Iro	130.0	0.00	Open	36.23	1,913.72	1,913.70	0.01	0.04	0.23

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-700	412.00	8.0	Ductile Iro	130.0	0.00	Open	-24.39	1,913.71	1,913.72	0.01	0.02	0.16
P-701	185.00	12.0	Ductile Iro	130.0	0.00	Open	285.84	1,913.67	1,913.63	0.05	0.25	0.81
P-702	172.00	12.0	Ductile Iro	130.0	0.00	Open	285.84	1,768.05	1,768.01	0.04	0.25	0.81
P-703	327.00	8.0	Ductile Iro	130.0	0.00	Open	54.88	1,768.01	1,767.98	0.03	0.08	0.35
P-706	818.00	8.0	Ductile Iro	130.0	0.00	Open	-12.85	1,767.97	1,767.98	0.00	0.01	0.08
P-707	288.00	8.0	Ductile Iro	130.0	0.00	Open	5.39	1,767.97	1,767.97	0.00	0.00	0.03
P-708	725.00	8.0	Ductile Iro	130.0	0.00	Open	-11.10	1,767.97	1,767.98	0.00	0.00	0.07
P-709	132.00	8.0	Ductile Iro	130.0	0.00	Open	-1.91	1,767.98	1,767.98	0.00	0.00	0.01
P-710	417.00	8.0	Ductile Iro	130.0	0.00	Open	-11.08	1,767.98	1,767.98	0.00	0.00	0.07
P-711	161.00	8.0	Ductile Iro	130.0	0.00	Open	-9.19	1,767.98	1,767.98	0.00	0.00	0.06
P-712	234.00	8.0	Ductile Iro	130.0	0.00	Open	7.33	1,767.98	1,767.98	0.00	0.00	0.05
P-713	148.00	8.0	Ductile Iro	130.0	0.00	Open	-16.51	1,767.98	1,767.98	0.00	0.01	0.11
P-714	458.00	8.0	Ductile Iro	130.0	0.00	Open	36.10	1,768.01	1,767.99	0.02	0.04	0.23
P-715	284.00	8.0	Ductile Iro	130.0	0.00	Open	36.09	1,767.99	1,767.98	0.01	0.04	0.23
P-716	264.00	8.0	Ductile Iro	130.0	0.00	Open	-0.00	1,767.99	1,767.99	0.00	0.00	0.00
P-717	52.00	12.0	Ductile Iro	130.0	0.00	Open	201.58	1,913.74	1,913.73	0.01	0.13	0.57
P-718	278.00	12.0	Ductile Iro	130.0	0.00	Open	201.58	1,768.04	1,768.01	0.04	0.13	0.57
P-719	460.00	12.0	Ductile Iro	130.0	0.00	Open	168.29	1,767.98	1,767.94	0.04	0.09	0.48
P-721	126.00	12.0	Ductile Iro	130.0	0.00	Open	155.22	1,768.01	1,768.00	0.01	0.08	0.44
P-722	1,092.00	8.0	Ductile Iro	130.0	0.00	Open	-9.03	1,767.97	1,767.98	0.00	0.00	0.06
P-723	304.00	8.0	Ductile Iro	130.0	0.00	Open	16.49	1,767.98	1,767.97	0.00	0.01	0.11
P-724	70.00	8.0	Ductile Iro	130.0	0.00	Open	-25.52	1,767.98	1,767.98	0.00	0.02	0.16
P-725	609.00	6.0	Ductile Iro	130.0	0.00	Open	8.30	2,456.88	2,456.87	0.01	0.01	0.09
P-727	417.00	6.0	Ductile Iro	130.0	0.00	Open	20.77	2,456.90	2,456.88	0.02	0.06	0.24
P-728	486.00	8.0	Ductile Iro	130.0	0.00	Open	32.77	2,456.49	2,456.48	0.02	0.03	0.21
P-729	291.00	6.0	Ductile Iro	130.0	0.00	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-730	264.00	6.0	Ductile Iro	130.0	0.00	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-731	219.00	6.0	Ductile Iro	130.0	0.00	Open	-63.19	2,456.78	2,456.88	0.10	0.44	0.72
P-732	132.00	6.0	Ductile Iro	130.0	0.00	Open	-70.08	2,456.88	2,456.95	0.07	0.54	0.80
P-733	754.00	6.0	Ductile Iro	130.0	0.00	Open	-6.89	2,456.88	2,456.88	0.01	0.01	0.08
P-734	318.00	12.0	Ductile Iro	130.0	0.00	Open	-179.03	1,911.77	1,911.81	0.03	0.10	0.51
P-735	685.00	12.0	Ductile Iro	130.0	0.00	Open	-141.45	1,911.81	1,911.85	0.05	0.07	0.40
P-737	940.00	8.0	Ductile Iro	130.0	0.00	Open	-16.82	2,049.82	2,049.82	0.01	0.01	0.11
P-739	343.00	8.0	Ductile Iro	130.0	0.00	Open	13.83	2,324.92	2,324.91	0.00	0.01	0.09
P-741	20.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	2,049.80	2,049.80	0.00	0.00	0.00
P-742	20.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,911.81	1,911.81	0.00	0.00	0.00
P-743	513.00	12.0	Ductile Iro	130.0	0.00	Open	-300.40	2,177.89	2,178.03	0.14	0.27	0.85
P-744	996.00	12.0	Ductile Iro	130.0	0.00	Open	-328.06	2,178.03	2,178.35	0.32	0.32	0.93
P-745	517.00	8.0	Ductile Iro	130.0	0.00	Open	-13.83	2,178.02	2,178.03	0.00	0.01	0.09
P-746	997.00	8.0	Ductile Iro	130.0	0.00	Open	18.69	1,913.87	1,913.86	0.01	0.01	0.12
P-749	341.00	8.0	Ductile Iro	130.0	0.00	Open	-26.75	1,913.63	1,913.64	0.01	0.02	0.17
P-750	765.00	6.0	Ductile Iro	130.0	0.00	Open	15.66	1,913.68	1,913.65	0.03	0.03	0.18
P-751	673.00	6.0	Ductile Iro	130.0	0.00	Open	4.84	1,913.65	1,913.65	0.00	0.00	0.05
P-753	93.00	8.0	Ductile Iro	130.0	0.00	Open	-30.24	1,913.62	1,913.62	0.00	0.03	0.19
P-754	463.00	6.0	Ductile Iro	130.0	0.00	Open	-5.23	1,913.62	1,913.62	0.00	0.00	0.06
P-755	393.00	8.0	Ductile Iro	130.0	0.00	Open	-33.22	1,913.62	1,913.63	0.01	0.03	0.21
P-756	316.00	8.0	Ductile Iro	130.0	0.00	Open	-22.99	1,913.62	1,913.62	0.01	0.02	0.15
P-757	571.00	8.0	Ductile Iro	130.0	0.00	Open	-22.99	1,913.62	1,913.63	0.01	0.02	0.15
P-759	846.00	8.0	Ductile Iro	130.0	0.00	Open	6.03	2,049.85	2,049.85	0.00	0.00	0.04
P-760	441.00	8.0	Ductile Iro	130.0	0.00	Open	6.03	2,050.03	2,050.03	0.00	0.00	0.04
P-761	1,712.00	8.0	Ductile Iro	130.0	0.00	Open	23.68	1,913.67	1,913.64	0.03	0.02	0.15

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

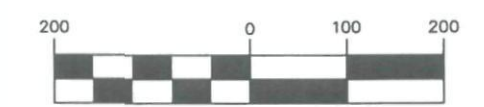
Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-762	814.00	6.0	Ductile Iro	130.0	0.00	Open	-16.60	1,913.64	1,913.67	0.03	0.04	0.19
P-763	380.00	8.0	Ductile Iro	130.0	0.00	Open	-11.89	1,913.63	1,913.63	0.00	0.00	0.08
P-764	201.00	8.0	Ductile Iro	130.0	0.00	Open	-41.19	1,913.63	1,913.64	0.01	0.05	0.26
P-765	618.00	6.0	Ductile Iro	130.0	0.00	Open	-18.50	1,913.65	1,913.68	0.03	0.05	0.21
P-766	83.00	6.0	Ductile Iro	130.0	0.00	Open	-16.14	1,913.64	1,913.65	0.00	0.04	0.18
P-767	87.00	6.0	Ductile Iro	130.0	0.00	Open	-42.29	1,913.68	1,913.69	0.02	0.21	0.48
P-768	263.00	8.0	Ductile Iro	130.0	0.00	Open	56.50	1,913.69	1,913.67	0.02	0.09	0.36
P-769	619.00	6.0	Ductile Iro	130.0	0.00	Open	-25.05	1,913.64	1,913.69	0.05	0.08	0.28
P-770	340.00	6.0	Ductile Iro	130.0	0.00	Open	11.44	2,049.81	2,049.80	0.01	0.02	0.13
P-771	606.00	6.0	Ductile Iro	130.0	0.00	Open	-7.81	2,049.80	2,049.80	0.01	0.01	0.09
P-772	573.00	8.0	Ductile Iro	130.0	0.00	Open	-0.00	1,913.62	1,913.62	0.00	0.00	0.00
P-773	917.00	8.0	Ductile Iro	130.0	0.00	Closed	0.00	1,912.25	1,910.87	0.00	0.00	0.00
P-775	820.00	8.0	Ductile Iro	130.0	0.00	Closed	0.00	1,913.62	1,912.25	0.00	0.00	0.00
P-776	100.00	6.0	Ductile Iro	130.0	0.00	Open	7.81	2,049.80	2,049.80	0.00	0.01	0.09
P-777	318.00	6.0	Ductile Iro	130.0	0.00	Open	11.44	2,049.80	2,049.80	0.01	0.02	0.13
P-778	366.00	8.0	Ductile Iro	130.0	0.00	Open	143.70	1,913.74	1,913.56	0.18	0.50	0.92
P-780	324.00	8.0	Ductile Iro	130.0	0.00	Open	-9.60	1,911.87	1,911.87	0.00	0.00	0.06
P-781	507.00	8.0	Ductile Iro	130.0	0.00	Open	9.60	1,911.87	1,911.87	0.00	0.00	0.06
P-782	645.00	12.0	Ductile Iro	130.0	0.00	Closed	0.00	1,911.87	1,913.80	0.00	0.00	0.00
P-783	194.00	12.0	Ductile Iro	130.0	0.00	Open	-120.12	1,913.80	1,913.81	0.01	0.05	0.34
P-784	1,490.00	8.0	Ductile Iro	130.0	0.00	Open	-37.59	1,911.81	1,911.87	0.06	0.04	0.24
P-785	1,006.00	8.0	Ductile Iro	130.0	0.00	Open	244.67	1,913.56	1,912.20	1.35	1.35	1.56
P-786	710.00	8.0	Ductile Iro	130.0	0.00	Open	116.62	1,912.20	1,911.96	0.24	0.34	0.74
P-787	1,100.00	8.0	Ductile Iro	130.0	0.00	Open	-103.01	1,911.90	1,912.20	0.30	0.27	0.66
P-788	919.00	8.0	Ductile Iro	130.0	0.00	Open	15.05	1,912.20	1,912.19	0.01	0.01	0.10
P-789	582.00	8.0	Ductile Iro	130.0	0.00	Open	-314.05	1,911.89	1,913.13	1.24	2.14	2.00
P-790	830.00	8.0	Ductile Iro	130.0	0.00	Open	106.44	1,913.80	1,913.56	0.24	0.29	0.68
P-792	325.00	8.0	Ductile Iro	130.0	0.00	Open	-319.52	1,913.13	1,913.85	0.72	2.21	2.04
P-793	254.00	6.0	Ductile Iro	130.0	0.00	Open	-120.41	1,910.87	1,911.25	0.37	1.47	1.37
P-794	266.00	6.0	Ductile Iro	130.0	0.00	Open	-120.41	1,911.25	1,911.64	0.39	1.47	1.37
P-795	457.00	8.0	Ductile Iro	130.0	0.00	Open	0.00	1,913.51	1,913.51	0.00	0.00	0.00
P-796	1,129.00	6.0	Ductile Iro	130.0	0.00	Open	-128.53	1,911.64	1,913.51	1.87	1.66	1.46
P-797	252.00	8.0	Ductile Iro	130.0	0.00	Open	-128.53	1,913.51	1,913.62	0.10	0.41	0.82
P-798	102.00	12.0	Ductile Iro	130.0	0.00	Open	646.28	1,914.00	1,913.88	0.12	1.13	1.83
P-799	366.00	12.0	Ductile Iro	130.0	0.00	Open	329.25	1,913.88	1,913.77	0.12	0.32	0.93
P-800	860.00	8.0	Ductile Iro	130.0	0.00	Open	20.99	1,913.58	1,913.57	0.01	0.01	0.13
P-801	252.00	6.0	Ductile Iro	130.0	0.00	Open	-83.91	1,913.57	1,913.76	0.19	0.75	0.95
P-802	275.00	8.0	Ductile Iro	130.0	0.00	Open	-115.10	1,913.58	1,913.67	0.09	0.33	0.73
P-803	253.00	6.0	Ductile Iro	130.0	0.00	Open	-9.72	1,767.99	1,767.99	0.00	0.01	0.11
P-804	780.00	12.0	Ductile Iro	130.0	0.00	Open	74.47	1,768.01	1,767.99	0.02	0.02	0.21
P-805	224.00	12.0	Ductile Iro	130.0	0.00	Open	64.75	1,767.99	1,767.99	0.00	0.02	0.18



Water Distribution Plan for Parcel 1.1

- 6" DIA. WATER
- 8" DIA. WATER
- 12" DIA. WATER
- 16" DIA. WATER
- 18" DIA. WATER
- 20" DIA. WATER
- 24" DIA. WATER
- 30" DIA. WATER

- J-105 WATERCAD NODE/JUNCTION
- P-318 (9) WATERCAD PIPE/LINK (ZONE)
- 5 PRESSURE ZONE
- PRESSURE ZONE BOUNDARY
- NOT APART OF PROJECT



1 inch = 200 ft.

