



Idaho Falls Water Facility Plan

PNWS AWWA

David Stangel, PE

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City of Idaho Falls, Water Superintendent



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What's unique about this project

- Last plan completed in 1989
 - Significant growth (demand and system expansion) has occurred
 - No guide for where/when to make capital improvements
- Added non-required elements
 - O&M Evaluation
 - Condition Assessment
 - Conservation Plan Development
 - Financial Assessment
- City does not meter their residential customers

System Description

- 16 O&M focused employees
- 314 miles of City owned pipeline
- 19 groundwater wells (87 mgd)
- 13 booster stations (91 mgd)
- 16 water tanks
 - 13 chlorine contact tanks (30 - 315 Kgal)
 - 3 water storage tanks (0.5 to 3 Mgal)
- One pressure zone

The system provides water to:

- Approximately 58,000 people
- 24,000 accounts
 - 250 metered accounts



Population and Demand Projections

- “Limited” customer water use data
- TAZ-based population data
- Existing well production data indicates **Average Day Demand of 455 gallons per capita per day**
- Projections include specific large industrial demands
- Approximately 1.75%/year
- Demand projections indicate a 100% increase in 40 years

Year	ADD (mgd)	MDD (mgd)	PHD (mgd)
2014 (Existing)	26.7	60.7	82.6
2020 (5-Year)	31.7	72.3	96.7
2035 (20-Year)	39.6	92.0	123.5
2055 (40-Year)	53.8	127.7	172.0

*ADD = average day demand
mgd = million gallons per day
MDD = maximum day demand
PHD = peak hour demand*

- If current trends continue, the City must have water rights to serve future growth
- Water right evaluation options
 - Acquire new water rights
 - Use existing water rights more efficiently
 - Meter the system!
 - Pursue other conservation measures
 - Some combination of above

- Water right initial recommendations
 - Add points of diversion to existing water rights
 - Construct large storage tanks at well sites to offset peak hour demands
 - Identify alternative irrigation sources for parks
 - Implement water conservation plan
 - Actively pursue aquifer recharge banking
- Unknowns
 - Curtailment orders & mother nature

System Design Standards

- **Supply**
 - MDD with largest pump out of service (Well 5)
- **Storage**
 - Provide peak demands and fire flow, excluding dead and operational storage
- **Pumping**
 - Redundant pumping adequate to serve PHD or MDD + fire flow (whichever is larger)
- **Pressure**
 - 20 psi during MDD + fire flow
 - 40 psi during PHD
 - 40-80 psi under typical operations
- **Pipe velocity**
 - 5 feet/second under MDD
 - 10 feet/second under PHD or MDD + fire flow
- **Fire-flow requirements**
 - 1,500 (Residential) to 4,500 gpm (Heavy Industrial)

- Water Rights and Supply evaluated for existing, 5-, 20- and 40-year projections
 - Water rights
 - Adequate yearly average water rights for 40 years
 - Adequate instantaneous water rights for existing and 5-year conditions
 - Instantaneous water right deficiency of 7.4 mgd in 20-year and 35.7 mgd in 40-year horizon (43.1 mgd total)
 - Well pumping capacity
 - Adequate existing supply
 - 10.8 mgd supply deficiency in 5-year horizon, another 11.7 mgd within 20-year horizon, and another 26 mgd within 40-year horizon

- Storage, pumping, and distribution piping evaluated for existing, 5, and 20 year projections
 - Storage analysis
 - Adequate storage for existing and 5-yr conditions
 - 1.6 million gallon deficit within 20-yr horizon
 - Backup power
 - 11.1 mgd existing deficit and an additional 13 mgd within the 20-yr horizon (24.1 mgd total)
 - Peak booster pumping analysis
 - Adequate pumping capacity for existing demand
 - PHD booster pumping deficit of 4.3 mgd within 5-yr horizon, additional 17.4 mgd needed within 20-yr horizon (21.7 mgd total)
 - Distribution system analysis
 - Existing pressures generally adequate
 - Significant fire-flow deficiencies due to undersized pipes
 - PHD pressure problems at 20-yr in north & south ends of system

Operations & Maintenance

O&M program recommends implementation of programs to address:

- Water storage tank inspection and cleaning
- Pipeline replacement
- Unidirectional flushing
- Valve exercising
- Water meter testing and calibration
- Current safety plans and equipment
- Asphalt and concrete flatwork at each facility
- Asset management software



