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Spokane 2013

PNWS - AWWA



A Conjunctive Use Approach Addresses Regulatory Needs and Positions a Rural Water System to Meet Future Demands

May 10, 2013



Presentation Outline

- **District and Water System Overview**
- **Key Issues with Current System Operation**
- **Bilateral Compliance Agreement Conditions**
- **Recommended Alternative**
- **Source Water Constraints (Wet/Legal/Quality)**
- **Discussion of Water Rights and WRIA Issues**
- **Project Status and Implementation Schedule**
- **Questions**



CCPUD1 Provides Various Services



Fairview Water System

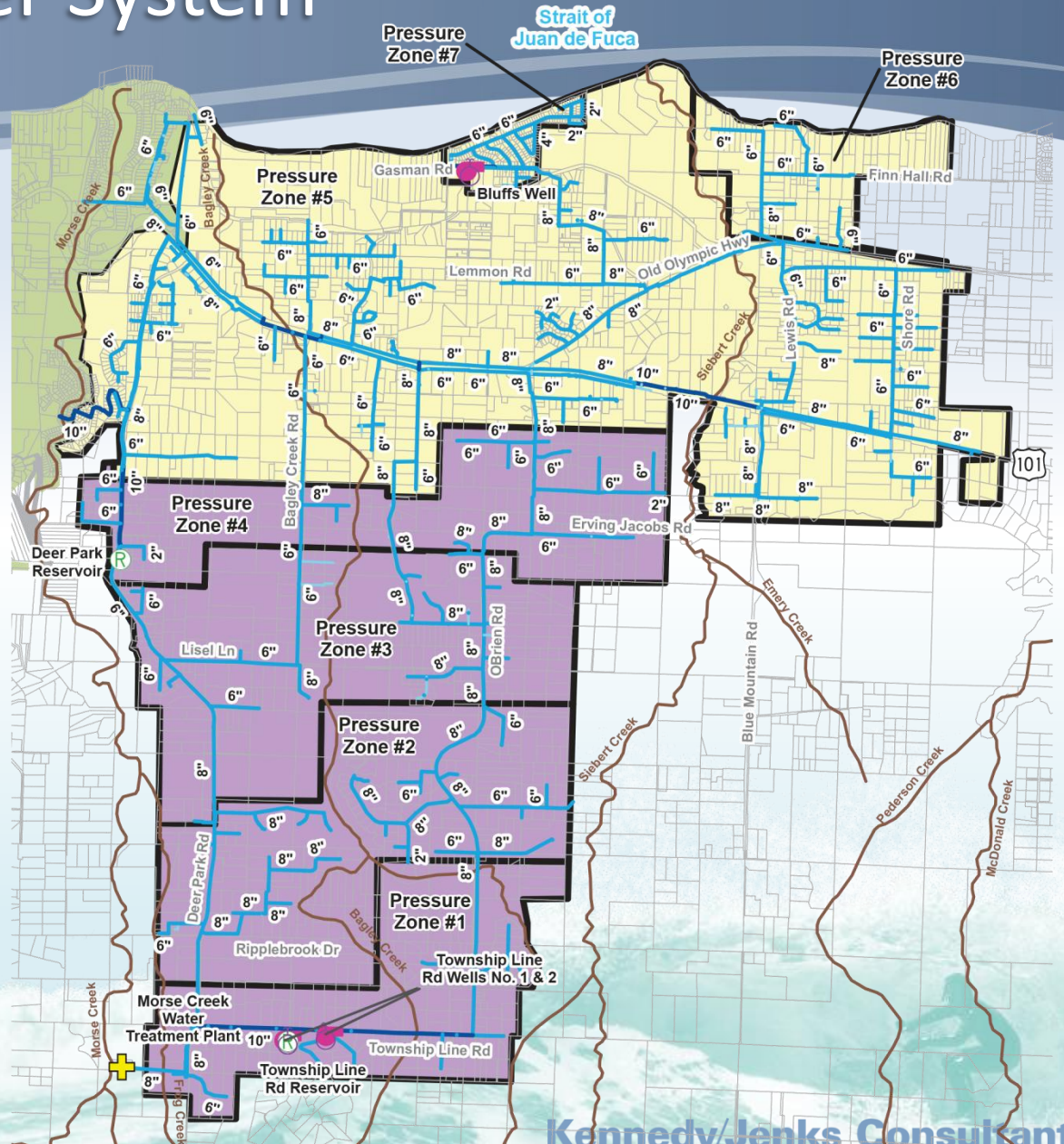
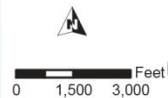
Legend

- Treatment Plant
- Pump Station
- Reservoir
- Production Well

- Existing Water System Pipelines**
- Streams
 - Gales Addition
 - Unknown
 - 8" and Smaller
 - 10" and Larger