Notes:

Lotting and roadway layouts are conceptual and subject to change. Pressure zone line boundaries are based on natural topography and may be adjusted with design of finish floor elevation of each lot.

Individual booster pumps may be required where inadequate pressure is available for individual lots.

The waterline layout is a conceptual design illustrating the pipe size necessary to serve each parcel and is not specific to its location.

Q:\DC_Ranch\Water\Overall Water Model\09_06_2006\Modell-Overall DC Ranch_9_06_2006.dwg

WOOD/PATEL

LAND DEVELOPMENT • WATER RESOURCES • WATER/WASTEWATER • TRANSPORTATION/TRAFFIC • SURVEYING • CONSTRUCTION MANAGEMENT

Planning

QS 38-48

Darrel E. Wood, P.E., R.L.S.
Ashok C. Patel, P.E., R.L.S., CFM
Gordon W. R. Wark, P.E.
James S. Campbell, P.E.
Thomas R. Gettings, R.L.S.
Michael T. Young, P.E.
Peter Hemingway, P.E.
Jeffrey R. Minch, P.E.
Robert D. Gofonia, P.E., R.L.S.
Patrick W. Marum, P.E.

Revised April 5, 2007
September 8, 2006

Mr. Douglas L. Mann, P.E.
Water Resources Engineer
City of Scottsdale Water Resources
9388 East San Salvador Drive
Scottsdale, AZ 85258

Phone: (480) 312-5636
Fax: (480) 312-5615

Re: **DC Ranch Parcel 1.1**
Water Distribution Basis of Design
WP #062762.10

Accepted For:
City of Scottsdale
Water Resources Department
9388 East San Salvador Drive
Scottsdale, AZ 85258
By: [Signature]
Date: 4/20/07

Dear Mr. Mann:

The existing Zone 5 storage reservoir provides the potable water storage for the DC Ranch Parcel 1.1 development.

The water system for DC Ranch Parcel 1.1 was analyzed in the amended *Planning Unit I and Second Amendment to Planning Units III, V, and VI Potable Water System Study*, dated August 29, 2002. The land uses, demands, and pipe locations have been updated to their current and proposed condition. The demands for the site are included in the attached spreadsheet named *Water Demands*.

The proposed water system consists of 8-inch waterlines that will provide potable water service to all 9 proposed buildings within Parcel 1.1. The proposed 8-inch waterlines will connect to proposed waterlines in three (3) locations: (1.) 12-inch Zone 4 waterline in the Trailside View alignment (commercial access road) just east of Pima Road – Node J-438, (2.) 12-inch waterline on the north side of Parcel 1.2 – Node J-294, and (3.) 12-inch waterline on the south side of Parcel 1.2 – Node J-296.

The estimated average-day demand for Parcel 1.1 is 82 gallons per minute (gpm), the maximum-day demand for the proposed development totals 163 gpm, and the peak-hour demand is 286 gpm. The demands for each building were quantified and placed at the nearest node.

Attached are the results of the maximum-day plus fire flow model and the peak-hour model along with an exhibit illustrating the specified node locations and pipeline sizes.

As indicated by the results of the water system modeling, adequate peak-hour demand pressures and fire flow requirements have been met at all service junctions. The onsite pressures for the peak-hour flow demands range between 61 psi and 123 psi. Fire flow rates of 1,500 gpm have been met at the specified nodes. All pressures exceed the 30-psi minimum requirement during the maximum-day plus fire flow scenario.



5495-06

Mr. Douglas L. Mann
City of Scottsdale Water Resources Dept.
DC Ranch Parcels 1.1
Water Distribution Basis of Design
WP #062762.10

Revised April 5, 2007
September 8, 2006
Page 2

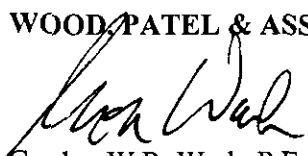
Pressures within the development may require individual pressure reducing valves, fire pumps, or other required potable water devices. This will depend on building use development and should be determined by a mechanical engineer.

Thank you for your prompt review of the water system analysis provided for DC Ranch Parcel 1.1.

If you have any questions, please feel free to contact us.

Sincerely,

WOOD, PATEL & ASSOCIATES, INC.


Gordon W.R. Wark, P.E.
Senior Vice President

GWRW/sv

Enclosure(s)



WATER DEMANDS

Project: DC Ranch Parcel 1.1
Location: City of Scottsdale, Arizona
Date: April 4, 2007
References: DC Ranch Planning Unit I and Second Ammendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

			NON-RESIDENTIAL Commercial/Retail		NON-RESIDENTIAL											
Node	SUB-AREA	LAND USE	AREA (SF)	ADF/ SF (GPD)	ADF SUB- TOTAL (GPD)	MAX DAY FACTOR	MAX DAY SUB TOTAL (GPD)	PEAK HOUR FACTOR	PEAK HOUR SUB- TOTAL (GPD)	TOTAL ADF (GPD)	MAX DAY TOTAL (GPD)	PEAK HOUR TOTAL (GPD)	TOTAL ADF (GPM)	MAX DAY TOTAL (GPM)	PEAK HOUR TOTAL (GPM)	
Parcel 1.1																
J-437	2.1	12 - BUILDING K BANK, 5297 sf	4,737	0.8	3,790	2	7,579	3.5	13,264	3,790	7,579	13,264				
TOTAL SUB-AREA 2.1 (J-437)					3,790		7,579		13,264	3,790	7,579	13,264	2.63	5.26	9.21	TOTAL SUB-AREA 2.1 (J-437)
J-444	2.2	13 - BUILDING J OFFICE, 67778 sf	67,778	0.8	54,222	2	108,445	3.5	189,778	54,222	108,445	189,778				
TOTAL SUB-AREA 2.2 (J-444)					54,222		108,445		189,778	54,222	108,445	189,778	37.65	75.31	131.79	TOTAL SUB-AREA 2.2 (J-444)
J-445	2.3	14 - BUILDING H COMMERCIAL PAD, 11,668 SF	11,668	0.8	9,334	2	18,669	3.5	32,670	9,334	18,669	32,670				
J-445	2.3	16 - BULDING G COMMERCIAL PAD, 7317 SF	7,317	0.8	5,854	2	11,707	3.5	20,488	5,854	11,707	20,488				
TOTAL SUB-AREA 2.3 (J-445)					15,188		30,376		53,158	15,188	30,376	53,158	10.55	21.09	36.92	TOTAL SUB-AREA 2.3 (J-445)
J-446	2.4	17 - BUILDING F COMMERCIAL PAD, 6467 SF	6,467	0.8	5,174	2	10,347	3.5	18,108	5,174	10,347	18,108				
J-446	2.4	18 - BUILDING E COMMERCIAL, 11,667 SF	11,667	0.8	9,334	2	18,667	3.5	32,668	9,334	18,667	32,668				
TOTAL SUB-AREA 2.4 (J-446)					14,507		29,014		50,775	14,507	29,014	50,775	10.07	20.15	35.26	TOTAL SUB-AREA 2.4 (J-446)
J-448	2.5	19 - BUILDING D GROCERY STORE, 17,117 SF	17,117	0.8	13,694	2	27,387	3.5	47,928	13,694	27,387	47,928				
J-448	2.5	20 - BUILDING C COMMERCIAL, 4533 SF	4,533	0.8	3,626	2	7,253	3.5	12,692	3,626	7,253	12,692				
TOTAL SUB-AREA 2.5 (J-448)					17,320		34,640		60,620	17,320	34,640	60,620	12.03	24.06	42.10	TOTAL SUB-AREA 2.5 (J-448)
J-443	2.6	21 - BUILDING A COMMERCIAL PAD, 15,754 SF	15,754	0.8	12,603	2	25,206	3.5	44,111	12,603	25,206	44,111				
TOTAL SUB-AREA 2.6 (J-443)					12,603		25,206		44,111	12,603	25,206	44,111	8.75	17.50	30.63	TOTAL SUB-AREA 2.6 (J-443)

PARCEL 1.1 TOTAL	COMM SF 147,038	TOTAL FLOW OUT OF DC RANCH 1.1 (GPD) TOTAL FLOW OUT OF DC RANCH 1.1 (GPM)	ADF 117,630 82	MAX DAY 235,261 163	PEAK HOUR 411,706 286

WOOD/PATEL

CIVIL ENGINEERS * HYDROLOGISTS * LAND SURVEYORS * CONSTRUCTION MANAGERS

WATER DEMANDS - Reference

Project: *DC Ranch Parcel 1.1*
Location: City of Scottsdale, Arizona
Date: April 4, 2007
References: DC Ranch Planning Unit I and Second Amendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

Project Number: 062732.10

Project Engineer: Gordon Wark, P.E.

Land Use	Average Day Flow	Type
Commercial/Retail	0.8 GPD / SF	Service/Employment

Maximum Head Loss 8.0 FT/1000 FT (Avg and Max Day Flow Conditions)
10.0 FT/1000 FT (Peak Hour Flow Conditions)
Maximum Pipe Velocity 10 FPS
Minimum Pressure 50.0 PSI (Normal Use Conditions)
30.0 PSI (Fire Flow Conditions)

Max Day Factor 2 times Average Day
Peak Hour Factor 3.5 times Average Day

Pressure Zone	Ground Elevation		
	HGL	Min	Max
4	1790	1510	1650
5	1910	1650	1790
6	2050	1790	1920
7	2180	1920	2050
8	2325	2050	2180
9	2455	2180	2310
10	2585	2310	2440
11	2715	2440	2570
12	2845	2570	2700
13	2975	2700	2830

Scenario: Peak Hour Steady State Analysis Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-87	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.85	109.83
J-92	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.07	94.78
J-93	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.94	101.21
J-94	1,627.00	Zone-5	Demand	1.93	DC Ranch	1.93	1,913.91	124.13
J-95	1,790.00	Zone-5	Demand	12.23	DC Ranch	12.23	1,913.79	53.56
J-96	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.77	49.22
J-111	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.77	49.22
J-148	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.04	54.10
J-149	1,770.00	Zone-5	Demand	46.31	DC Ranch	46.31	1,910.01	60.58
J-151	1,760.00	Zone-5	Demand	77.88	DC Ranch	77.88	1,910.01	64.90
J-154	1,790.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.73	52.23
J-171	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.75	80.80
J-194	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.80	54.43
J-195	1,775.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.80	58.75
J-196	1,745.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.52	72.91
J-197	1,710.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.53	88.06
J-198	1,720.00	Zone-5	Demand	9.45	DC Ranch	9.45	1,913.48	83.71
J-199	1,710.00	Zone-5	Demand	24.29	DC Ranch	24.29	1,913.42	88.01
J-200	1,747.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,911.70	71.26
J-203	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.69	74.28
J-204	1,748.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.70	70.83
J-207	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.06	54.54
J-208	1,805.00	Zone-5	Demand	13.37	DC Ranch	13.37	1,911.61	46.12
J-210	1,770.00	Zone-5	Demand	9.57	DC Ranch	9.57	1,911.71	61.31
J-211	1,745.00	Zone-5	Demand	3.61	DC Ranch	3.61	1,913.30	72.82
J-212	1,743.00	Zone-5	Demand	9.02	DC Ranch	9.02	1,913.30	73.68
J-213	1,747.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.30	71.95
J-214	1,782.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,911.49	56.03
J-215	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.54	94.55
J-216	1,727.00	Zone-5	Demand	13.53	DC Ranch	13.53	1,913.32	80.61
J-217	1,690.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.53	96.71
J-218	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.52	94.54
J-219	1,702.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.35	91.44
J-220	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.52	81.56
J-221	1,635.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.78	120.61
J-222	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.56	101.05