Operations & Maintenance

Benchmarking results

- Staffing:
 - The City operates the system with fewer staff than most cities, indicating need to add O&M staff
 - Staffing needs will grow as system expands, flows increase, and regulations become more stringent
 - Current recommendations include:
 - Hire two FTE's to implement a valve exercising program
 - Add one additional O&M FTE for misc. support



System Condition & Code Evaluation

Task Description:

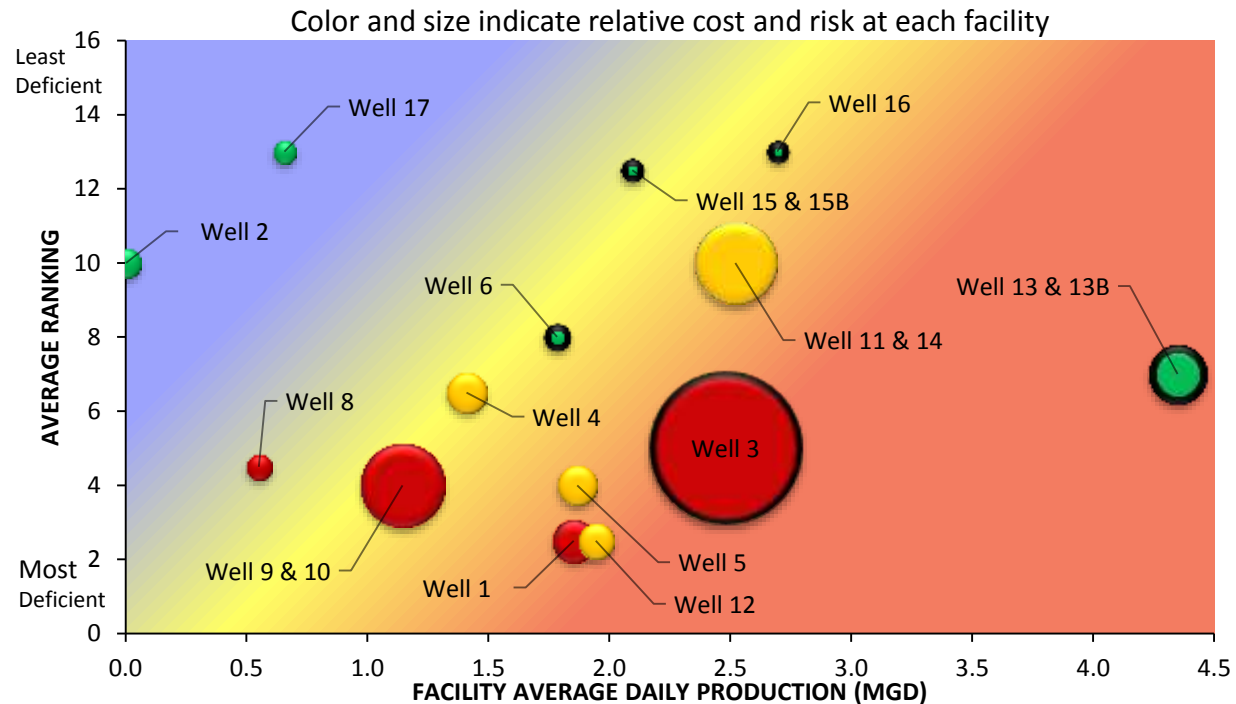
- Evaluate the City's pumping facilities with regards to operational and code compliance
- Rank and recommend specific facility improvements
- Determine pipeline condition priority and replacement program



System Condition & Code Evaluation

Facility evaluations and resulting improvements focused on the following areas:

- HVAC
- Electrical
- Site/facility security
- Site/facility safety
- Piping modifications
- General condition
- Wells
- Reservoirs
- Additional items



Each Facility was ranked on the areas listed above, then compared with water production rates, risk of failure, and relative cost for improvements

System Condition & Code Evaluation

Pipeline Analysis and Results

- The water system has 314 miles of pipeline
- The oldest pipe is from 1902 (cast iron), with the majority of pipes from 1960 to 1979 (cast iron & ductile iron)
- Ductile iron pipeline installed today
- City pipeline break records indicate that 1902 – 1959 cast iron pipe accounts for 70% of the breaks and repairs
- It is recommended that these pipelines be replaced first
- Based on **100-year design life**, it is recommended that the City replace approximately **3.2 miles of pipe each year**