- Service Areas**
- Lower Service Area
 - Upper Service Area
 - Parcels

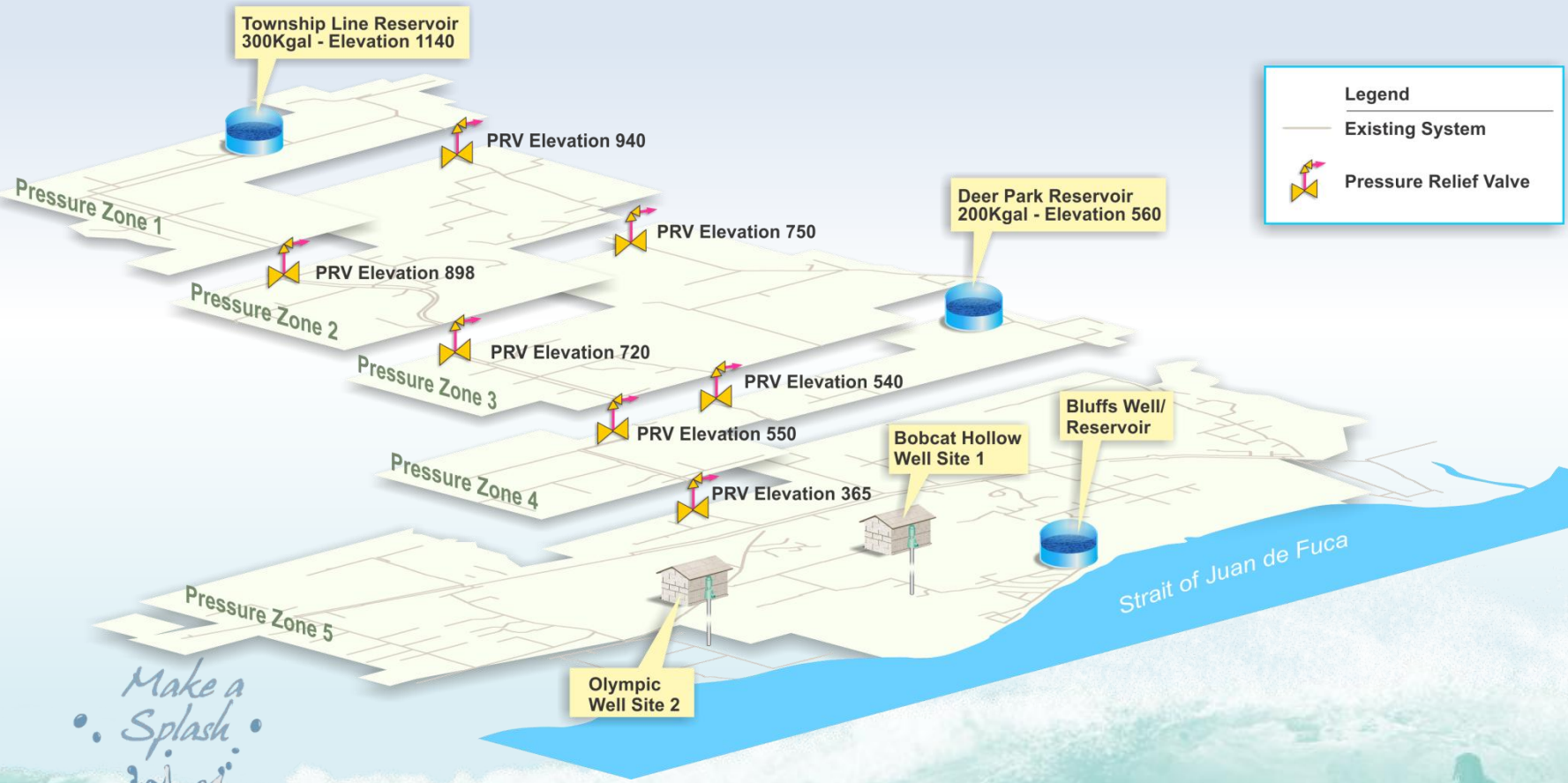
Figure 1
Water Service Area and
Pressure Zones
 Fairview Water System
 Supply Project
 PUD No 1 of Clallam County



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Fairview Water System Configuration



Morse Creek Water Right Limits Operation



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Issues with the Bluffs Well Also Limit Operations



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A Bilateral Compliance Agreement (BCA) Drives Project Implementation

- **BCA process (2009) sought actions to address seasonal water shortages in the Fairview Water System**
- **Various feasibility studies and predesign and design efforts since 2008 have proceeded to well construction and the current system design process.**



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A Series of New Bluffs Wells Is the Recommended Alternative

- Up to four new wells are assumed and to be located further inland near Lemmon Road
- $Q_i(\text{estimated}) = 1,200 \text{ gpm}$



