

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED

SEP 08 2017

DEPARTMENT OF
WATER RESOURCES

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATIONPermit No. 63-34208

1. Owner City of Boise, Public Works Department Phone No. 208-272-0512
Current address 150 N. Capitol Blvd., PO Box 500, Boise ID 83701-0500
2. Examiner's name Terry Scanlan, P.E., P.G., CWRE 129 EXAM DATE 8/24/2017
3. Accompanied by Kent Johnson & Rick Cummings Email rcummings@cityofboise.org
Address West Boise Wastewater Treatment Plan 11818 Joplin Road Boise, ID 83714-1076
Relationship to permit holder Project Manager, Construction Site Manager Phone No. 208-272-0512 - Kent
4. Source Ground Water tributary to 208-608-7266 - Rick

B. OVERLAP REVIEW

1. Other water rights with the same place of use Thurman Mill surface water, 63-8125
2. Other water rights with the same source and point of diversion None

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
			SW	SW	22	4N	1E	Ada	Exam, Aerial Photo, Well Report

2. Place(s) of Use: Method of determination Exam, Aerial Photo

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
4N	1E	22									X	X							

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☒ see attached.

Scale: 1" = _____

- ☒ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (required)
☒ Aerial photo attached (required for irrigation of 10+ acres)
☒ Photo of diversion and system attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Well Pump	Grundfos	10		SP300-2	3-inch

*Code to correspond with no. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
5-gallon bucket, stopwatch						
90 degree v-notch weir						

2. **Measurements:** _____

See Attachment C for 5-gallon bucket and stopwatch data

Weir water depth measured at 0.63 feet = 0.77 cfs per chart for 90-degree v-notch weir.

F. FLOW CALCULATIONS☒ Additional computation sheets attached

Measured Method:

See Attachment C.

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

 $V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$ _____ $V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 =$ _____ $V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$ _____

2. Volume Calculations for Other Uses:

Water Exhibit: 8 hours per day, 246 days (3/1 to 11/1): $0.67 \times 246 \times 8/24 \times 1.9835 = 109 \text{ afa}$ **H. RECOMMENDATIONS**

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Industrial	3/1	11/1	0.67	109.0
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Totals:			0.67 cfs	109.0 afa

2. Recommended Amendments

☐ Change P.D. as reflected on page 1☐ Add P.D. as reflected on page 1☒ None☐ Change P.U. as reflected on page 1☐ Add P.U. as reflected on page 1☐ Other**I. AUTHENTICATION**