Title: DC Ranch

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Scenario: Peak Hour Steady State Analysis Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-275	1,760.00	Zone-5	Demand	43.16	DC Ranch	43.16	1,910.01	64.90
J-280	1,640.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.78	118.45
J-281	1,645.00	Zone-5	Demand	21.67	DC Ranch	21.67	1,913.67	116.24
J-282	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.59	109.72
J-283	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.58	109.71
J-284	1,660.00	Zone-5	Demand	23.37	DC Ranch	23.37	1,913.57	109.71
J-285	1,670.00	Zone-5	Demand	15.12	DC Ranch	15.12	1,913.58	105.38
J-286	1,637.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.01	56.68
J-287	1,649.00	Zone-5	Demand	25.17	DC Ranch	25.17	1,913.36	114.38
J-288	1,649.00	Zone-5	Demand	33.29	DC Ranch	33.29	1,913.19	114.30
J-289	1,626.00	Zone-4	Demand	33.29	DC Ranch	33.29	1,767.98	61.43
J-290	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.94	64.01
J-291	1,603.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	71.35
J-292	1,610.00	Zone-4	Demand	15.30	DC Ranch	15.30	1,767.90	68.32
J-293	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.01	117.25
J-294	1,642.00	Zone-5	Demand	59.98	DC Ranch	59.98	1,912.98	117.24
J-296	1,637.00	Zone-5	Demand	76.52	DC Ranch	76.52	1,912.81	119.33
J-297	1,623.00	Zone-4	Demand	1.27	DC Ranch	1.27	1,768.02	62.74
J-299	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	72.65
J-300	1,615.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	66.19
J-301	1,613.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.99	67.05
J-302	1,590.00	Zone-4	Demand	35.81	DC Ranch	35.81	1,767.89	76.97
J-303	1,605.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	70.48
J-304	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	72.64
J-305	1,595.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.89	74.80
J-306	1,595.00	Zone-4	Demand	12.35	DC Ranch	12.35	1,767.89	74.80
J-307	1,610.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.82	68.28
J-308	1,662.00	Zone-5	Demand	23.22	DC Ranch	23.22	1,913.37	108.76
J-317	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.78	82.97
J-318	1,740.00	Zone-5	Demand	16.89	DC Ranch	16.89	1,911.72	74.30
J-319	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.75	74.31
J-320	1,750.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.75	69.98
J-321	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.73	82.95
J-322	1,740.00	Zone-5	Demand	28.92	DC Ranch	28.92	1,911.71	74.29
J-323	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.73	74.30
J-324	1,740.00	Zone-5	Demand	0.59	DC Ranch	0.59	1,911.73	74.30

Title: DC Ranch

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Scenario: Peak Hour Steady State Analysis Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-328	1,742.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.70	73.42
J-345	1,569.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	86.06
J-346	1,763.00	Zone-5	Demand	3.80	DC Ranch	3.80	1,911.68	64.33
J-350	1,610.00	Zone-4	Demand	49.40	DC Ranch	49.40	1,767.80	68.27
J-351	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.93	64.00
J-352	1,636.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,912.93	119.81
J-355	1,766.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.80	62.65
J-357	1,735.00	Zone-5	Demand	2.74	DC Ranch	2.74	1,911.70	76.45
J-358	1,689.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.52	97.14
J-359	1,632.00	Zone-4	Demand	34.72	DC Ranch	34.72	1,767.91	58.80
J-360	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.36	115.24
J-361	1,652.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.43	113.11
J-362	1,632.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	58.83
J-363	1,611.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.92	67.89
J-364	1,591.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	76.54
J-365	1,614.00	Zone-4	Demand	64.75	DC Ranch	64.75	1,767.88	66.58
J-366	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.32	117.39
J-378	1,608.00	Zone-4	Demand	26.74	DC Ranch	26.74	1,767.92	69.19
J-379	1,631.00	Zone-4	Demand	21.60	DC Ranch	21.60	1,767.88	59.22
J-380	1,600.00	Zone-4	Demand	36.86	DC Ranch	36.86	1,767.89	72.64
J-381	1,631.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,912.84	121.94
J-382	1,640.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,912.96	118.10
J-383	1,648.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,912.96	114.64
J-384	1,645.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,912.96	115.94
J-385	1,639.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.00	118.55
J-386	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.00	64.03
J-387	1,616.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.99	65.76
J-388	1,632.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	58.83
J-389	1,627.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	61.00
J-390	1,669.00	Zone-5	Demand	9.00	DC Ranch	9.00	1,913.37	105.73
J-391	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,912.96	115.93
J-392	1,638.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.13	119.04
J-393	1,641.50	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.18	117.54
J-394	1,649.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.20	114.31
J-395	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.23	116.05
J-396	1,631.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	59.27

Title: DC Ranch

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Scenario: Peak Hour Steady State Analysis Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-397	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	61.86
J-398	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-399	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-400	1,619.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	64.46
J-401	1,635.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	57.54
J-402	1,630.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	59.70
J-403	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	61.86
J-407	1,795.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.64	50.46
J-408	1,990.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,177.91	81.30
J-409	1,987.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,177.92	82.60
J-410	1,720.00	Zone-5	Demand	6.31	DC Ranch	6.31	1,913.31	83.64
J-411	1,703.00	Zone-5	Demand	10.82	DC Ranch	10.82	1,913.33	91.00
J-412	1,747.00	Zone-5	Demand	14.42	DC Ranch	14.42	1,913.30	71.95
J-413	1,732.00	Zone-5	Demand	5.41	DC Ranch	5.41	1,913.31	78.45
J-414	1,733.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.31	78.01
J-416	1,707.00	Zone-5	Demand	16.23	DC Ranch	16.23	1,913.35	89.28
J-417	1,715.00	Zone-5	Demand	7.21	DC Ranch	7.21	1,913.33	85.81
J-418	1,715.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.32	85.80
J-419	1,702.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.37	91.45
J-422	1,760.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.30	66.33
J-425	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.70	74.29
J-426	1,695.00	Zone-5	Demand	5.46	DC Ranch	5.46	1,913.25	94.43
J-427	1,720.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,913.47	83.70
J-428	1,720.00	Zone-5	Demand	10.00	DC Ranch	10.00	1,912.00	83.07
J-429	1,720.00	Zone-5	Demand	15.05	DC Ranch	15.05	1,911.99	83.07
J-430	1,748.00	Zone-5	Demand	5.47	DC Ranch	5.47	1,912.86	71.33
J-431	1,782.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.14	55.87
J-432	1,765.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.20	64.12
J-433	1,753.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.20	69.31
J-434	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.54	115.32
J-435	1,630.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,912.62	122.28
J-436	1,640.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,912.77	118.01
J-437	1,626.00	Zone-4	Demand	9.21	DC Ranch	9.21	1,767.94	61.41
J-438	1,621.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.94	63.57
J-442	1,637.00	Zone-5	Demand	0.00	Fixed	0.00	1,912.77	119.31
J-443	1,644.00	Zone-5	Demand	30.63	Fixed	30.63	1,912.76	116.28

Title: DC Ranch

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**Scenario: Peak Hour
Steady State Analysis
Junction Report**

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
→ J-444	1,628.00	Zone-5	Demand	131.79	Fixed	131.79	1,912.58	123.13 ←
→ J-446	1,634.00	Zone-5	Demand	35.26	Fixed	35.26	1,912.62	120.55 ←
→ J-447	1,636.00	Zone-5	Demand	0.00	Fixed	0.00	1,912.62	119.68 ←
→ J-448	1,640.00	Zone-5	Demand	42.10	Fixed	42.10	1,912.68	117.97 ←

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-516	1,078.00	30.0	Ductile Iron	130.0	Open	1,951.10	1,913.78	1,913.67	0.11	0.10	0.89
P-517	1,688.00	30.0	Ductile Iron	130.0	Open	1,241.15	1,913.67	1,913.59	0.07	0.04	0.56
P-518	263.00	8.0	Ductile Iron	130.0	Open	38.49	1,913.59	1,913.58	0.01	0.04	0.25
P-519	635.00	8.0	Ductile Iron	130.0	Open	23.37	1,913.58	1,913.57	0.01	0.02	0.15
P-520	511.00	8.0	Ductile Iron	130.0	Open	15.12	1,913.58	1,913.58	0.00	0.01	0.10
P-521	785.00	6.0	Ductile Iron	130.0	Open	13.30	2,585.06	2,585.04	0.02	0.02	0.15
P-522	136.00	6.0	Ductile Iron	130.0	Open	0.00	2,585.04	2,585.04	0.00	0.00	0.00
P-523	684.00	6.0	Ductile Iron	130.0	Open	0.00	2,457.88	2,457.88	0.00	0.00	0.00
P-527	246.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.05	2,715.04	0.02	0.08	0.28
P-528	631.00	8.0	Ductile Iron	130.0	Open	22.96	1,767.91	1,767.90	0.01	0.02	0.15
P-532	151.00	6.0	Ductile Iron	130.0	Open	23.07	2,715.04	2,715.02	0.01	0.07	0.26
P-533	324.00	6.0	Ductile Iron	130.0	Open	5.39	2,715.02	2,715.02	0.00	0.00	0.06
P-534	569.00	6.0	Ductile Iron	130.0	Open	7.60	2,715.02	2,715.02	0.00	0.01	0.09
P-536	518.00	6.0	Ductile Iron	130.0	Open	3.80	2,715.02	2,715.02	0.00	0.00	0.04
P-537	1,583.00	12.0	Ductile Iron	130.0	Open	-114.59	1,767.91	1,767.99	0.07	0.05	0.33
P-538	371.00	8.0	Ductile Iron	130.0	Open	0.47	1,767.99	1,767.99	0.00	0.00	0.00
P-540	412.00	8.0	Ductile Iron	130.0	Open	40.68	1,767.91	1,767.89	0.02	0.05	0.26
P-541	945.00	12.0	Ductile Iron	130.0	Open	37.39	1,767.91	1,767.91	0.01	0.01	0.11
P-542	346.00	8.0	Ductile Iron	130.0	Open	31.56	1,767.91	1,767.90	0.01	0.03	0.20
P-543	366.00	8.0	Ductile Iron	130.0	Open	19.21	1,767.90	1,767.89	0.00	0.01	0.12
P-544	408.00	8.0	Ductile Iron	130.0	Open	12.35	1,767.90	1,767.89	0.00	0.01	0.08
P-546	491.00	12.0	Ductile Iron	130.0	Open	-31.13	1,767.91	1,767.91	0.00	0.00	0.09
P-547	1,468.00	30.0	Ductile Iron	130.0	Open	817.70	1,913.59	1,913.56	0.03	0.02	0.37
P-549	534.00	6.0	Ductile Iron	130.0	Open	36.95	1,767.91	1,767.82	0.09	0.17	0.42
P-550	379.00	8.0	Ductile Iron	130.0	Open	6.95	2,049.89	2,049.89	0.00	0.00	0.04
P-551	648.00	8.0	Ductile Iron	130.0	Open	6.95	2,049.89	2,049.89	0.00	0.00	0.04
P-552	334.00	8.0	Ductile Iron	130.0	Open	-7.16	2,049.90	2,049.90	0.00	0.00	0.05
P-553	462.00	8.0	Ductile Iron	130.0	Open	-14.18	2,049.90	2,049.90	0.00	0.01	0.09
P-554	311.00	8.0	Ductile Iron	130.0	Open	-31.75	2,049.86	2,049.87	0.01	0.03	0.20
P-555	228.00	8.0	Ductile Iron	130.0	Open	-31.75	2,049.87	2,049.87	0.01	0.03	0.20
P-556	290.00	8.0	Ductile Iron	130.0	Open	208.27	2,715.43	2,715.14	0.29	1.00	1.33
P-557	255.00	8.0	Ductile Iron	130.0	Open	86.00	2,458.07	2,458.02	0.05	0.19	0.55
P-558	803.00	6.0	Ductile Iron	130.0	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-559	374.00	6.0	Ductile Iron	130.0	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-560	287.00	6.0	Ductile Iron	130.0	Open	25.27	2,325.05	2,325.03	0.02	0.08	0.29