Capital Improvement Program

- Major Project Categories
 - New and upgraded pipelines
 - Primary focus on fire flow deficiencies
 - Prioritized based on age, type and size
 - 87 projects over 20 years
 - New and upgraded facilities
 - Well, storage, and booster stations
 - 24 projects over 20 years
 - Metering
 - \$250,000 yearly – focused on metering large water users

Capital Improvement Program

	Cost of Required 2020 (1 to 5 Year) Improvements	Cost of Required 2035 (6 to 20 Year) Improvements
New and Upgraded Pipelines	\$7,000,000	\$28,014,000
New and Upgraded Facilities	\$14,715,000	\$28,328,000
Metering	\$1,250,000	\$3,750,000
Total	\$22,965,000	\$60,092,000
Annual Average	\$4.6 million/year	\$4.0 million/year

- \$83 million over 20 years
- Annual 100-year pipeline replacement not fully-funded in 20 year CIP
- Approximately \$3M/year more than currently being invested

Five-Year Funding Plan

- Rate revenues primary funding source
 - Roughly half of CIP funded through rate increases
- Drawdown reserves, connection fee funds
 - Currently at \$8M

Annual CIP Expenditures and Funding by Source

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	TOTAL	Percent
Projected Capital Expenditures	\$ 4.72	\$ 5.09	\$ 5.34	\$ 4.43	\$ 4.51	\$ 24.09	100.0%
<i>Proposed Rate Increases</i>	<i>20.0%</i>	<i>5.0%</i>	<i>5.0%</i>	<i>5.0%</i>	<i>5.0%</i>		
Operating Revenues	3.02	3.16	3.40	3.65	3.92	17.14	71.0%
Connection Fee Revenues	0.45	0.45	0.45	0.45	0.45	2.25	9.3%
Existing Reserves	1.27	1.54	1.50	0.25	0.18	4.74	19.6%
Used (Unused) Balance	(0.02)	(0.06)	(0.01)	0.08	(0.04)	(0.05)	
Total Funds	\$ 4.72	\$ 5.09	\$ 5.34	\$ 4.43	\$ 4.51	\$ 24.09	100.0%