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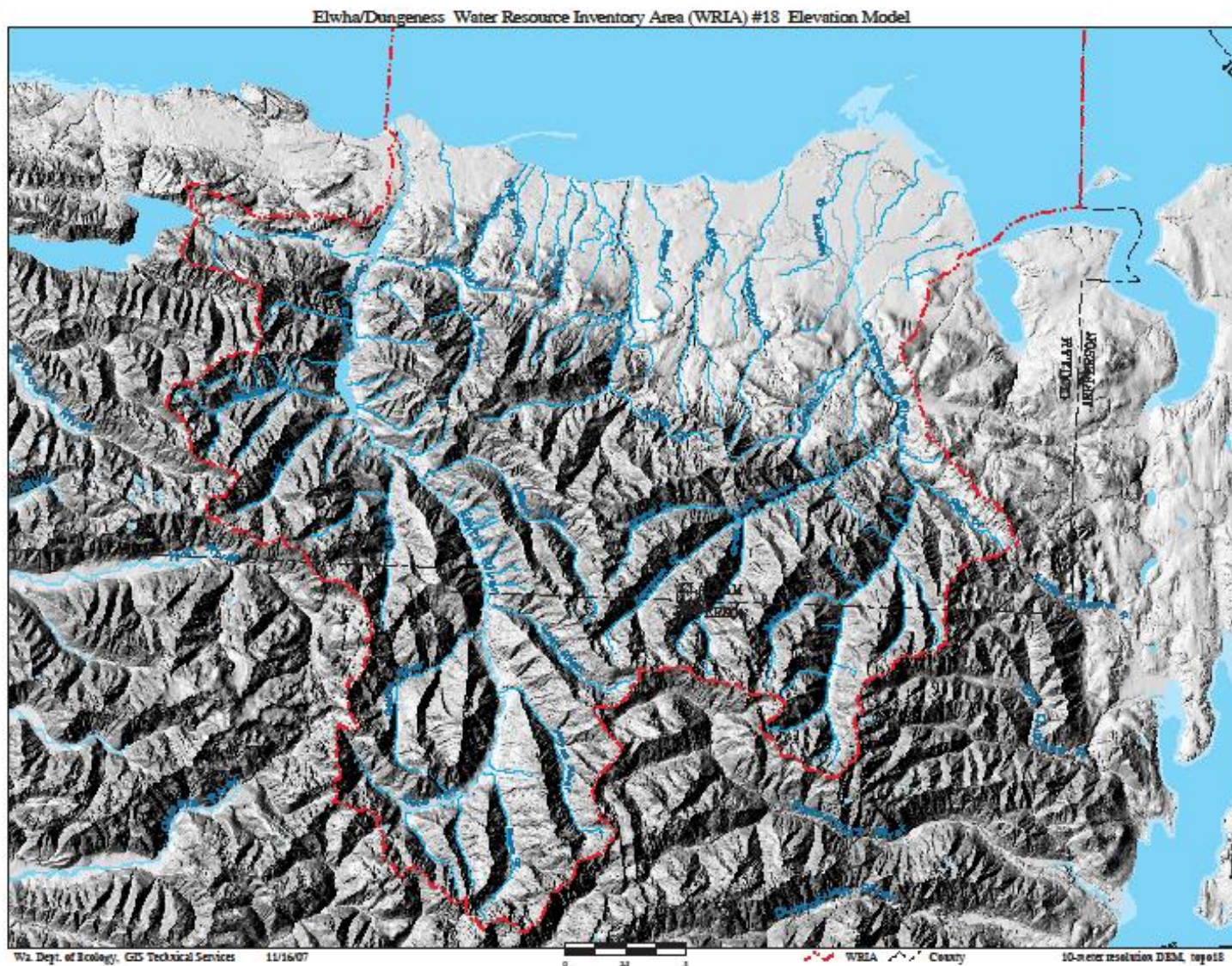
Source Water