Field Examiner's Signature

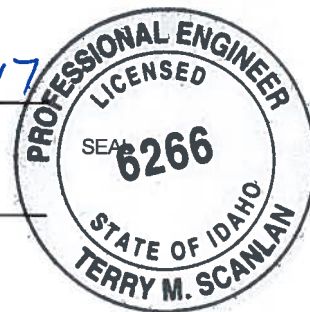
Terry M. Scanlan

Date

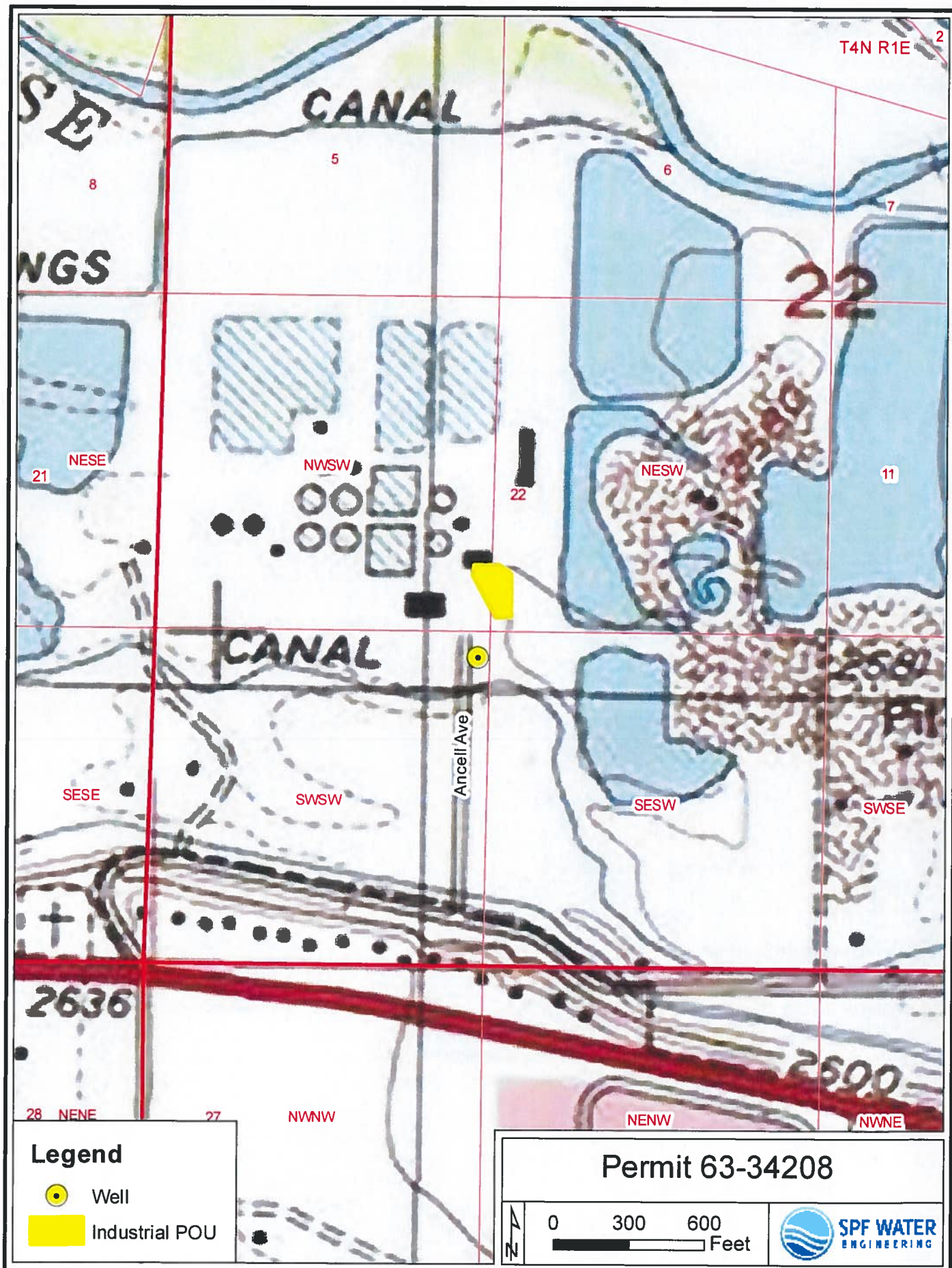
8/28/2017

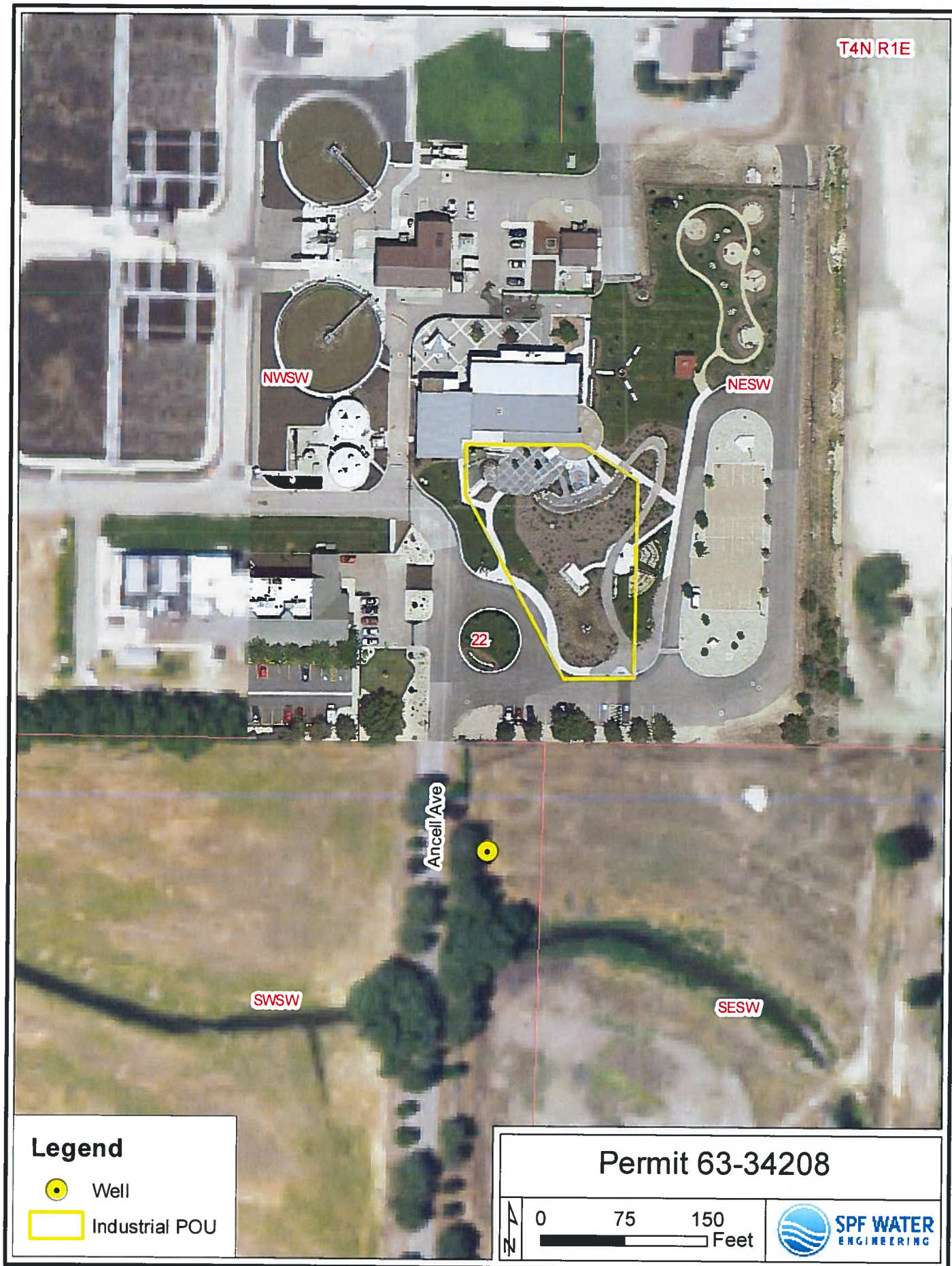