Reported in escalated dollars

Community Rate Comparison

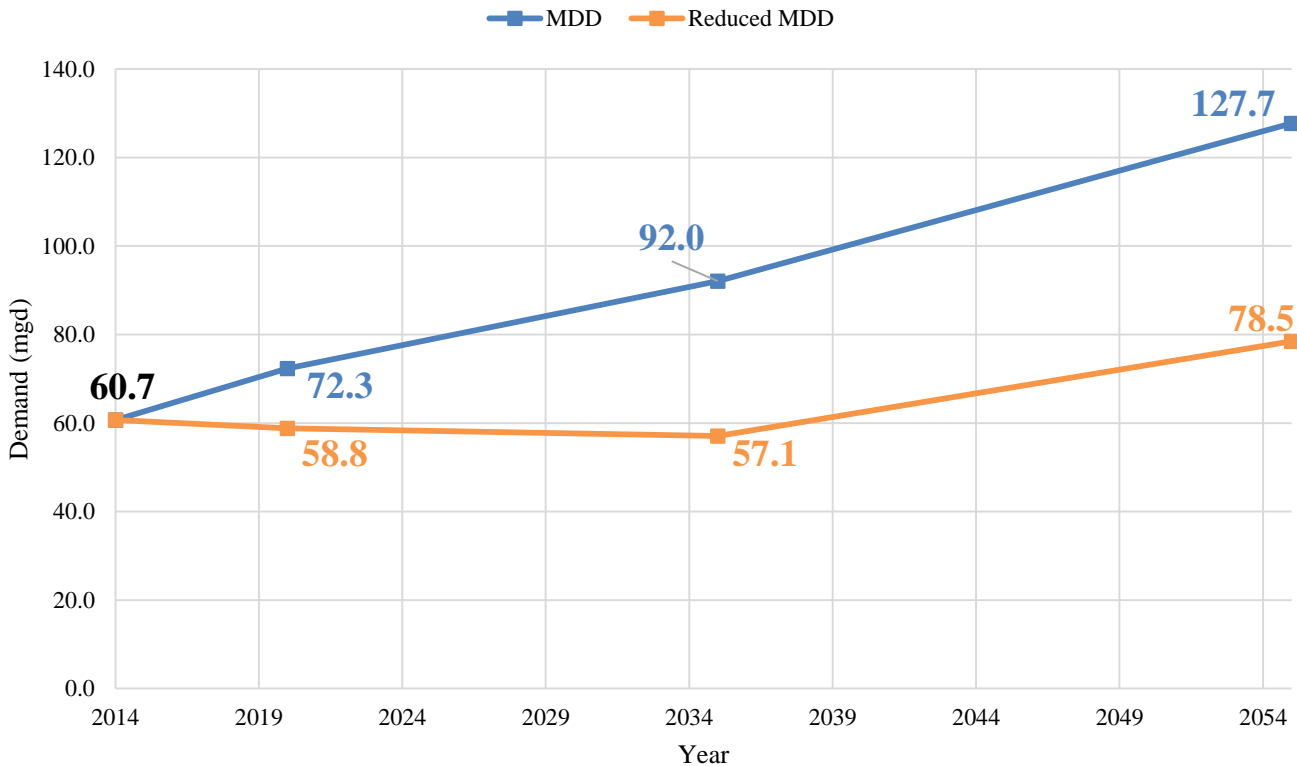
Community	Monthly Charge	Volumetric Rate	Total Bill (20 kgal)
Butte, MT	\$ 26.84	Varies per hundred cubic feet, declining block structure	\$ 83.53
Bozeman, MT	\$ 14.65	Varies, inclining block structure	\$ 68.82
Malad, ID	\$ 43.00	\$0.60 / kgal after first 5 kgal	\$ 52.00
Pocatello, ID	\$ 7.55	\$2.00 / kgal for first 25 kgal	\$ 47.55
Boise, ID	\$ 10.40	Varies, inclining block structure	\$ 46.20
Meridian, ID	\$ 5.49	\$1.90 / kgal, no minimum	\$ 43.49
Logan, UT	\$ 16.00	\$0.99 / kgal for first 10 kgal, \$1.60 beyond that	\$ 41.90
Twin Falls, ID	\$ 10.74	\$1.70 / kgal after first 2 kgal	\$ 41.34
St. Anthony, ID	\$ 27.13	\$0.54 / kgal, no minimum	\$ 37.93
Ammon, ID	\$ 37.25	Flat rate (some residential customers charged \$44.75/mo.)	\$ 37.25
Nampa, ID	\$ 34.90	Flat rate	\$ 34.90
American Falls, ID	\$ 24.15	\$0.89 / kgal after first 15 kgal	\$ 30.50
Blackfoot, ID	\$ 21.90	\$1.54 / kgal after first 15 kgal	\$ 29.60
Burley, ID	\$ 18.70	\$0.573 / kgal after first 3 kgal	\$ 28.44
Rexburg, ID	\$ 15.87	\$0.82 / kgal after first 6 kgal	\$ 27.35
Idaho Falls, ID (proposed)*	\$ 25.20	Flat rate (incorporates annualized irrigation charge and DEQ fee)	\$ 27.20
Brigham City, UT	\$ 9.31	\$1.31 / kgal after first 7 kgal	\$ 26.34
Idaho Falls, ID (existing)	\$ 21.00	Flat rate (incorporates annualized irrigation charge and DEQ fee)	\$ 22.71
Rigby, ID	\$ 19.00	Flat rate	\$ 19.00
Shelley, ID	\$ 17.50	Flat rate	\$ 17.50

* Monthly rate after proposed FY 2016 increase of 20%

- What is the implication on usage and rates if the City meters all customers?

Metering: Impact on Demand

- Assumed 30% reduction in average demand and 40% reduction in peak demands due to metering
- Peak 20-year demands below current levels



Meter Installation Assumptions

- Cost of city-wide meters: \$77.7 million
 - 10-year implementation period
 - Customers charged volumetric rate, demand reduced
- Capital improvement project deferrals
 - \$20.8 million, mostly over last 15 years
- Debt in two issuances
 - \$40 million in year 1, \$25 million in year 6
 - Assumes availability of low-interest state loans
- Substantial rate increases during first 5 years
 - *20% per annum first 5 years, but none thereafter*
 - *City average residential rate would be \$56/month*

City Planning to:

- Implement condition-based improvements
 - Facilities – need attention!
 - Implement pipeline replacement program
 - Starting with fire flow deficiencies
- Implement proposed rate increases
 - 20% increase approved in October of 2015 followed by 5%
- Continue to investigate feasibility of metering
 - Politically and financially

Questions