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-561	910.00	6.0	Ductile Iron	130.0	Open	19.02	2,325.03	2,324.98	0.04	0.05	0.22
P-562	1,758.00	6.0	Ductile Iron	130.0	Open	-6.26	2,325.02	2,325.03	0.01	0.01	0.07
P-563	457.00	8.0	Ductile Iron	130.0	Open	44.28	2,458.02	2,457.99	0.03	0.06	0.28
P-564	575.00	6.0	Ductile Iron	130.0	Open	25.27	2,457.99	2,457.95	0.05	0.08	0.29
P-565	195.00	8.0	Ductile Iron	130.0	Open	138.65	2,715.14	2,715.05	0.09	0.47	0.88
P-566	475.00	8.0	Ductile Iron	130.0	Open	41.01	1,911.78	1,911.75	0.02	0.05	0.26
P-567	251.00	12.0	Ductile Iron	130.0	Open	-162.78	1,911.70	1,911.72	0.02	0.09	0.46
P-568	383.00	8.0	Ductile Iron	130.0	Open	-70.09	1,911.72	1,911.78	0.05	0.13	0.45
P-569	134.00	8.0	Ductile Iron	130.0	Open	0.00	1,911.75	1,911.75	0.00	0.00	0.00
P-570	97.00	8.0	Ductile Iron	130.0	Open	0.00	1,911.75	1,911.75	0.00	0.00	0.00
P-572	477.00	8.0	Ductile Iron	130.0	Open	41.01	1,911.75	1,911.73	0.02	0.05	0.26
P-573	199.00	6.0	Ductile Iron	130.0	Open	28.92	1,911.73	1,911.71	0.02	0.10	0.33
P-574	97.00	8.0	Ductile Iron	130.0	Open	12.09	1,911.73	1,911.73	0.00	0.01	0.08
P-575	274.00	8.0	Ductile Iron	130.0	Open	0.59	1,911.73	1,911.73	0.00	0.00	0.00
P-577	755.00	8.0	Ductile Iron	130.0	Open	11.50	1,911.73	1,911.72	0.00	0.00	0.07
P-582	205.00	8.0	Ductile Iron	130.0	Open	-25.27	1,911.69	1,911.70	0.00	0.02	0.16
P-583	199.00	8.0	Ductile Iron	130.0	Open	-25.27	1,911.70	1,911.70	0.00	0.02	0.16
P-585	76.00	8.0	Ductile Iron	130.0	Open	-1.34	2,458.21	2,458.21	0.00	0.00	0.01
P-586	422.00	6.0	Ductile Iron	130.0	Open	3.80	2,585.05	2,585.05	0.00	0.00	0.04
P-587	75.00	8.0	Ductile Iron	130.0	Open	-25.76	2,049.90	2,049.90	0.00	0.02	0.16
P-588	108.00	8.0	Ductile Iron	130.0	Open	-55.23	2,049.90	2,049.91	0.01	0.09	0.35
P-589	470.00	8.0	Ductile Iron	130.0	Open	25.82	2,049.91	2,049.90	0.01	0.02	0.16
P-590	807.00	8.0	Ductile Iron	130.0	Open	81.05	2,050.05	2,049.91	0.14	0.17	0.52
P-591	467.00	8.0	Ductile Iron	130.0	Open	0.00	2,049.90	2,049.90	0.00	0.00	0.00
P-592	161.00	8.0	Ductile Iron	130.0	Open	3.70	2,049.88	2,049.88	0.00	0.00	0.02
P-593	522.00	8.0	Ductile Iron	130.0	Open	-20.51	2,049.88	2,049.89	0.01	0.01	0.13
P-594	268.00	8.0	Ductile Iron	130.0	Open	-24.21	2,049.87	2,049.88	0.01	0.02	0.15
P-595	102.00	8.0	Ductile Iron	130.0	Open	-25.76	2,049.89	2,049.89	0.00	0.02	0.16
P-596	396.00	8.0	Ductile Iron	130.0	Open	-11.27	2,049.89	2,049.89	0.00	0.00	0.07
P-597	251.00	8.0	Ductile Iron	130.0	Open	-25.76	2,049.89	2,049.90	0.01	0.02	0.16
P-598	249.00	8.0	Ductile Iron	130.0	Open	14.48	2,049.89	2,049.89	0.00	0.01	0.09
P-599	347.00	8.0	Ductile Iron	130.0	Open	-7.02	2,049.90	2,049.90	0.00	0.00	0.04
P-600	186.00	8.0	Ductile Iron	130.0	Open	-7.37	2,049.90	2,049.90	0.00	0.00	0.05
P-601	508.00	8.0	Ductile Iron	130.0	Open	6.38	2,049.90	2,049.90	0.00	0.00	0.04
P-602	56.00	8.0	Ductile Iron	130.0	Open	-32.44	2,049.90	2,049.91	0.00	0.03	0.21

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-603	51.00	8.0	Ductile Iron	130.0	Open	25.15	2,049.91	2,049.90	0.00	0.02	0.16
P-604	578.00	8.0	Ductile Iron	130.0	Open	11.40	2,049.90	2,049.90	0.00	0.00	0.07
P-605	377.00	8.0	Ductile Iron	130.0	Open	-13.75	2,049.90	2,049.90	0.00	0.01	0.09
P-606	141.00	8.0	Ductile Iron	130.0	Open	-57.59	2,049.91	2,049.92	0.01	0.09	0.37
P-607	340.00	24.0	Ductile Iron	130.0	Open	1,353.52	1,910.05	1,909.99	0.05	0.15	0.96
P-608	127.00	24.0	Ductile Iron	130.0	Open	892.35	1,909.99	1,909.99	0.01	0.07	0.63
P-609	242.00	24.0	Ductile Iron	130.0	Open	-461.18	1,909.99	1,909.99	0.01	0.02	0.33
P-613	184.00	12.0	Ductile Iron	130.0	Open	288.37	2,050.05	2,050.01	0.05	0.25	0.82
P-614	574.00	8.0	Ductile Iron	130.0	Open	0.94	2,180.55	2,180.55	0.00	0.00	0.01
P-615	209.00	16.0	Ductile Iron	130.0	Open	774.32	2,180.55	2,180.46	0.08	0.39	1.24
P-616	2,729.00	16.0	Ductile Iron	130.0	Open	485.95	2,180.46	2,180.02	0.45	0.16	0.78
P-617	321.00	12.0	Ductile Iron	130.0	Open	288.37	2,180.46	2,180.38	0.08	0.25	0.82
P-618	278.00	8.0	Ductile Iron	130.0	Open	-6.29	2,180.55	2,180.55	0.00	0.00	0.04
P-619	330.00	8.0	Ductile Iron	130.0	Open	33.43	2,049.87	2,049.86	0.01	0.03	0.21
P-620	108.00	8.0	Ductile Iron	130.0	Open	12.58	2,049.86	2,049.86	0.00	0.00	0.08
P-621	389.00	8.0	Ductile Iron	130.0	Open	20.85	2,049.86	2,049.86	0.01	0.01	0.13
P-622	160.00	8.0	Ductile Iron	130.0	Open	8.09	2,049.79	2,049.79	0.00	0.00	0.05
P-623	448.00	8.0	Ductile Iron	130.0	Open	11.21	2,049.79	2,049.79	0.00	0.00	0.07
P-624	148.00	8.0	Ductile Iron	130.0	Open	-0.66	2,049.79	2,049.79	0.00	0.00	0.00
P-625	376.00	8.0	Ductile Iron	130.0	Open	-3.78	2,049.79	2,049.79	0.00	0.00	0.02
P-626	395.00	8.0	Ductile Iron	130.0	Open	-3.13	2,049.79	2,049.79	0.00	0.00	0.02
P-627	156.00	6.0	Ductile Iron	130.0	Open	0.00	2,715.07	2,715.07	0.00	0.00	0.00
P-629	364.00	12.0	Ductile Iron	130.0	Open	-137.51	1,911.68	1,911.70	0.02	0.06	0.39
P-630	391.00	6.0	Ductile Iron	130.0	Open	9.49	2,049.79	2,049.79	0.01	0.01	0.11
P-631	454.00	6.0	Ductile Iron	130.0	Open	-7.59	2,049.78	2,049.79	0.00	0.01	0.09
P-632	331.00	8.0	Ductile Iron	130.0	Open	-11.64	2,049.81	2,049.81	0.00	0.01	0.07
P-633	488.00	8.0	Ductile Iron	130.0	Open	-28.10	2,049.81	2,049.82	0.01	0.02	0.18
P-634	126.00	8.0	Ductile Iron	130.0	Open	16.46	2,049.81	2,049.81	0.00	0.01	0.11
P-635	274.00	24.0	Ductile Iron	130.0	Open	-2,784.93	1,914.07	1,914.23	0.16	0.58	1.98
P-636	166.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.07	2,715.05	0.01	0.08	0.28
P-637	1,359.00	30.0	Ductile Iron	130.0	Open	1,951.10	1,914.07	1,913.94	0.14	0.10	0.89
P-638	844.00	30.0	Ductile Iron	130.0	Open	1,951.10	1,913.94	1,913.85	0.08	0.10	0.89
P-639	748.00	30.0	Ductile Iron	130.0	Open	1,951.10	1,913.85	1,913.78	0.08	0.10	0.89
P-640	100.00	6.0	Ductile Iron	130.0	Open	38.95	2,985.06	2,985.04	0.02	0.18	0.44
P-641	689.00	6.0	Ductile Iron	130.0	Open	-36.52	1,767.80	1,767.91	0.11	0.16	0.41

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-646	607.00	12.0	Ductile Iron	130.0	Open	-351.04	2,178.25	2,178.47	0.22	0.36	1.00
P-649	104.00	6.0	Ductile Iron	130.0	Open	38.95	2,985.04	2,985.02	0.02	0.18	0.44
P-650	97.00	6.0	Ductile Iron	130.0	Open	0.00	2,844.88	2,844.88	0.00	0.00	0.00
P-651	125.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.14	2,715.13	0.01	0.08	0.28
P-652	829.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.13	2,715.07	0.07	0.08	0.28
P-653	279.00	6.0	Ductile Iron	130.0	Open	44.65	2,715.14	2,715.08	0.07	0.23	0.51
P-654	105.00	6.0	Ductile Iron	130.0	Open	22.53	2,715.06	2,715.05	0.01	0.07	0.26
P-655	573.00	6.0	Ductile Iron	130.0	Open	16.83	2,715.05	2,715.03	0.02	0.04	0.19
P-656	518.00	6.0	Ductile Iron	130.0	Open	5.70	2,715.05	2,715.05	0.00	0.01	0.06
P-657	625.00	6.0	Ductile Iron	130.0	Open	0.00	2,844.81	2,844.81	0.00	0.00	0.00
P-658	209.00	8.0	Ductile Iron	130.0	Open	26.74	1,767.94	1,767.93	0.00	0.02	0.17
P-659	578.00	8.0	Ductile Iron	130.0	Open	26.74	1,767.93	1,767.92	0.01	0.02	0.17
P-660	766.00	8.0	Ductile Iron	130.0	Open	28.47	1,767.92	1,767.90	0.02	0.03	0.18
P-661	1,137.00	8.0	Ductile Iron	130.0	Open	21.60	1,767.90	1,767.88	0.02	0.02	0.14
P-662	949.00	8.0	Ductile Iron	130.0	Open	22.33	1,767.91	1,767.89	0.02	0.02	0.14
P-663	804.00	8.0	Ductile Iron	130.0	Open	-14.53	1,767.89	1,767.90	0.01	0.01	0.09
P-665	350.00	12.0	Ductile Iron	130.0	Open	412.10	1,913.01	1,912.84	0.17	0.49	1.17
P-668	329.00	12.0	Ductile Iron	130.0	Open	124.22	1,768.00	1,767.99	0.02	0.05	0.35
P-669	415.00	8.0	Ductile Iron	130.0	Open	-87.72	1,912.84	1,912.93	0.08	0.20	0.56
P-670	316.00	8.0	Ductile Iron	130.0	Open	-61.39	1,912.93	1,912.96	0.03	0.10	0.39
P-671	405.00	8.0	Ductile Iron	130.0	Open	-1.22	1,912.96	1,912.96	0.00	0.00	0.01
P-672	483.00	8.0	Ductile Iron	130.0	Open	-18.84	1,912.96	1,912.96	0.01	0.01	0.12
P-673	722.00	8.0	Ductile Iron	130.0	Open	42.82	1,912.96	1,912.93	0.04	0.05	0.27
P-674	244.00	8.0	Ductile Iron	130.0	Open	-78.15	1,912.96	1,913.00	0.04	0.16	0.50
P-676	500.00	8.0	Ductile Iron	130.0	Open	31.03	1,768.00	1,767.99	0.01	0.03	0.20
P-677	357.00	8.0	Ductile Iron	130.0	Open	15.28	1,767.99	1,767.99	0.00	0.01	0.10
P-684	923.00	8.0	Ductile Iron	130.0	Open	48.10	1,913.43	1,913.37	0.06	0.07	0.31
P-685	347.00	8.0	Ductile Iron	130.0	Open	9.00	1,913.37	1,913.37	0.00	0.00	0.06
P-686	240.00	12.0	Ductile Iron	130.0	Open	-212.54	1,912.81	1,912.84	0.03	0.14	0.60
P-688	135.00	12.0	Ductile Iron	130.0	Open	327.57	1,913.36	1,913.32	0.04	0.32	0.93
P-689	362.00	8.0	Ductile Iron	130.0	Open	-75.53	1,912.96	1,913.01	0.06	0.15	0.48
P-690	265.00	6.0	Ductile Iron	130.0	Open	6.01	2,715.02	2,715.02	0.00	0.01	0.07
P-691	272.00	8.0	Ductile Iron	130.0	Open	-1.13	1,912.96	1,912.96	0.00	0.00	0.01
P-692	195.00	8.0	Ductile Iron	130.0	Open	-1.13	1,912.96	1,912.96	0.00	0.00	0.01
P-693	559.00	8.0	Ductile Iron	130.0	Open	-94.64	1,913.00	1,913.13	0.13	0.23	0.60