Reviewer

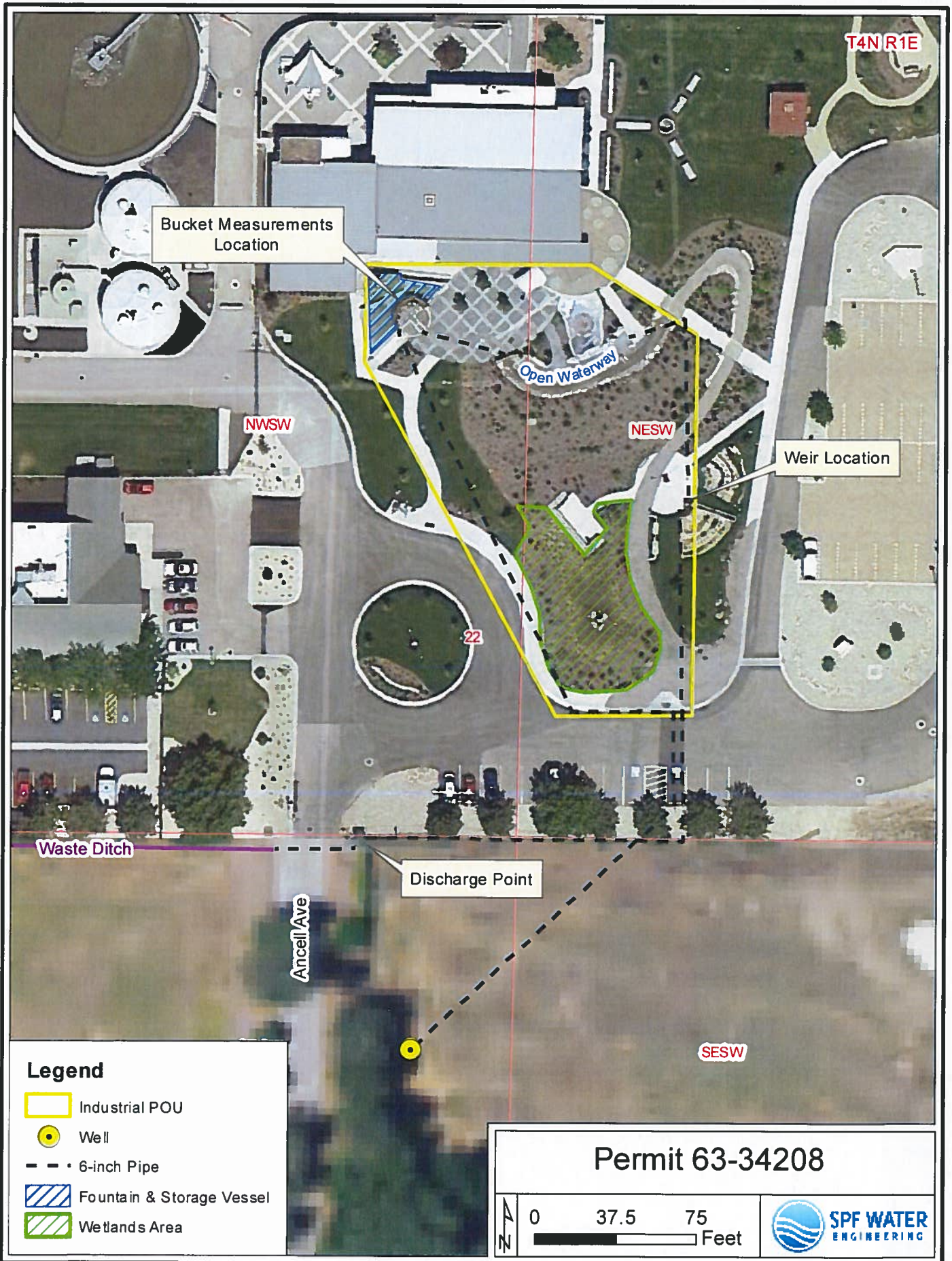
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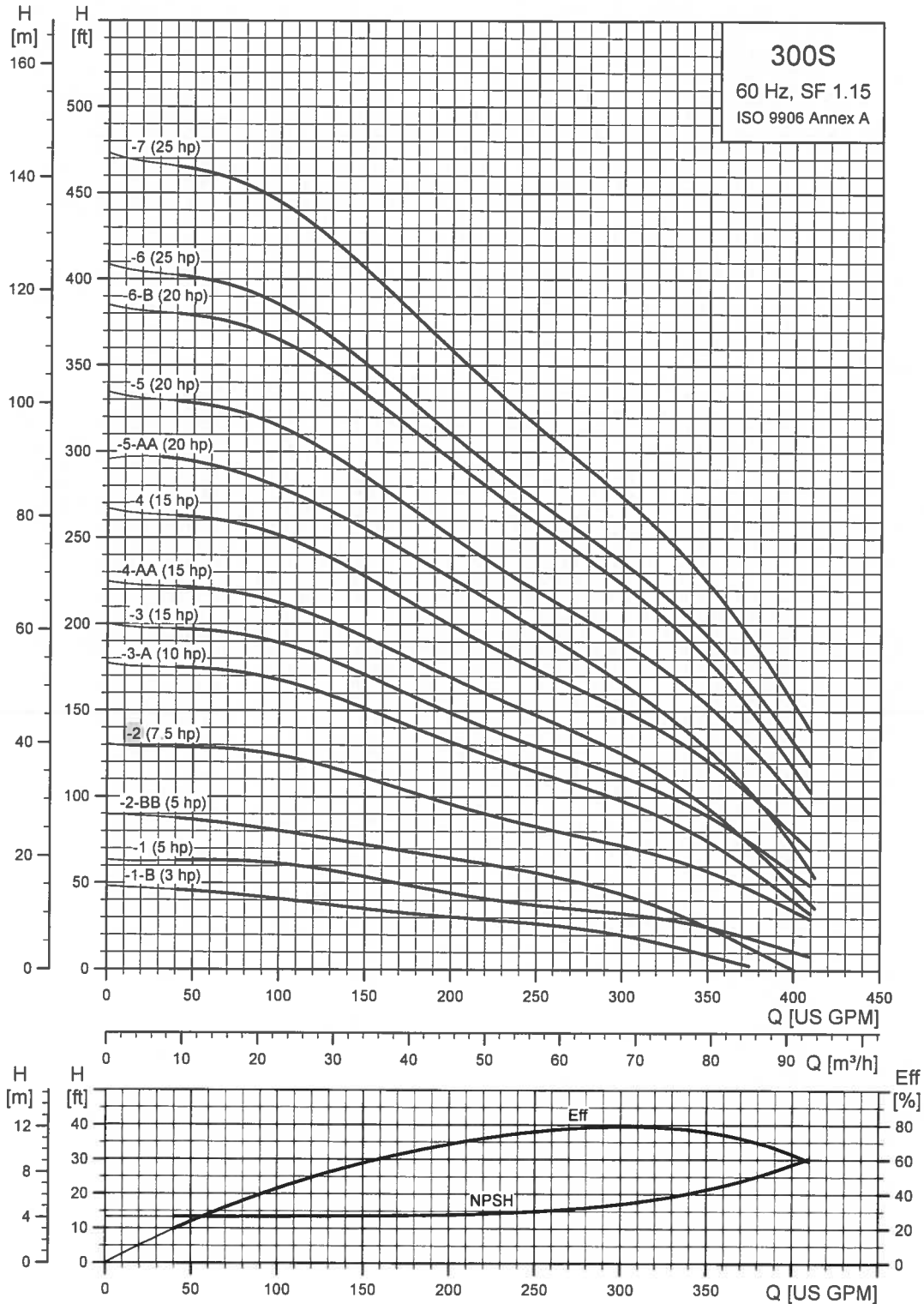
Attachment A
Field Exam Maps