- It Must Be Wet
- It Must Be Legal
- It Must Be Clean

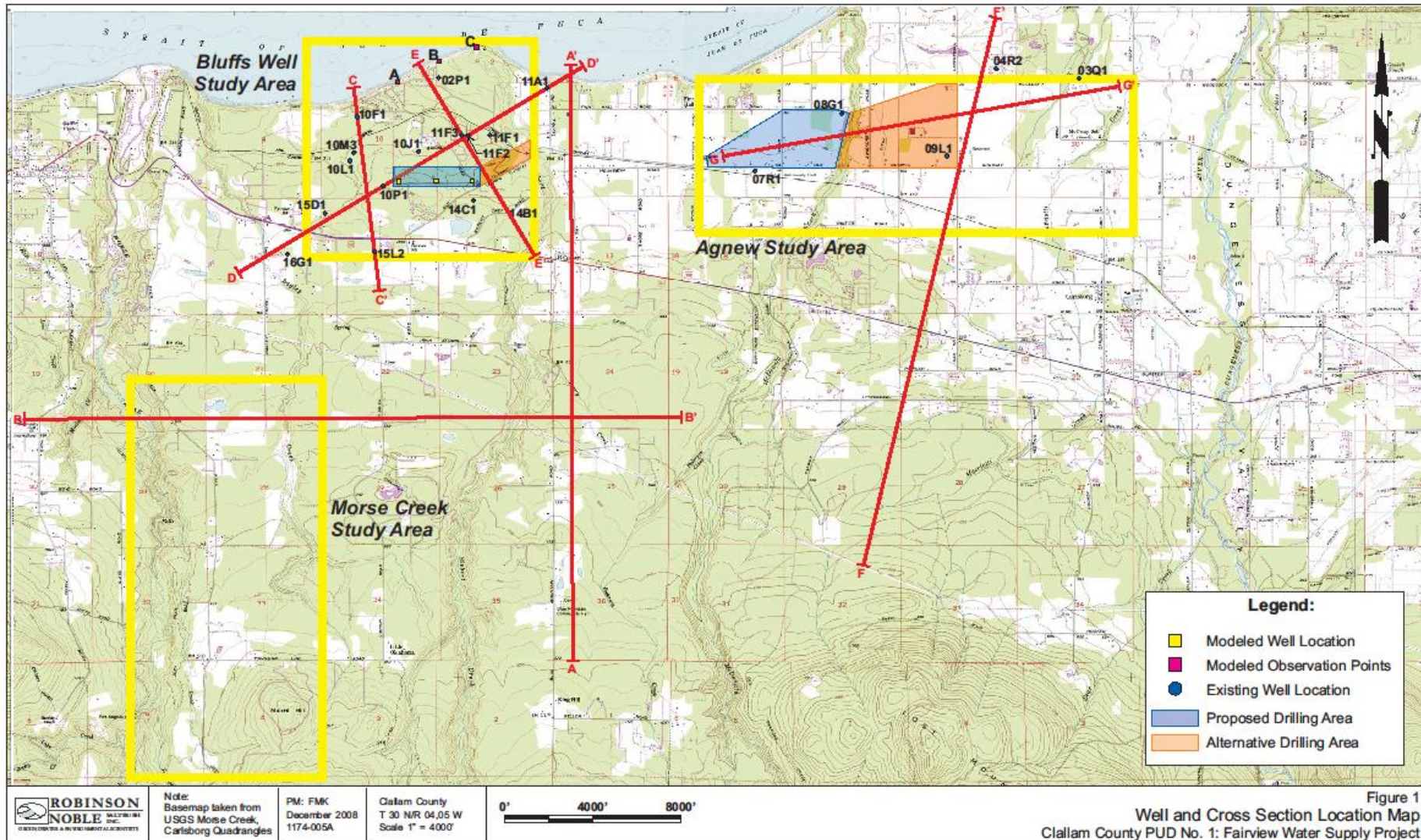


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Geologic Context

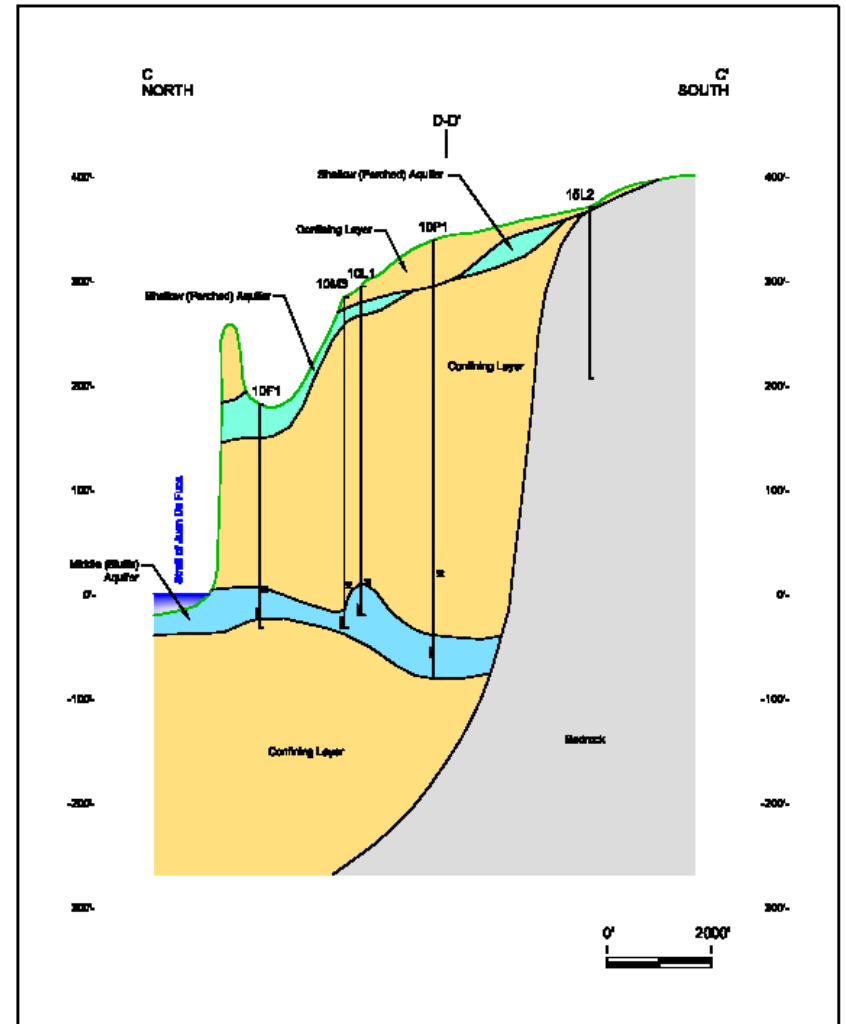


Hydrogeologic Setting



Cross Section to the Sea