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-694	214.00	8.0	Ductile Iron	130.0	Open	-94.64	1,913.13	1,913.18	0.05	0.23	0.60
P-696	378.00	8.0	Ductile Iron	130.0	Open	-15.57	1,913.18	1,913.19	0.00	0.01	0.10
P-697	250.00	8.0	Ductile Iron	130.0	Open	-48.86	1,913.19	1,913.20	0.02	0.07	0.31
P-698	218.00	8.0	Ductile Iron	130.0	Open	127.93	1,913.32	1,913.23	0.09	0.41	0.82
P-699	290.00	8.0	Ductile Iron	130.0	Open	79.08	1,913.23	1,913.18	0.05	0.17	0.50
P-700	412.00	8.0	Ductile Iron	130.0	Open	-48.86	1,913.20	1,913.23	0.03	0.07	0.31
P-701	289.00	12.0	Ductile Iron	130.0	Open	287.27	1,912.84	1,912.77	0.07	0.25	0.81
P-702	134.00	12.0	Ductile Iron	130.0	Open	287.27	1,768.05	1,768.02	0.03	0.25	0.81
P-703	331.00	8.0	Ductile Iron	130.0	Open	56.80	1,768.02	1,767.99	0.03	0.09	0.36
P-706	818.00	8.0	Ductile Iron	130.0	Open	-13.02	1,767.98	1,767.99	0.00	0.01	0.08
P-707	288.00	8.0	Ductile Iron	130.0	Open	5.72	1,767.98	1,767.98	0.00	0.00	0.04
P-708	725.00	8.0	Ductile Iron	130.0	Open	-10.77	1,767.98	1,767.98	0.00	0.00	0.07
P-709	132.00	8.0	Ductile Iron	130.0	Open	-0.79	1,767.98	1,767.98	0.00	0.00	0.01
P-710	417.00	8.0	Ductile Iron	130.0	Open	-9.16	1,767.98	1,767.99	0.00	0.00	0.06
P-711	161.00	8.0	Ductile Iron	130.0	Open	-9.98	1,767.98	1,767.98	0.00	0.00	0.06
P-712	234.00	8.0	Ductile Iron	130.0	Open	8.12	1,767.98	1,767.98	0.00	0.00	0.05
P-713	148.00	8.0	Ductile Iron	130.0	Open	-18.10	1,767.98	1,767.99	0.00	0.01	0.12
P-714	458.00	8.0	Ductile Iron	130.0	Open	35.76	1,768.01	1,767.99	0.02	0.04	0.23
P-715	284.00	8.0	Ductile Iron	130.0	Open	35.76	1,767.99	1,767.98	0.01	0.04	0.23
P-716	264.00	8.0	Ductile Iron	130.0	Open	0.00	1,767.99	1,767.99	0.00	0.00	0.00
P-717	52.00	12.0	Ductile Iron	130.0	Open	199.64	1,913.32	1,913.31	0.01	0.13	0.57
P-718	278.00	12.0	Ductile Iron	130.0	Open	199.64	1,768.04	1,768.01	0.04	0.13	0.57
P-719	460.00	12.0	Ductile Iron	130.0	Open	166.35	1,767.98	1,767.94	0.04	0.09	0.47
P-721	164.00	12.0	Ductile Iron	130.0	Open	155.25	1,768.02	1,768.00	0.01	0.08	0.44
P-722	1,092.00	8.0	Ductile Iron	130.0	Open	-9.18	1,767.98	1,767.98	0.00	0.00	0.06
P-723	304.00	8.0	Ductile Iron	130.0	Open	16.49	1,767.98	1,767.98	0.00	0.01	0.11
P-724	70.00	8.0	Ductile Iron	130.0	Open	-25.67	1,767.98	1,767.99	0.00	0.02	0.16
P-725	609.00	6.0	Ductile Iron	130.0	Open	8.30	2,456.88	2,456.87	0.01	0.01	0.09
P-727	417.00	6.0	Ductile Iron	130.0	Open	20.77	2,456.90	2,456.88	0.02	0.06	0.24
P-728	486.00	8.0	Ductile Iron	130.0	Open	32.77	2,456.49	2,456.48	0.02	0.03	0.21
P-729	291.00	6.0	Ductile Iron	130.0	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-730	264.00	6.0	Ductile Iron	130.0	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-731	219.00	6.0	Ductile Iron	130.0	Open	-63.19	2,456.78	2,456.88	0.10	0.45	0.72
P-732	132.00	6.0	Ductile Iron	130.0	Open	-70.08	2,456.88	2,456.95	0.07	0.54	0.80
P-733	754.00	6.0	Ductile Iron	130.0	Open	-6.89	2,456.88	2,456.88	0.01	0.01	0.08

Title: DC Ranch

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Project Engineer: Gordon Wark, P.E.

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**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-734	318.00	12.0	Ductile Iron	130.0	Open	-169.51	1,911.61	1,911.64	0.03	0.09	0.48
P-735	685.00	12.0	Ductile Iron	130.0	Open	-133.72	1,911.64	1,911.68	0.04	0.06	0.38
P-737	940.00	8.0	Ductile Iron	130.0	Open	-17.31	2,049.81	2,049.82	0.01	0.01	0.11
P-739	343.00	8.0	Ductile Iron	130.0	Open	13.83	2,324.92	2,324.91	0.00	0.01	0.09
P-741	20.00	8.0	Ductile Iron	130.0	Open	0.00	2,049.79	2,049.79	0.00	0.00	0.00
P-742	20.00	8.0	Ductile Iron	130.0	Open	0.00	1,911.64	1,911.64	0.00	0.00	0.00
P-743	513.00	12.0	Ductile Iron	130.0	Open	-309.55	2,177.77	2,177.92	0.15	0.29	0.88
P-744	996.00	12.0	Ductile Iron	130.0	Open	-337.21	2,177.92	2,178.25	0.34	0.34	0.96
P-745	517.00	8.0	Ductile Iron	130.0	Open	-13.83	2,177.91	2,177.92	0.00	0.01	0.09
P-746	997.00	8.0	Ductile Iron	130.0	Open	17.99	1,913.54	1,913.53	0.01	0.01	0.11
P-749	341.00	8.0	Ductile Iron	130.0	Open	-25.35	1,913.31	1,913.32	0.01	0.02	0.16
P-750	765.00	6.0	Ductile Iron	130.0	Open	15.25	1,913.35	1,913.33	0.02	0.03	0.17
P-751	673.00	6.0	Ductile Iron	130.0	Open	4.43	1,913.33	1,913.33	0.00	0.00	0.05
P-753	93.00	8.0	Ductile Iron	130.0	Open	-27.65	1,913.30	1,913.30	0.00	0.02	0.18
P-754	463.00	6.0	Ductile Iron	130.0	Open	-4.66	1,913.30	1,913.30	0.00	0.00	0.05
P-755	393.00	8.0	Ductile Iron	130.0	Open	-31.31	1,913.30	1,913.31	0.01	0.03	0.20
P-756	316.00	8.0	Ductile Iron	130.0	Open	-21.74	1,913.30	1,913.31	0.00	0.02	0.14
P-757	571.00	8.0	Ductile Iron	130.0	Open	-21.74	1,913.31	1,913.31	0.01	0.02	0.14
P-759	846.00	8.0	Ductile Iron	130.0	Open	6.03	2,049.84	2,049.84	0.00	0.00	0.04
P-760	441.00	8.0	Ductile Iron	130.0	Open	6.03	2,050.03	2,050.03	0.00	0.00	0.04
P-761	1,712.00	8.0	Ductile Iron	130.0	Open	22.86	1,913.35	1,913.32	0.03	0.02	0.15
P-762	814.00	6.0	Ductile Iron	130.0	Open	-16.02	1,913.32	1,913.35	0.03	0.04	0.18
P-763	380.00	8.0	Ductile Iron	130.0	Open	-11.37	1,913.31	1,913.31	0.00	0.00	0.07
P-764	201.00	8.0	Ductile Iron	130.0	Open	-39.42	1,913.31	1,913.32	0.01	0.05	0.25
P-765	618.00	6.0	Ductile Iron	130.0	Open	-17.92	1,913.33	1,913.35	0.03	0.04	0.20
P-766	83.00	6.0	Ductile Iron	130.0	Open	-15.14	1,913.32	1,913.33	0.00	0.03	0.17
P-767	87.00	6.0	Ductile Iron	130.0	Open	-41.29	1,913.35	1,913.37	0.02	0.20	0.47
P-768	263.00	8.0	Ductile Iron	130.0	Open	55.11	1,913.37	1,913.35	0.02	0.08	0.35
P-769	619.00	6.0	Ductile Iron	130.0	Open	-24.28	1,913.32	1,913.37	0.05	0.08	0.28
P-770	340.00	6.0	Ductile Iron	130.0	Open	11.36	2,049.80	2,049.79	0.01	0.02	0.13
P-771	606.00	6.0	Ductile Iron	130.0	Open	-7.89	2,049.79	2,049.79	0.01	0.01	0.09
P-772	573.00	8.0	Ductile Iron	130.0	Open	0.00	1,913.30	1,913.30	0.00	0.00	0.00
P-773	917.00	8.0	Ductile Iron	130.0	Closed	0.00	1,912.05	1,910.80	0.00	0.00	0.00
P-775	820.00	8.0	Ductile Iron	130.0	Closed	0.00	1,913.30	1,912.05	0.00	0.00	0.00
P-776	100.00	6.0	Ductile Iron	130.0	Open	7.89	2,049.80	2,049.79	0.00	0.01	0.09