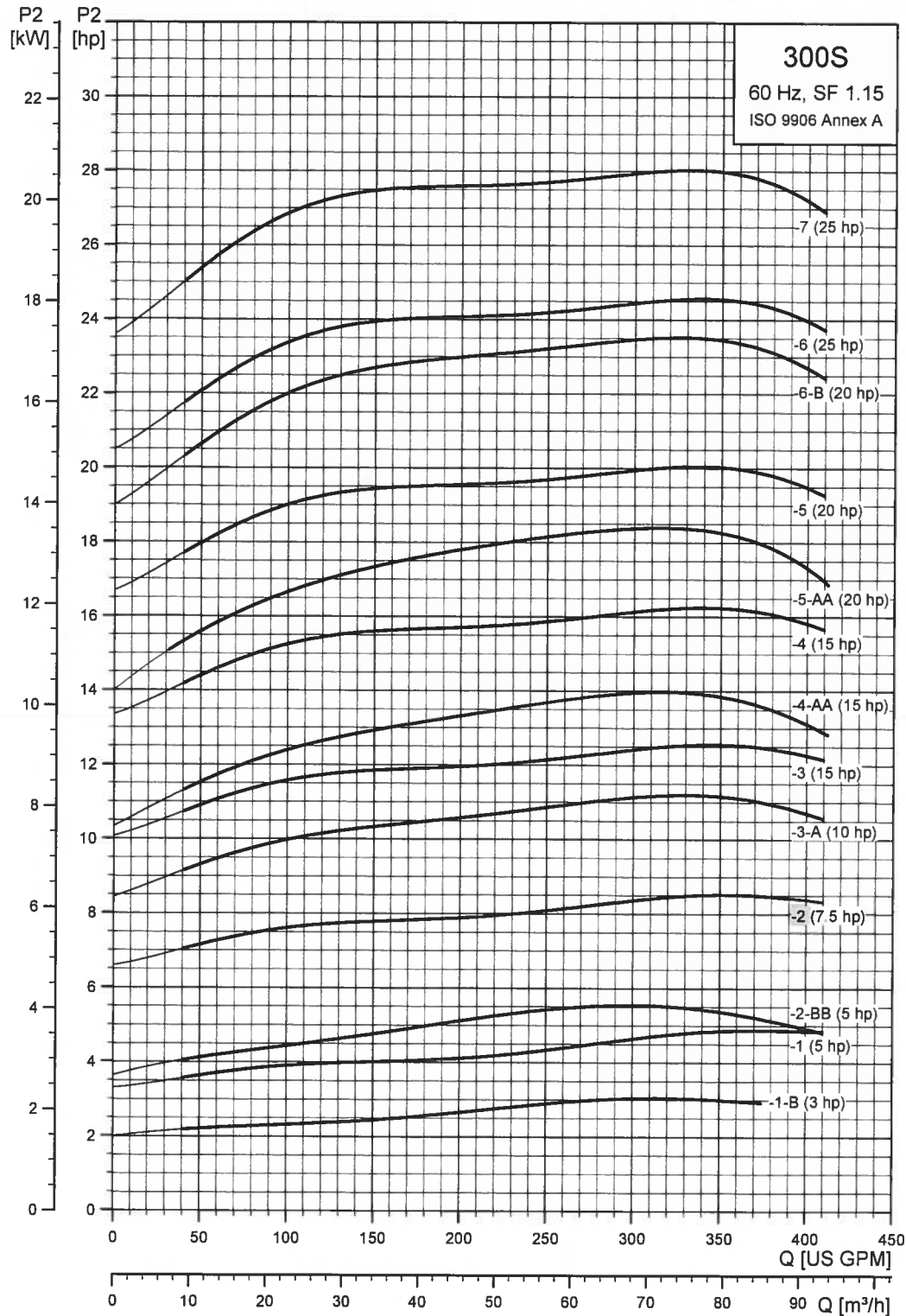
6" and larger wells - continued SP 300S (300 gpm)