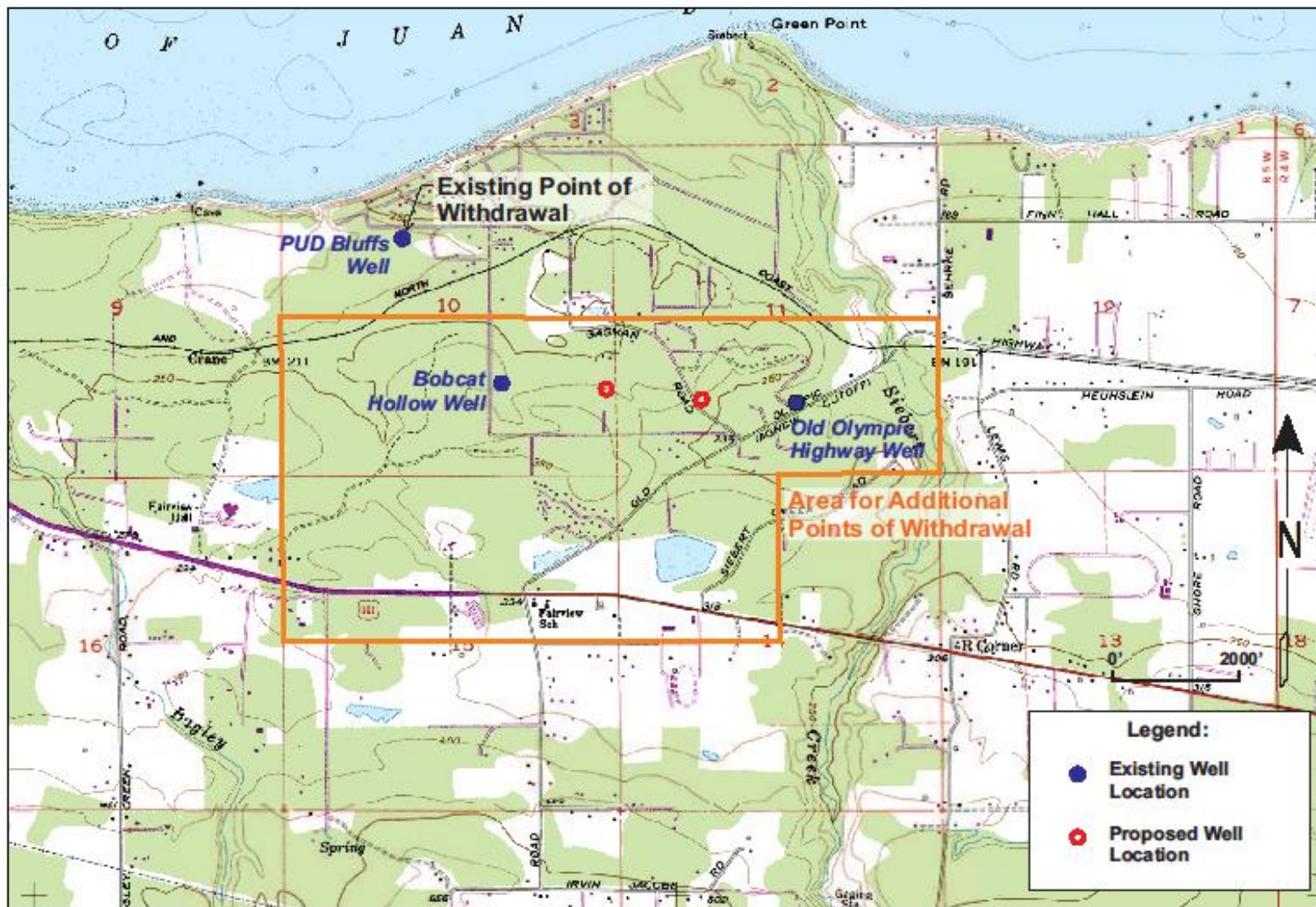
- Target Aquifer (at and below sea level)
- Variable geology but quite permeable
- More than one permeable layer separated by fines but one aquifer system
- Suspect recharge along rock
- Transmissivity increases to the east
- Overlain by clay deposits