**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-777	318.00	6.0	Ductile Iron	130.0	Open	11.36	2,049.79	2,049.79	0.01	0.02	0.13
P-778	366.00	8.0	Ductile Iron	130.0	Open	137.62	1,913.42	1,913.25	0.17	0.46	0.88
P-780	324.00	8.0	Ductile Iron	130.0	Open	-10.53	1,911.70	1,911.70	0.00	0.00	0.07
P-781	507.00	8.0	Ductile Iron	130.0	Open	10.53	1,911.70	1,911.69	0.00	0.00	0.07
P-782	645.00	12.0	Ductile Iron	130.0	Closed	0.00	1,911.70	1,913.47	0.00	0.00	0.00
P-783	194.00	12.0	Ductile Iron	130.0	Open	-115.75	1,913.47	1,913.48	0.01	0.05	0.33
P-784	1,490.00	8.0	Ductile Iron	130.0	Open	-35.80	1,911.64	1,911.69	0.06	0.04	0.23
P-785	1,006.00	8.0	Ductile Iron	130.0	Open	234.23	1,913.25	1,912.00	1.25	1.24	1.50
P-786	710.00	8.0	Ductile Iron	130.0	Open	111.10	1,912.00	1,911.78	0.22	0.31	0.71
P-787	1,100.00	8.0	Ductile Iron	130.0	Open	-98.08	1,911.72	1,912.00	0.27	0.25	0.63
P-788	919.00	8.0	Ductile Iron	130.0	Open	15.05	1,912.00	1,911.99	0.01	0.01	0.10
P-789	582.00	8.0	Ductile Iron	130.0	Open	-300.02	1,911.71	1,912.86	1.14	1.96	1.91
P-790	830.00	8.0	Ductile Iron	130.0	Open	102.07	1,913.47	1,913.25	0.22	0.27	0.65
P-792	325.00	8.0	Ductile Iron	130.0	Open	-305.49	1,912.86	1,913.52	0.66	2.03	1.95
P-793	254.00	6.0	Ductile Iron	130.0	Open	-114.19	1,910.80	1,911.14	0.34	1.33	1.30
P-794	266.00	6.0	Ductile Iron	130.0	Open	-114.19	1,911.14	1,911.49	0.35	1.33	1.30
P-795	457.00	8.0	Ductile Iron	130.0	Open	0.00	1,913.20	1,913.20	0.00	0.00	0.00
P-796	1,129.00	6.0	Ductile Iron	130.0	Open	-122.31	1,911.49	1,913.20	1.71	1.51	1.39
P-797	252.00	8.0	Ductile Iron	130.0	Open	-122.31	1,913.20	1,913.30	0.09	0.37	0.78
P-798	102.00	12.0	Ductile Iron	130.0	Open	688.28	1,913.67	1,913.54	0.13	1.27	1.95
P-799	413.00	12.0	Ductile Iron	130.0	Open	688.28	1,913.54	1,913.01	0.52	1.27	1.95
P-801	449.00	8.0	Ductile Iron	130.0	Open	-140.68	1,912.77	1,912.98	0.22	0.48	0.90
P-802	415.00	8.0	Ductile Iron	130.0	Open	-136.02	1,912.62	1,912.81	0.19	0.45	0.87
P-803	113.00	8.0	Ductile Iron	130.0	Open	-9.21	1,767.94	1,767.94	0.00	0.00	0.06
P-804	515.00	8.0	Ductile Iron	130.0	Open	73.96	1,768.02	1,767.94	0.08	0.15	0.47
P-805	492.00	8.0	Ductile Iron	130.0	Open	64.75	1,767.94	1,767.88	0.06	0.11	0.41
P-806	220.00	8.0	Ductile Iron	130.0	Open	20.52	2,049.56	2,049.56	0.00	0.01	0.13
P-807	615.00	8.0	Ductile Iron	130.0	Open	6.64	2,049.56	2,049.56	0.00	0.00	0.04
P-808	391.00	8.0	Ductile Iron	130.0	Open	6.64	2,049.56	2,049.56	0.00	0.00	0.04
P-809	304.00	8.0	Ductile Iron	130.0	Open	0.00	1,912.77	1,912.77	0.00	0.00	0.00
P-810	151.00	8.0	Ductile Iron	130.0	Open	-30.63	1,912.76	1,912.77	0.00	0.03	0.20
P-811	87.00	8.0	Ductile Iron	130.0	Open	-131.79	1,912.58	1,912.62	0.04	0.43	0.84
P-812	238.00	12.0	Ductile Iron	130.0	Open	-200.66	1,912.98	1,913.01	0.03	0.13	0.57
P-813	225.00	8.0	Ductile Iron	130.0	Open	4.23	1,912.62	1,912.62	0.00	0.00	0.03
P-814	166.00	8.0	Ductile Iron	130.0	Open	-32.69	1,912.62	1,912.62	0.01	0.03	0.21

Title: DC Ranch

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**Scenario: Peak Hour
Steady State Analysis
Pipe Report**

Label	Length (ft)	Diameter (in)	Material	Hazen- Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-815	150.00	8.0	Ductile Iron	130.0	Open	0.00	1,912.62	1,912.62	0.00	0.00	0.00
P-816	416.00	8.0	Ductile Iron	130.0	Open	-67.95	1,912.62	1,912.68	0.05	0.13	0.43
P-817	292.00	8.0	Ductile Iron	130.0	Open	-110.05	1,912.68	1,912.77	0.09	0.31	0.70

Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Needed Residual Pressure (psi)	Calculated Residual Pressure (psi)	Needed Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)
J-87	Zone-5	true	true	500.00	500.00	600.00	30.00	109.76	30.00	46.17
J-92	Zone-5	true	true	500.00	500.00	600.00	30.00	94.71	30.00	46.18
J-93	Zone-5	true	true	500.00	500.00	600.00	30.00	101.14	30.00	46.17
J-94	Zone-5	true	true	500.00	501.37	601.37	30.00	123.98	30.00	46.19
J-95	Zone-5	true	true	500.00	508.66	608.66	30.00	53.36	30.00	46.19
J-96	Zone-5	true	true	500.00	500.00	600.00	30.00	49.01	30.00	46.20
J-111	Zone-5	true	true	500.00	500.00	600.00	30.00	48.96	30.00	46.20
J-148	Zone-5	true	true	500.00	500.00	600.00	30.00	54.00	30.00	46.49
J-149	Zone-5	true	true	500.00	532.80	632.80	30.00	59.87	30.00	46.49
J-151	Zone-5	true	true	500.00	555.16	655.16	30.00	64.28	30.00	46.49
J-154	Zone-5	true	true	500.00	500.00	600.00	30.00	52.11	30.00	46.29
J-171	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	71.91	30.00	42.66
J-194	Zone-5	true	true	500.00	500.00	600.00	30.00	54.28	30.00	46.25
J-195	Zone-5	true	true	500.00	500.00	600.00	30.00	58.60	30.00	46.25
J-196	Zone-5	true	true	500.00	500.00	1,600.00	30.00	71.67	30.00	45.58
J-197	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	86.84	30.00	45.58
J-198	Zone-5	true	true	1,500.00	1,505.40	1,605.40	30.00	81.97	30.00	45.48
J-199	Zone-5	true	true	500.00	517.20	1,617.20	30.00	85.46	30.00	45.37
J-200	Zone-5	true	true	500.00	507.82	607.82	30.00	70.04	30.00	45.67
J-203	Zone-5	true	true	500.00	500.00	600.00	30.00	73.37	30.00	45.54
J-204	Zone-5	true	true	500.00	500.00	600.00	30.00	70.09	30.00	45.48
J-207	Zone-5	true	true	500.00	500.00	1,600.00	30.00	53.52	30.00	45.50
J-208	Zone-5	true	true	500.00	510.13	610.13	30.00	45.37	30.00	49.50
J-210	Zone-5	true	true	500.00	505.47	605.47	30.00	60.79	30.00	45.85
J-211	Zone-5	true	true	500.00	502.06	602.06	30.00	71.86	30.00	46.14
J-212	Zone-5	true	true	500.00	505.15	605.15	30.00	72.25	30.00	46.14
J-213	Zone-5	true	true	500.00	504.63	604.63	30.00	70.42	30.00	46.14
J-214	Zone-5	true	true	500.00	504.64	604.64	30.00	53.49	30.00	46.22
J-215	Zone-5	true	true	500.00	500.00	600.00	30.00	94.46	30.00	46.13
J-216	Zone-5	true	true	500.00	507.73	607.73	30.00	79.34	30.00	46.14
J-217	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	90.74	30.00	45.58
J-218	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	93.10	30.00	45.56
J-219	Zone-5	true	true	500.00	504.64	604.64	30.00	90.11	30.00	46.14
J-220	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	80.34	30.00	45.58
J-221	Zone-5	true	true	500.00	500.00	600.00	30.00	120.10	30.00	46.16

Title: DC Ranch

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Needed Residual Pressure (psi)	Calculated Residual Pressure (psi)	Needed Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)
J-222	Zone-5	true	true	500.00	500.00	600.00	30.00	100.97	30.00	46.14
J-275	Zone-5	true	true	500.00	530.57	630.57	30.00	63.72	30.00	46.49
J-280	Zone-5	true	true	500.00	500.00	600.00	30.00	118.38	30.00	46.16
J-281	Zone-5	true	true	1,500.00	1,512.38	1,612.38	30.00	115.13	30.00	45.64
J-282	Zone-5	true	true	500.00	500.00	600.00	30.00	109.64	30.00	46.14
J-283	Zone-5	true	true	500.00	500.00	600.00	30.00	108.77	30.00	46.14
J-284	Zone-5	true	true	500.00	516.55	616.55	30.00	106.72	30.00	46.14
J-285	Zone-5	true	true	500.00	510.71	610.71	30.00	102.82	30.00	46.14
J-286	Zone-4	true	true	500.00	500.00	600.00	30.00	56.57	30.00	57.43
J-287	Zone-5	true	true	500.00	514.39	614.39	30.00	113.29	30.00	46.15
J-288	Zone-5	true	true	500.00	519.01	619.01	30.00	113.28	30.00	46.15
J-289	Zone-4	true	true	500.00	519.01	619.01	30.00	60.87	30.00	56.58
J-290	Zone-4	true	true	500.00	500.00	600.00	30.00	63.74	30.00	56.60
J-291	Zone-4	true	true	500.00	500.00	600.00	30.00	71.00	30.00	56.62
J-292	Zone-4	true	true	500.00	508.74	608.74	30.00	67.59	30.00	56.62
J-293	Zone-5	true	true	500.00	500.00	600.00	30.00	117.00	30.00	46.15
J-294	Zone-5	true	true	1,500.00	1,534.27	1,634.27	30.00	114.24	30.00	45.63
J-296	Zone-5	true	true	1,500.00	1,543.72	1,643.72	30.00	115.81	30.00	45.63
J-297	Zone-4	true	true	500.00	500.90	600.90	30.00	62.68	30.00	56.68
J-299	Zone-4	true	true	500.00	500.00	600.00	30.00	72.28	30.00	56.64
J-300	Zone-4	true	true	500.00	500.00	600.00	30.00	66.04	30.00	56.67
J-301	Zone-4	true	true	500.00	509.00	1,609.00	30.00	63.61	30.00	56.63
J-302	Zone-4	true	true	1,500.00	1,525.37	1,625.37	30.00	71.72	30.00	56.45
J-303	Zone-4	true	true	500.00	500.00	600.00	30.00	70.11	30.00	56.63
J-304	Zone-4	true	true	500.00	500.00	600.00	30.00	71.77	30.00	56.63
J-305	Zone-4	true	true	500.00	517.06	617.06	30.00	73.76	30.00	56.64
J-306	Zone-4	true	true	500.00	508.75	608.75	30.00	72.65	30.00	56.63
J-307	Zone-4	true	true	500.00	517.06	617.06	30.00	64.83	30.00	56.64
J-308	Zone-5	true	true	500.00	513.27	613.27	30.00	107.52	30.00	46.15
J-317	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	76.96	30.00	42.73
J-318	Zone-5	true	true	1,500.00	1,511.96	1,611.96	30.00	69.76	30.00	42.52
J-319	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	62.89	30.00	42.66
J-320	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	56.73	30.00	42.66
J-321	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	73.48	30.00	42.61
J-322	Zone-5	true	true	1,500.00	1,520.48	1,620.48	30.00	49.22	30.00	42.61