TM05 0247 1812

6" and larger wells - continued

SP 300S (300 gpm) pump power requirement (P2)



TM05 0249 1812

6" and larger wells - continued

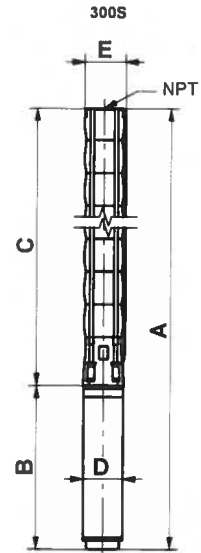
SP 300S (300 gpm) / 4, 6 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]	Dimensions					Net weight (complete) [lb]	
					A	B	C	D	E		
					[In. (mm)]	[In. (mm)]	[In. (mm)]	[In. (mm)]	[In. (mm)]		
300S - Motor dia. 4 inch, 3 wire motor, 60 Hz, rated flow 300 gpm (3" NPT)											
300S30-1B	19	1	230	3	•	37.60 (955)	22.72 (577)	14.89 (378)	3.75 (95)	5.75 (146)	72.0
		3	230	3	•	32.84 (834)	17.96 (456)	14.89 (378)	3.75 (95)	5.75 (146)	72.0
		3	460	3	•	32.84 (834)	17.96 (456)	14.89 (378)	3.75 (95)	5.75 (146)	72.0
300S50-1	31	1	230	5	•	41.54 (1055)	26.66 (677)	14.89 (378)	3.75 (95)	5.75 (146)	74.7
		3	230	5	•	37.56 (954)	22.68 (576)	14.89 (378)	3.75 (95)	5.75 (146)	74.7
		3	460	5	•	37.56 (954)	22.68 (576)	14.89 (378)	3.75 (95)	5.75 (146)	74.7
300S50-2BB	42	1	230	5	•	45.99 (1168)	26.66 (677)	19.34 (491)	3.75 (95)	5.75 (146)	135.0
		3	230	5	•	42.01 (1067)	22.68 (576)	19.34 (491)	3.75 (95)	5.75 (146)	135.0
		3	460	5	•	42.01 (1067)	22.68 (576)	19.34 (491)	3.75 (95)	5.75 (146)	135.0
300S75-2	70	3	230	7.5	•	45.95 (1167)	26.62 (676)	19.34 (491)	3.75 (95)	5.75 (146)	101.7
		3	460	7.5	•	45.95 (1167)	26.62 (676)	19.34 (491)	3.75 (95)	5.75 (146)	101.7
300S100-3A	97	3	460	10	•	54.34 (1380)	30.56 (776)	23.78 (604)	3.75 (95)	5.75 (146)	145.8
300S - Motor dia. 6 inch, 60 Hz, rated flow 300 gpm (3" NPT)											
300S75-2	70	3	230	7.5	▲	43.47 (1104)	23.51 (597)	19.97 (507)	5.52 (140)	5.79 (147)	167.4
		3	460	7.5	▲	43.47 (1104)	23.51 (597)	19.97 (507)	5.52 (140)	5.79 (147)	167.4
300S100-3A	97	3	230	10	▲	49.10 (1247)	24.69 (627)	24.41 (620)	5.52 (140)	5.79 (147)	216.0
		3	460	10	▲	49.10 (1247)	24.69 (627)	24.41 (620)	5.52 (140)	5.79 (147)	216.0
300S150-3	110	3	230	15	▲	51.46 (1307)	27.05 (687)	24.41 (620)	5.52 (140)	5.79 (147)	216.0
		3	460	15	▲	51.46 (1307)	27.05 (687)	24.41 (620)	5.52 (140)	5.79 (147)	216.0
300S150-4AA	123	3	230	15	▲	55.91 (1420)	27.05 (687)	28.86 (733)	5.52 (140)	5.79 (147)	222.3
		3	460	15	▲	55.91 (1420)	27.05 (687)	28.86 (733)	5.52 (140)	5.79 (147)	222.3
300S150-4	149	3	230	15	▲	55.91 (1420)	27.05 (687)	28.86 (733)	5.52 (140)	5.79 (147)	222.3
		3	460	15	▲	55.91 (1420)	27.05 (687)	28.86 (733)	5.52 (140)	5.79 (147)	222.3
300S200-5AA	170	3	230	20	▲	62.92 (1598)	29.61 (752)	33.31 (846)	5.52 (140)	5.79 (147)	194.4
		3	460	20	▲	62.92 (1598)	29.61 (752)	33.31 (846)	5.52 (140)	5.79 (147)	194.4
300S200-5	188	3	230	20	▲	62.92 (1598)	29.61 (752)	33.31 (846)	5.52 (140)	5.79 (147)	194.4
		3	460	20	▲	62.92 (1598)	29.61 (752)	33.31 (846)	5.52 (140)	5.79 (147)	194.4
300S200-6B	211	3	230	20	▲	67.37 (1711)	29.61 (752)	37.76 (959)	5.52 (140)	5.79 (147)	198.0
		3	460	20	▲	67.37 (1711)	29.61 (752)	37.76 (959)	5.52 (140)	5.79 (147)	198.0
300S250-6	228	3	230	25	▲	69.53 (1766)	31.78 (807)	37.76 (959)	5.52 (140)	5.79 (147)	198.0
		3	460	25	▲	69.53 (1766)	31.78 (807)	37.76 (959)	5.52 (140)	5.79 (147)	198.0