ROBINSON NOBLE ENGINEERS ARCHITECTS
 P/E: FHK
 December 2005
 1174-008A
 Clallam County
 T 30 NR 04,08 W
 Horizontal Scale 1" = 200'
 Figure 3
 Conceptual Cross Section C-C'
 Clallam County FUD No. 1: Fairview Water Supply Project



Well Locations



Legend:

- Existing Well Location
- Proposed Well Location

ROB NSON
NOBLE

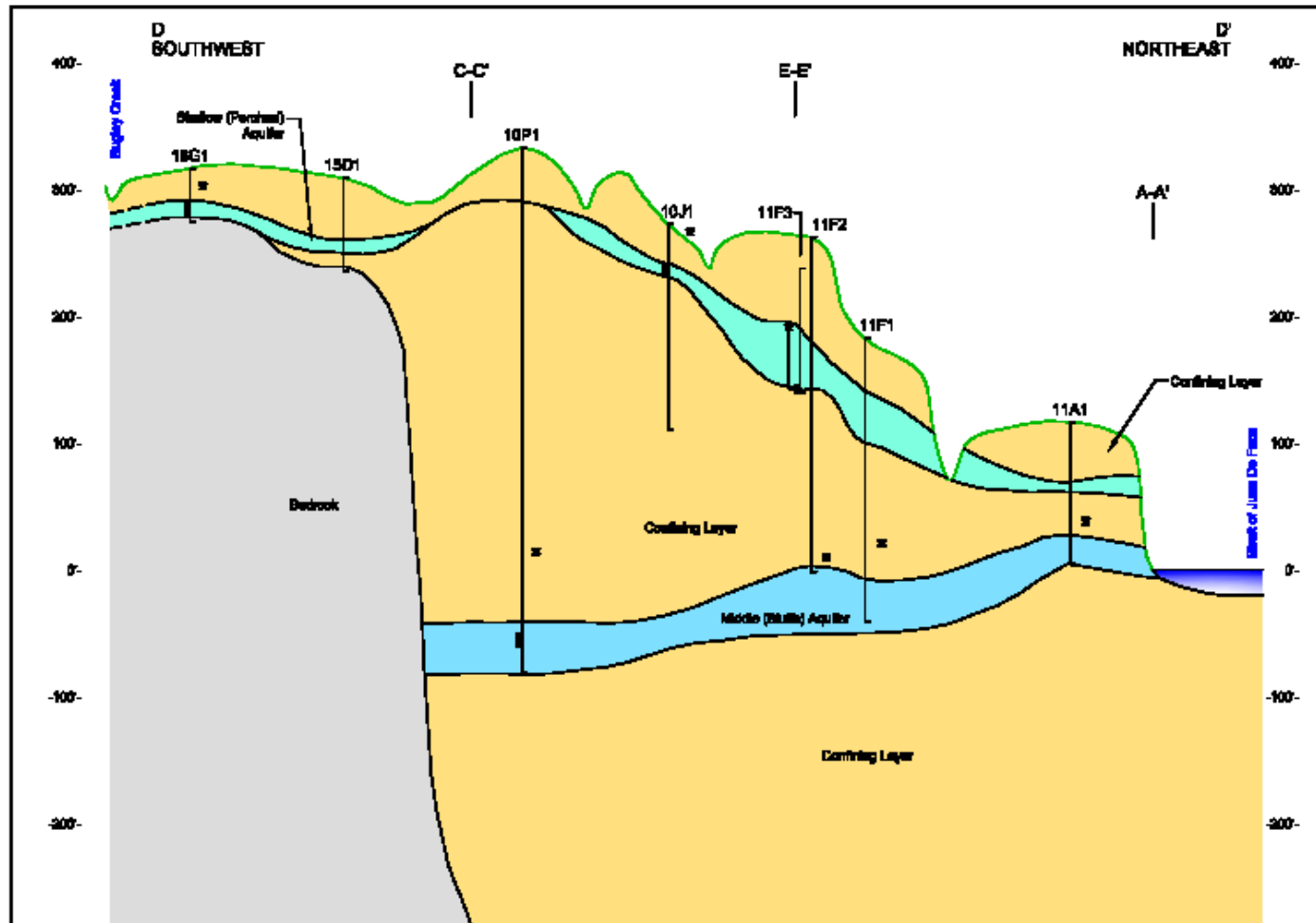
Note:
Basemap taken from
USGS Moose Creek
Quad.