Title: DC Ranch

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Needed Residual Pressure (psi)	Calculated Residual Pressure (psi)	Needed Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)
J-323	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	64.97	30.00	42.60
J-324	Zone-5	true	true	1,500.00	1,500.42	1,600.42	30.00	59.79	30.00	42.60
J-328	Zone-5	true	true	500.00	500.00	600.00	30.00	72.52	30.00	45.50
J-345	Zone-4	true	true	500.00	500.00	1,600.00	30.00	78.96	30.00	56.37
J-346	Zone-5	true	true	500.00	502.70	602.70	30.00	63.58	30.00	45.45
J-350	Zone-4	true	true	500.00	534.99	634.99	30.00	64.39	30.00	56.64
J-351	Zone-4	true	true	500.00	500.00	600.00	30.00	63.07	30.00	56.60
J-352	Zone-5	true	true	500.00	509.42	609.42	30.00	119.29	30.00	46.15
J-355	Zone-5	true	true	500.00	500.00	600.00	30.00	62.50	30.00	46.25
J-357	Zone-5	true	true	500.00	501.56	601.56	30.00	73.53	30.00	45.67
J-358	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	95.53	30.00	45.56
J-359	Zone-4	true	true	500.00	524.59	624.59	30.00	56.03	30.00	56.60
J-360	Zone-5	true	true	500.00	500.00	1,600.00	30.00	112.90	30.00	45.62
J-361	Zone-5	true	true	500.00	500.00	1,600.00	30.00	111.08	30.00	45.62
J-362	Zone-4	true	true	500.00	500.00	1,600.00	30.00	57.91	30.00	56.18
J-363	Zone-4	true	true	500.00	500.00	1,600.00	30.00	66.12	30.00	56.34
J-364	Zone-4	true	true	500.00	500.00	1,600.00	30.00	73.56	30.00	56.37
J-365	Zone-4	true	true	1,500.00	1,537.00	1,637.00	30.00	46.43	30.00	50.92
J-366	Zone-5	true	true	500.00	500.00	600.00	30.00	117.08	30.00	46.15
J-378	Zone-4	true	true	500.00	515.88	615.88	30.00	66.40	30.00	56.60
J-379	Zone-4	true	true	500.00	512.34	612.34	30.00	54.88	30.00	56.62
J-380	Zone-4	true	true	500.00	521.06	1,621.06	30.00	65.43	30.00	56.36
J-381	Zone-5	true	true	500.00	500.00	1,600.00	30.00	118.91	30.00	45.63
J-382	Zone-5	true	true	500.00	509.42	609.42	30.00	117.59	30.00	46.15
J-383	Zone-5	true	true	500.00	509.42	1,609.42	30.00	109.88	30.00	45.63
J-384	Zone-5	true	true	500.00	509.42	609.42	30.00	115.30	30.00	46.15
J-385	Zone-5	true	true	500.00	509.42	609.42	30.00	117.76	30.00	46.15
J-386	Zone-4	true	true	500.00	500.00	1,600.00	30.00	63.47	30.00	56.64
J-387	Zone-4	true	true	500.00	509.00	1,609.00	30.00	62.03	30.00	56.63
J-388	Zone-4	true	true	500.00	509.42	609.42	30.00	57.99	30.00	56.68
J-389	Zone-4	true	true	500.00	509.42	609.42	30.00	60.00	30.00	56.68
J-390	Zone-5	true	true	500.00	505.14	605.14	30.00	103.41	30.00	46.15
J-391	Zone-5	true	true	500.00	500.00	600.00	30.00	115.22	30.00	46.15
J-392	Zone-5	true	true	500.00	500.00	1,600.00	30.00	113.20	30.00	45.63
J-393	Zone-5	true	true	500.00	500.00	1,600.00	30.00	112.42	30.00	45.63

Title: DC Ranch

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Watertown, CT 06795 USA

+1-203-755-1666

Project Engineer: Gordon Wark, P.E.

WaterCAD v7.0 [07.00.049.00]

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Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Needed Residual Pressure (psi)	Calculated Residual Pressure (psi)	Needed Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)
J-394	Zone-5	true	true	500.00	500.00	1,600.00	30.00	107.33	30.00	45.62
J-395	Zone-5	true	true	500.00	500.00	1,600.00	30.00	111.66	30.00	45.62
J-396	Zone-4	true	true	500.00	509.42	1,609.42	30.00	49.91	30.00	56.12
J-397	Zone-4	true	true	500.00	500.00	1,600.00	30.00	59.22	30.00	56.26
J-398	Zone-4	true	true	500.00	500.00	1,600.00	30.00	60.02	30.00	56.41
J-399	Zone-4	true	true	500.00	500.00	1,600.00	30.00	60.26	30.00	56.46
J-400	Zone-4	true	true	500.00	509.42	1,609.42	30.00	61.67	30.00	56.64
J-401	Zone-4	true	true	500.00	500.00	1,600.00	30.00	49.15	30.00	56.13
J-402	Zone-4	true	true	500.00	500.00	1,600.00	30.00	56.29	30.00	54.13
J-403	Zone-4	true	true	500.00	500.00	600.00	30.00	61.25	30.00	56.68
J-407	Zone-5	true	true	500.00	500.00	1,600.00	30.00	46.07	30.00	41.90
J-408	Zone-5	true	true	500.00	507.90	1,607.90	30.00	56.91	30.00	46.49
J-409	Zone-5	true	true	500.00	507.90	1,607.90	30.00	68.05	30.00	46.49
J-410	Zone-5	true	true	500.00	503.61	1,603.61	30.00	77.86	30.00	45.64
J-411	Zone-5	true	true	500.00	506.18	1,606.18	30.00	69.26	30.00	45.63
J-412	Zone-5	true	true	500.00	508.24	1,608.24	30.00	67.37	30.00	45.65
J-413	Zone-5	true	true	500.00	503.09	1,603.09	30.00	72.97	30.00	45.64
J-414	Zone-5	true	true	500.00	500.00	1,600.00	30.00	69.92	30.00	45.64
J-416	Zone-5	true	true	500.00	509.28	1,609.28	30.00	82.68	30.00	45.63
J-417	Zone-5	true	true	500.00	504.12	1,604.12	30.00	77.47	30.00	45.63
J-418	Zone-5	true	true	500.00	500.00	1,600.00	30.00	79.41	30.00	45.64
J-419	Zone-5	true	true	500.00	500.00	1,600.00	30.00	86.83	30.00	45.63
J-422	Zone-5	true	true	500.00	500.00	1,600.00	30.00	47.04	30.00	45.64
J-425	Zone-5	true	true	500.00	500.00	600.00	30.00	73.08	30.00	45.65
J-426	Zone-5	true	true	500.00	503.12	603.12	30.00	93.70	30.00	45.95
J-427	Zone-5	true	true	500.00	507.82	1,607.82	30.00	81.65	30.00	45.46
J-428	Zone-5	true	true	500.00	505.50	1,605.50	30.00	77.62	30.00	43.16
J-429	Zone-5	true	true	500.00	508.60	1,608.60	30.00	60.10	30.00	43.16
J-430	Zone-5	true	true	500.00	503.12	1,603.12	30.00	68.11	30.00	45.39
J-431	Zone-5	true	true	500.00	500.00	1,600.00	30.00	44.98	30.00	45.92
J-432	Zone-5	true	true	500.00	500.00	1,600.00	30.00	48.26	30.00	45.67
J-433	Zone-5	true	true	500.00	500.00	1,600.00	30.00	62.07	30.00	45.67
J-434	Zone-5	true	true	500.00	500.00	1,600.00	30.00	113.89	30.00	45.64
J-435	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	115.17	30.00	45.63
J-436	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	111.09	30.00	45.63

Title: DC Ranch

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Watertown, CT 06795 USA

+1-203-755-1666

Project Engineer: Gordon Wark, P.E.

WaterCAD v7.0 [07.00.049.00]

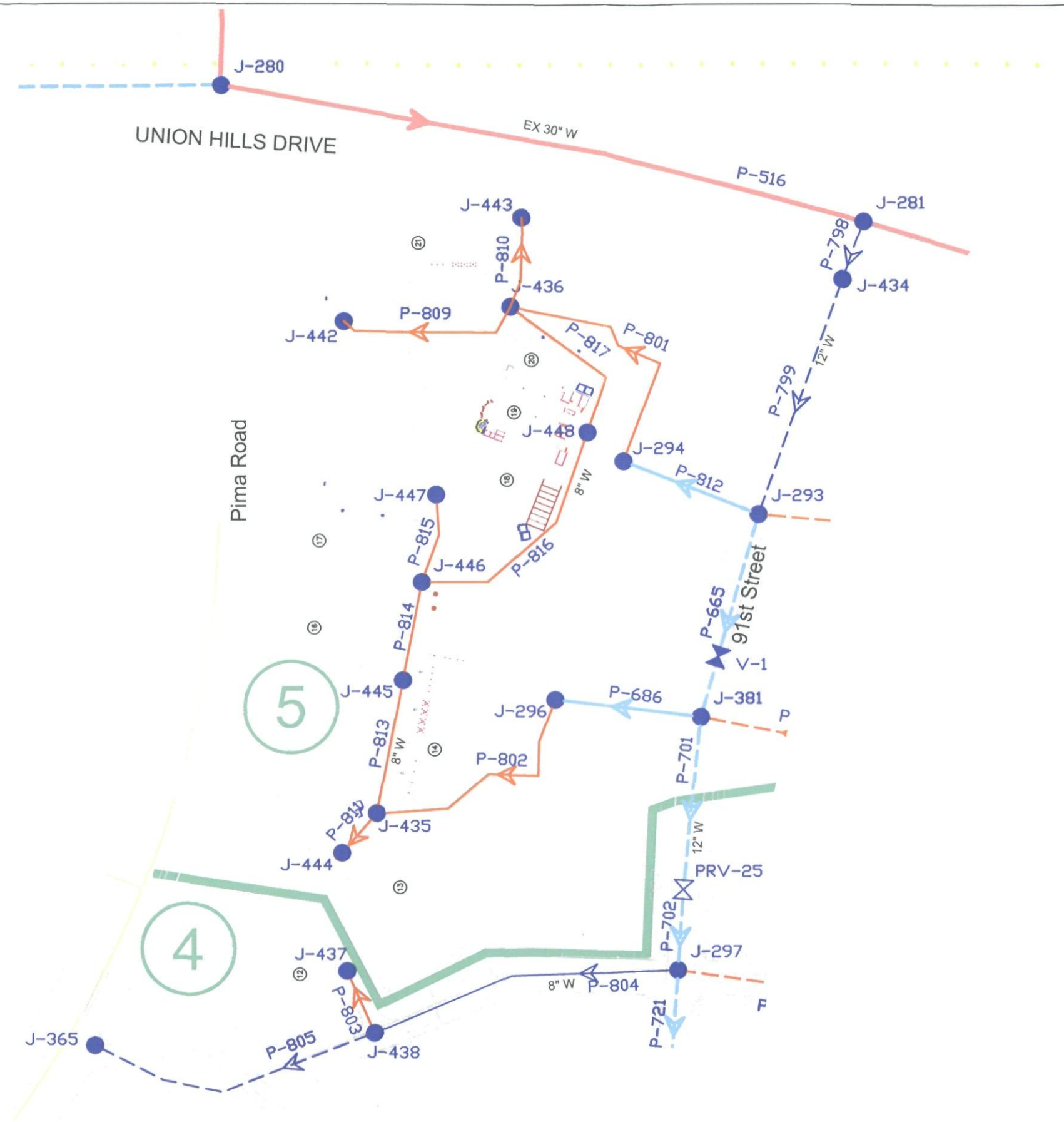
Page 4 of 5

Scenario: Max Day + Fire Flow

Fire Flow Analysis

Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Needed Residual Pressure (psi)	Calculated Residual Pressure (psi)	Needed Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)
J-437	Zone-4	true	true	1,500.00	1,505.26	1,605.26	30.00	48.78	30.00	53.09
J-438	Zone-4	true	true	1,500.00	1,500.00	1,600.00	30.00	53.09	30.00	50.92
J-442	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	106.66	30.00	45.63
J-443	Zone-5	true	true	1,500.00	1,517.50	1,617.50	30.00	106.46	30.00	45.63
J-444	Zone-5	true	true	1,500.00	1,575.31	1,675.31	30.00	114.24	30.00	45.63
J-446	Zone-5	true	true	1,500.00	1,520.15	1,620.15	30.00	112.30	30.00	45.63
J-447	Zone-5	true	true	1,500.00	1,500.00	1,600.00	30.00	108.60	30.00	45.63
J-448	Zone-5	true	true	1,500.00	1,524.06	1,624.06	30.00	109.97	30.00	45.63



Water Distribution Plan for Parcel 1.1

- 6" DIA. WATER
- 8" DIA. WATER
- 12" DIA. WATER
- 16" DIA. WATER
- 18" DIA. WATER
- 20" DIA. WATER
- 24" DIA. WATER
- 30" DIA. WATER

J-105 WATERCAD NODE/JUNCTION

P-318 (9) PROPOSED WATERCAD PIPE/LINK (ZONE)

P-318 (9) EXISTING WATERCAD PIPE/LINK (ZONE)

6 PRESSURE ZONE

PRESSURE ZONE BOUNDARY



1 inch = 200 ft.