Notes:

Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906:1999 (E) Annex A. Minimum submergence is 2 feet.

- MS 4000 motor.
- ▲ MS 6000C motor.



E = Maximum diameter of pump including cable guard and motor.

TW00 0961 1196

Attachment C

Flow Rate Calculations

Pump was operated at 100% speed and flow determined using three methods: volumetric, weir measurement, and theoretical from pump curve.

1. Volumetric (5-gallon bucket and stopwatch)

Bucket Flow Measurements - 8/24/2017											
	Overflow Ports										
	1	2	3	4	5	6	7	8	9	10	Total
Bucket Size (gallons)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Fill Times (seconds)											
time 1	11.6	12.5	13.3	8.7	8.4	10.7	11.7	12	4.0	5.0	
time 2	10.9	12.5	12.8	8.8	7.9	10.9	11.4	11.5	3.9	5.3	
time 3	11.2				8.5			12.3	3.8	4.8	
Average	11.23	12.50	13.05	8.75	8.27	10.80	11.55	11.93	3.90	5.03	
Flow (gpm)	26.71	24.00	22.99	34.29	36.29	27.78	25.97	25.14	76.92	59.60	359.69
Flow (cfs)	0.060	0.053	0.051	0.076	0.081	0.062	0.058	0.056	0.171	0.133	0.80
Note that unmeasured losses from splashing at ports 2 and 3 estimated at 15%; losses at other ports less than 5%											

2. Weir

90° C-notch weir with 0.63 feet depth = 0.77 cfs

3. Pump Curve

1. Static water level 6 feet.
2. Specific capacity 15 gpm/ft from pumping test. Down at 360 gpm = $360/15 = 24$ feet.
3. Lift from ground to base of fountain = 8 feet (estimated).
4. Headloss in 500 feet of 6-inch pipe at 360 gpm = 5 feet.
5. Miscellaneous losses (bends, check valve, etc.) = 10 feet.
6. Total dynamic head at 360 gpm = $6+24+8+5+10= 47$ feet

Pump curve flow at 47 feet = 360 gpm (0.80 cfs)

Average of three methods = 0.79 cfs = 355 gpm.

Attachment D
Exam Photos



Entrance sign at corner of Joplin Road and Ansell Avenue

E



Point of Diversion: 8-inch well and submersible pump in SESW Section 22. Pump discharges through a pitless connection to 6-inch buried pipeline approximately 500 feet to Watershed exhibit.



Entrance landscaping at exhibit area. Irrigation for landscape is provided from separate source under municipal water right.



Additional landscape



Upper valve cover is for isolation valve between well and storage reservoir and fountain. Lower valve cover is for drain to treatment plant for fountain flows during winter months.



Storage reservoir and fountain. Fountain is supplied from separate well in NESW Section 22 under municipal water right 63-8125. Fountain was turned off during exam so that all measured flow was from well authorized by permit 63-34208.



Storage reservoir and fountain photo 2.



Signage on storage reservoir.



Reservoir looking toward overflow



Discharge ports used for timed flow measurements (measurement numbers correspond to table). Well discharges to storage reservoir and base of fountain through 6-inch buried pipeline. All water overflows from reservoir at this point to a drain. Drain channel flows beneath stainless steel grates and concrete walk and discharges to the simulated stream.