PM DCD
December 2012
1174-005E

Clallam County
T 30 N/R 04,05 W
Scale 1" = 2000'

Figure 1
Well Location Map
Clallam County PUD No. 1

Source Aquifer



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ANALYTICAL SERVICES

PM: FHK
 December 2008
 1174-008A

Clallam County
 T30 N/R 04,06 W
 Horizontal Scale 1" = 2000'



Figure 4
 Conceptual Cross Section D-D'
 Clallam County PUD No. 1: Fairview Water Supply Project

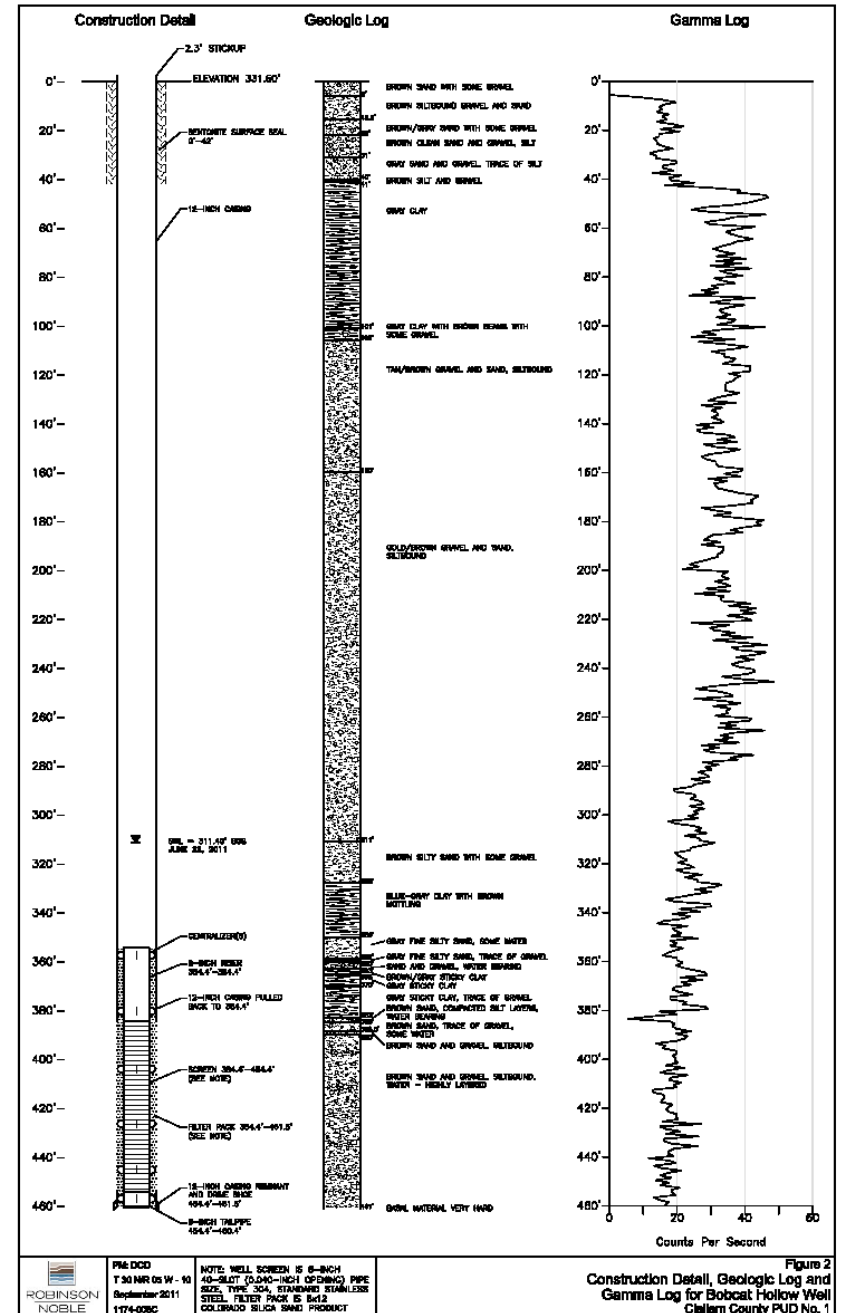
Original Bluffs Well

- **Constructed late 1965**
- **8-inch drilled to 214 feet**
- **Screened 195 to 205
(elevation -15 to -25)**
- **SWL 177 feet below surface
(elevation about 4 feet)**
- **Can produce up to 400 gpm**