Notes:

Lotting and roadway layouts are conceptual and subject to change. Pressure zone line boundaries are based on natural topography and may be adjusted with design of finish floor elevation of each lot.

Individual booster pumps may be required where inadequate pressure is available for individual lots.

The waterline layout is a conceptual design illustrating the pipe size necessary to serve each parcel and is not specific to its location.

Project Number: 062762 .10

Date: April 3, 2007

WOOD/PATEL
Civil Engineers
Hydrologists
Land Surveyors
Construction Managers
(602) 335-8500

DC Ranch LLC
7500 East Doubletree
Ranch Road, Suite 300
Phoenix, Arizona 85016
(602) 956-7877
(602) 956-7961 FAX

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WOOD/PATEL

LAND DEVELOPMENT • WATER RESOURCES • WATER/WASTEWATER • TRANSPORTATION/TRAFFIC • SURVEYING • CONSTRUCTION MANAGEMENT

Planning

05 38-48

Darrel E. Wood, P.E., R.L.S.
Ashok C. Patel, P.E., R.L.S., CFM
Gordon W. R. Wark, P.E.
James S. Campbell, P.E.
Thomas R. Gettings, R.L.S.
Michael T. Young, P.E.
Peter Hemingway, P.E.
Jeffrey R. Minch, P.E.
Robert D. Gofonia, P.E., R.L.S.
Patrick W. Marum, P.E.

Revised April 5, 2007
September 8, 2006

Mr. Douglas L. Mann
Water Resources Engineer
City of Scottsdale
Water Resources Department
9388 East San Salvador Drive
Scottsdale, AZ 85258

Phone: (480) 312-5636
Fax: (480) 312-5615

Re: **DC Ranch Parcel 1.1**
Sanitary Sewer Basis of Design
WP# 062762.10

Accepted For:

City Of Scottsdale
Water Resources Department
9388 E. San Salvador
Scottsdale, Arizona

By: [Signature]
Date: 4/20/07

Dear Mr. Mann:

The proposed sewer system will provide sanitary sewer service to the proposed DC Ranch Parcel 1.1 development. The sewer system for DC Ranch Parcel 1.1 was analyzed in the *Planning Unit I and Second Amended Wastewater System Study for DC Ranch Units III, V, and VI*. The land uses, flows, and pipe locations have been updated to their current and proposed condition. The flows for the site are included in the attached spreadsheet named *Ultimate Condition Estimated Flow Calculations*.

The proposed sewer system for Parcel 1.1 consists of 8-inch diameter gravity sewer lines that will connect to the proposed 8-inch outfall line in the Trailside View alignment just east of Pima Road. Please refer to the attached Exhibit - *Parcel 1.1 Sewer Exhibit* for sewer line and manhole locations.

The proposed sewer system will provide gravity sewer service to all 9 proposed buildings within Parcel 1.1. The proposed system has adequate capacity to convey the estimated total 417,588 gallons per day (gpd) of peak wastewater flow generated by all 9 proposed buildings located in Parcel 1.1. The average-day flow from the development is estimated to be 104,397 gpd. Please refer to the attached *Ultimate Condition Estimated Flows Conditions* and *Ultimate Condition Estimated Pipe Capacities*. These flows are less than those called out in the *Planning Unit I and Second Amended Wastewater System Study for DC Ranch Units III, V, and VI*, so there should be capacity in the North Pima Trunkline in Pima Road.

The attached exhibit illustrates the existing and proposed sanitary sewer pipe locations and sizes, and buildings. All sanitary sewer lines have been designed in accordance with the City of Scottsdale design standards and the aforementioned wastewater system study.

Thank you for your prompt review of the sanitary sewer system provided for DC Ranch Parcel 1.1.



5495-06

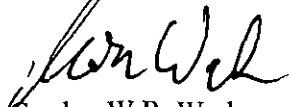
Mr. Douglas L. Mann
City of Scottsdale Water Resources Dept.
DC Ranch Parcel 1.1
Sanitary Sewer Basis of Design
WP #062762.10

Revised April 5, 2007
September 8, 2006
Page 2

If you have any questions, please feel free to contact us.

Sincerely,

WOOD PATEL & ASSOCIATES, INC.


Gordon W.R. Wark
Senior Vice President

GWRW/sv

Enclosure(s)

Y:\WP\General Correspondence\062762.10 DC Ranch Parcel 1.1 Sewer BOD.doc



Ultimate Condition Estimated Flow Calculations

Project: DC Ranch Parcel 1.1
Location: City of Scottsdale, Arizona
Date: April 4, 2007
References: DC Ranch Planning Unit I and Second Ammendment to Planning Units III, V, and VI - Wastewater Systems Study
City of Scottsdale, Design Standards and Policy Manual

				NON-RESIDENTIAL COMMERCIAL		RESIDENTIAL			NON-RESIDENTIAL										
From Node	To Node	PIPE SEGMENT	LAND USE	AREA (SF)	ADF/ SF (GPD)	ADF SUB-TOTAL (GPD)	ADF TOTAL (GPD)	PEAKING FACTOR	ADF SUB-TOTAL (GPD)	ADF TOTAL (GPD)	PEAKING FACTOR	TOTAL ADF (GPD)	PEAK HOUR FLOW (GPD)	PIPE SIZE (INCHES)	PIPE SLOPE (FT / FT)	FLOW VELOCITY (FPS)	PIPE CAPACITY (GPD)	SURPLUS CAPACITY (GPD)	d/D RATIO
PARCEL 1.1																			
-	N2.5.1.2	P2.5.1.3	21 - BUILDING A COMMERCIAL PAD, 15,754 SF	15,754	0.71	-	-	4.0	11,185	11,185	4.0	11,185	44,741	8	0.0052	1.49	564,339	519,598	0.19
N2.5.1.2	N2.5.1.1	P2.5.1.2				-	-	4.0	-	11,185	4.0	11,185	44,741	8	0.0052	1.49	564,339	519,598	0.19
N2.5.1.1	N2.5	P2.5.1.1	17 - BUILDING F COMMERCIAL PAD, 6467 SF	6,467	0.71	-	-	4.0	4,592	15,777	4.0	15,777	63,108	8	0.0052	1.65	564,339	501,232	0.23
-	N2.5.2.4	P2.5.2.5	20 - BUILDING C COMMERCIAL, 4533 SF	4,533	0.71	-	-	4.0	3,218	3,218	4.0	3,218	12,874	8	0.0052	1.03	564,339	551,466	0.10
N2.5.2.4	N2.5.2.3	P2.5.2.4				-	-	4.0	-	3,218	4.0	3,218	12,874	8	0.0052	1.03	564,339	551,466	0.10
N2.5.2.3	N2.5.2.2	P2.5.2.3	19 - BUILDING D GROCERY STORE, 17,117 SF	17,117	0.71	-	-	4.0	12,153	15,372	4.0	15,372	61,486	8	0.0052	1.64	564,339	502,853	0.22
N2.5.2.2	N2.5.2.1	P2.5.2.2				-	-	4.0	-	15,372	4.0	15,372	61,486	8	0.0052	1.64	564,339	502,853	0.22
N2.5.2.1	N2.5	P2.5.2.1	18 - BUILDING E COMMERCIAL, 11,667 SF	11,667	0.71	-	-	4.0	8,284	23,655	4.0	23,655	94,620	8	0.0052	1.86	564,339	469,719	0.28
N2.5	N2.4	P2.5	16 - BUILDING G COMMERCIAL, 7317 SF; 14 - BUILDING H COMMERCIAL, 11,668 SF	18,985	0.71	-	-	4.0	13,479	52,911	4.0	52,911	211,645	8	0.0052	2.32	564,339	352,694	0.42
N2.4	N2.3	P2.4				-	-	4.0	-	52,911	4.0	52,911	211,645	8	0.0052	2.32	564,339	352,694	0.42
N2.3	N2.2	P2.3				-	-	4.0	-	52,911	4.0	52,911	211,645	8	0.0052	2.32	564,339	352,694	0.42
N2.2	N2.1	P2.2	12 - BUILDING K BANK PAD, 4737 SF; 13 - BUILDING J OFFICE, 67,778 SF	72,515	0.71	-	-	4.0	51,486	104,397	4.0	104,397	417,588	8	0.0052	2.74	564,339	146,752	0.64
N2.1	N2	P2.1				-	-	4.0	-	104,397	4.0	104,397	417,588	8	0.0052	2.74	564,339	146,752	0.64

PARCEL 1.1 TOTAL

COMM SF
147,038

TOTAL FLOW OUT OF DC RANCH PARCEL 1.1 (GPD)

ADF
104,397

PHR
417,588

Ultimate Condition Estimated Pipe Capacities

Project: DC Ranch Parcel 1.1
 Location: City of Scottsdale, Arizona
 Date: April 4, 2007
 References: DC Ranch Planning Unit I and Second Amendment to Planning Units III, V, and VI - Wastewater Systems Study
 City of Scottsdale, Design Standards and Policy Manual

Project Number: 062732.10
 Project Engineer: Gordon Wark, P.E.

FROM NODE	TO NODE	PIPE SEGMENT	PIPE SIZE (IN)	PEAK FLOW (GPD)	MINIMUM PIPE SLOPE (FT/FT)	DESIGN PIPE SLOPE (FT / FT)	FULL FLOW VELOCITY, V ₀ (FPS)	PARTIAL FLOW VELOCITY, V ₁ (FPS)	COMPARE FLOW (GPD)	PIPE CAPACITY (GPD)	SURPLUS CAPACITY (GPD)	d / D Ratio
PARCEL 1.1												
-	N2.5.1.2	P2.5.1.3	8	44,741	0.0052	0.0052	2.5	1.49	44,740	564,339	519,598	0.19
N2.5.1.2	N2.5.1.1	P2.5.1.2	8	44,741	0.0052	0.0052	2.5	1.49	44,743	564,339	519,598	0.19
N2.5.1.1	N2.5	P2.5.1.1	8	63,108	0.0052	0.0052	2.5	1.65	63,110	564,339	501,232	0.23
-	N2.5.2.4	P2.5.2.5	8	12,874	0.0052	0.0052	2.5	1.03	12,879	564,339	551,466	0.10
N2.5.2.4	N2.5.2.3	P2.5.2.4	8	12,874	0.0052	0.0052	2.5	1.03	12,879	564,339	551,466	0.10
N2.5.2.3	N2.5.2.2	P2.5.2.3	8	61,486	0.0052	0.0052	2.5	1.64	61,472	564,339	502,853	0.22
N2.5.2.2	N2.5.2.1	P2.5.2.2	8	61,486	0.0052	0.0052	2.5	1.64	61,472	564,339	502,853	0.22
N2.5.2.1	N2.5	P2.5.2.1	8	94,620	0.0052	0.0052	2.5	1.86	94,590	564,339	469,719	0.28
N2.5	N2.4	P2.5	8	211,645	0.0052	0.0052	2.5	2.32	211,604	564,339	352,694	0.42

WOOD/PATEL

CIVIL ENGINEERS • HYDROLOGISTS • LAND SURVEYORS • CONSTRUCTION MANAGERS

Reference

Project: *DC Ranch Parcel 1.1*
Location: City of Scottsdale, Arizona
Date: April 3, 2007
References: DC Ranch Planning Unit I and Second Amendment to Planning Units III, V, and VI - Wastewater Systems Study
City of Scottsdale, Design Standards and Policy Manual

Project Number: 062732.10
Project Engineer: Gordon Wark, P.E.

Land Use	Average Day Flow	Type	Pipe Size (IN)	Min Slope (FT/FT)	Manhole Spacing	Peaking Factor
RESIDENTIAL	250 GPD / DU	Residential	8	0.0052	500	4
			10	0.0037	500	4
			12	0.0030	500	4
COMMERCIAL	0.71 GPD / SF	Non-Residential	15	0.0022	500	HARMONS
			18	0.0017	600	HARMONS
			21	0.00140	600	HARMONS
			24	0.00120	600	HARMONS
			27			HARMONS
			30			HARMONS
			33			HARMONS
			36			HARMONS
			42			HARMONS

Minimum Pipe Velocity	2.5 FPS
Maximum Pipe Velocity	10.0 FPS