Calibrated 5-gallon bucket used for timed fill measurements



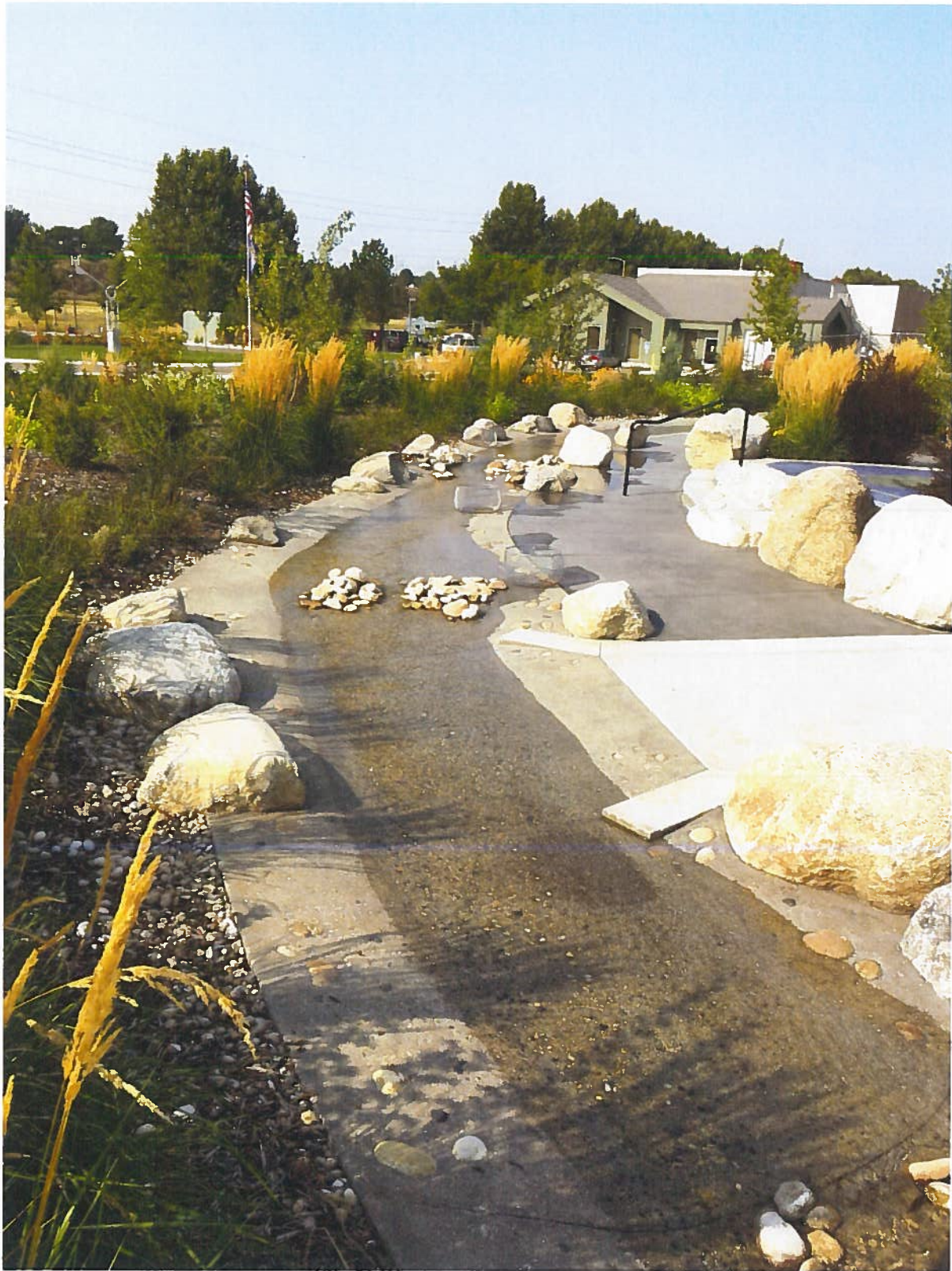
Timed fill measurements from overflows



Timed fill measurements from valves



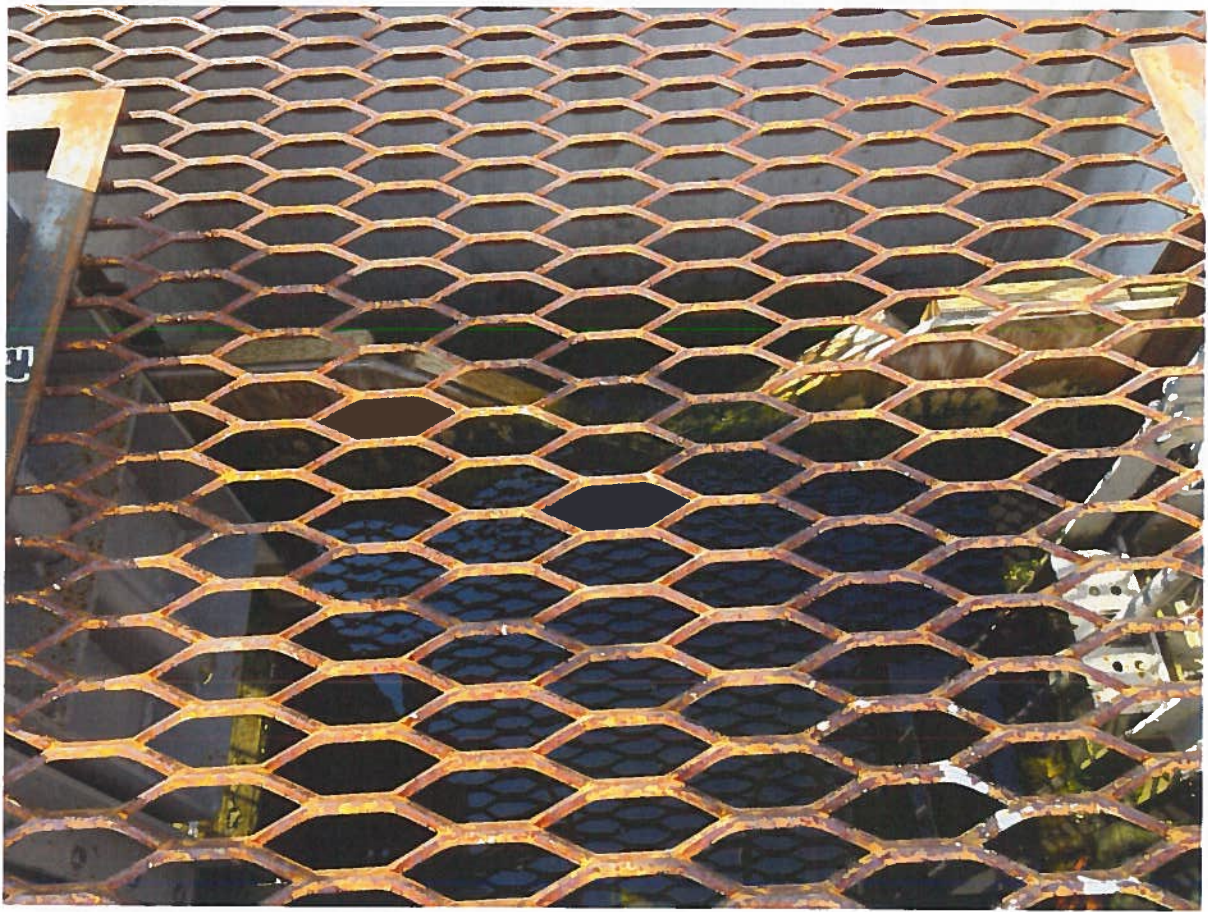
Water from storage reservoir discharges to simulated stream



Simulated stream



Water from waterway discharged to weir box through buried pipe beneath concrete. Concrete ditch and siphon tubes to small garden area for demonstration of gravity irrigation and wetland. Irrigation and wetland is supplied from under municipal water right 63-8125 (i.e., separate well supplies 15 gpm of fountain water that mixes with water pumped under permit 63-34208).



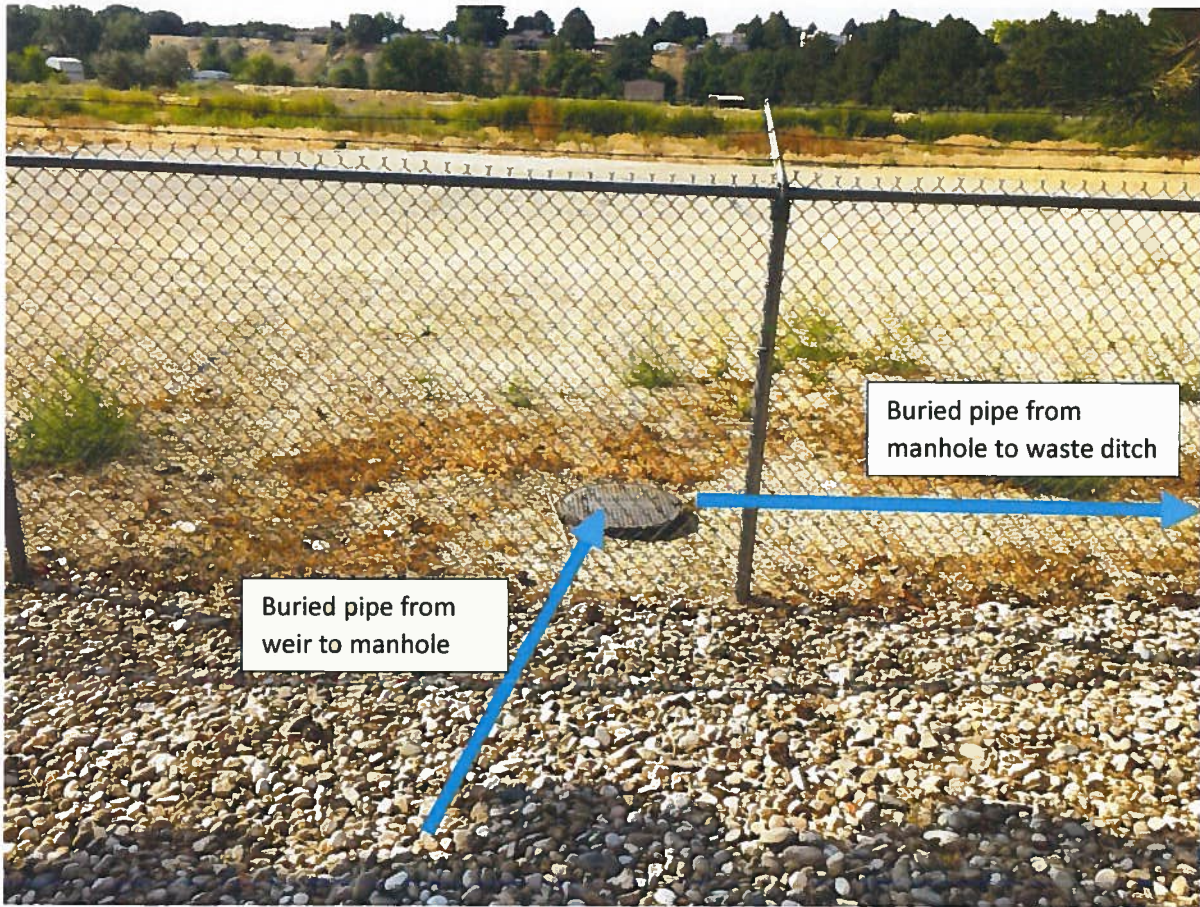
90 degree v-notch weir



Discharge pipe to wetlands



Wetland area



6-inch waste pipeline manhole in SESW



Open waste ditch east of Ancell Avenue for infiltration/conveyance of wastewater from exhibit



Open waste ditch west of Ancell Avenue for infiltration/conveyance of wastewater from exhibit



Water infiltrating in open ditch on south side of wastewater treatment plant fence



Pond west of wastewater treatment plant. Wastewater from Boise Watershed Exhibit can potentially be discharged to this pond; however, all water was infiltrating before reaching pond at time of exam

Attachment E
Proof of Beneficial Use