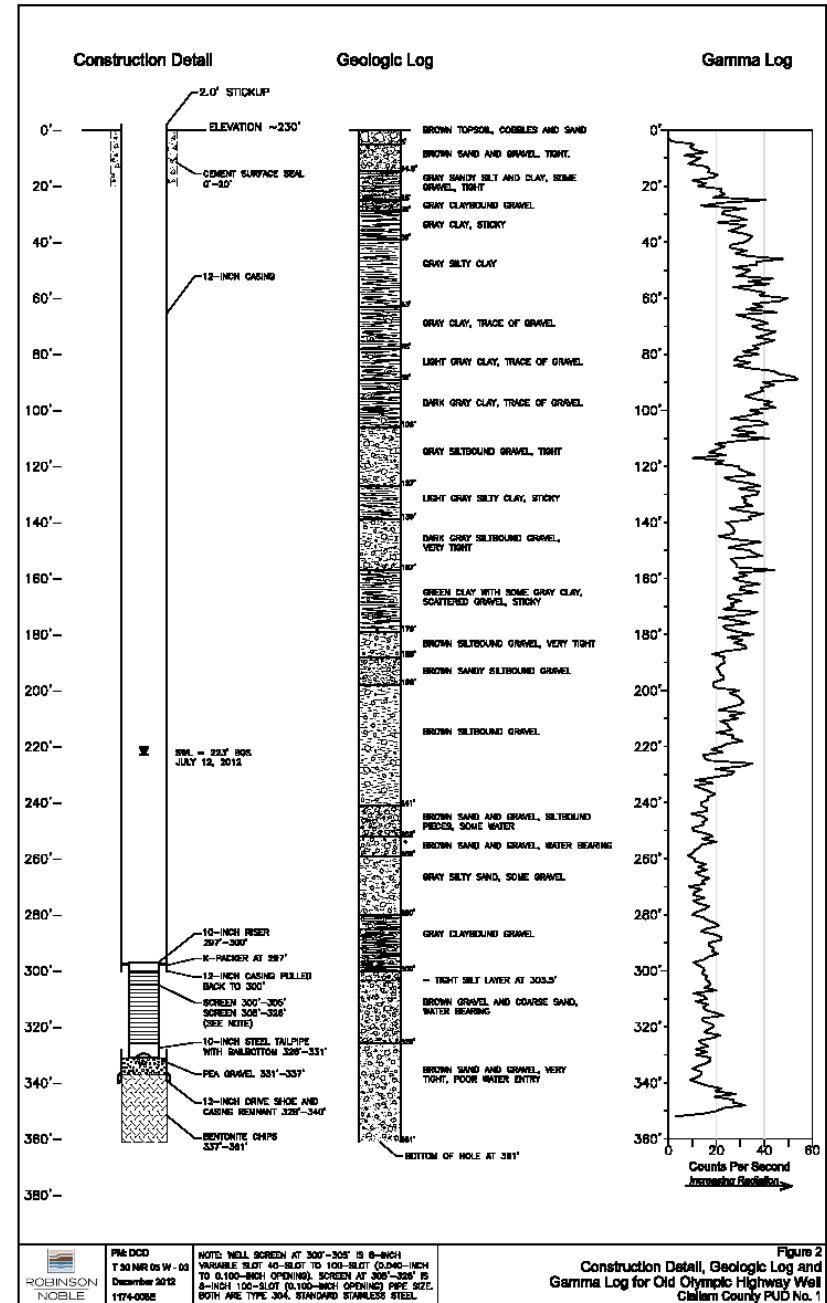
Bobcat Hollow Well

- Constructed in 2011
- 12-inch casing drilled to 461 feet
- 8-inch gravel packed screen 384 to 454 feet (elevation – 50 to – 122)
- Static water level 311.4 feet (elevation 20 feet)
- Rated at 400 gpm



Old Olympic Highway Well

- Constructed in 2012
- 12-inch casing drilled to 361 feet
- Screen set from 300 to 326 feet (elevation -70 to -96)
- Static water level 223 feet (elevation 7 feet)
- Tested at more than 1,000 gpm



Keeping it Legal - Water Right Change

- Add points of withdrawal
- Evolving legal/regulatory setting
- WRIA 18 East - Watershed Planning
- Ecology Rulemaking – subsequent Rule
- Models and impacts – mitigation, OH MY
- WHERE DO WE STAND?



Water Quality

- **Bobcat Hollow Well water quality meets standards**
- **Old Olympic Highway meets standards for all but Manganese which is quite high (0.6 mg/l) and needs treatment**
- **Seawater intrusion issues require management but not considered a likely issue for inland well field**
- **Third and possibly fourth well may be needed for full production to spread the withdrawal along coast**



A Recent Pilot Study Developed Design Criteria for the Manganese Treatment Facility



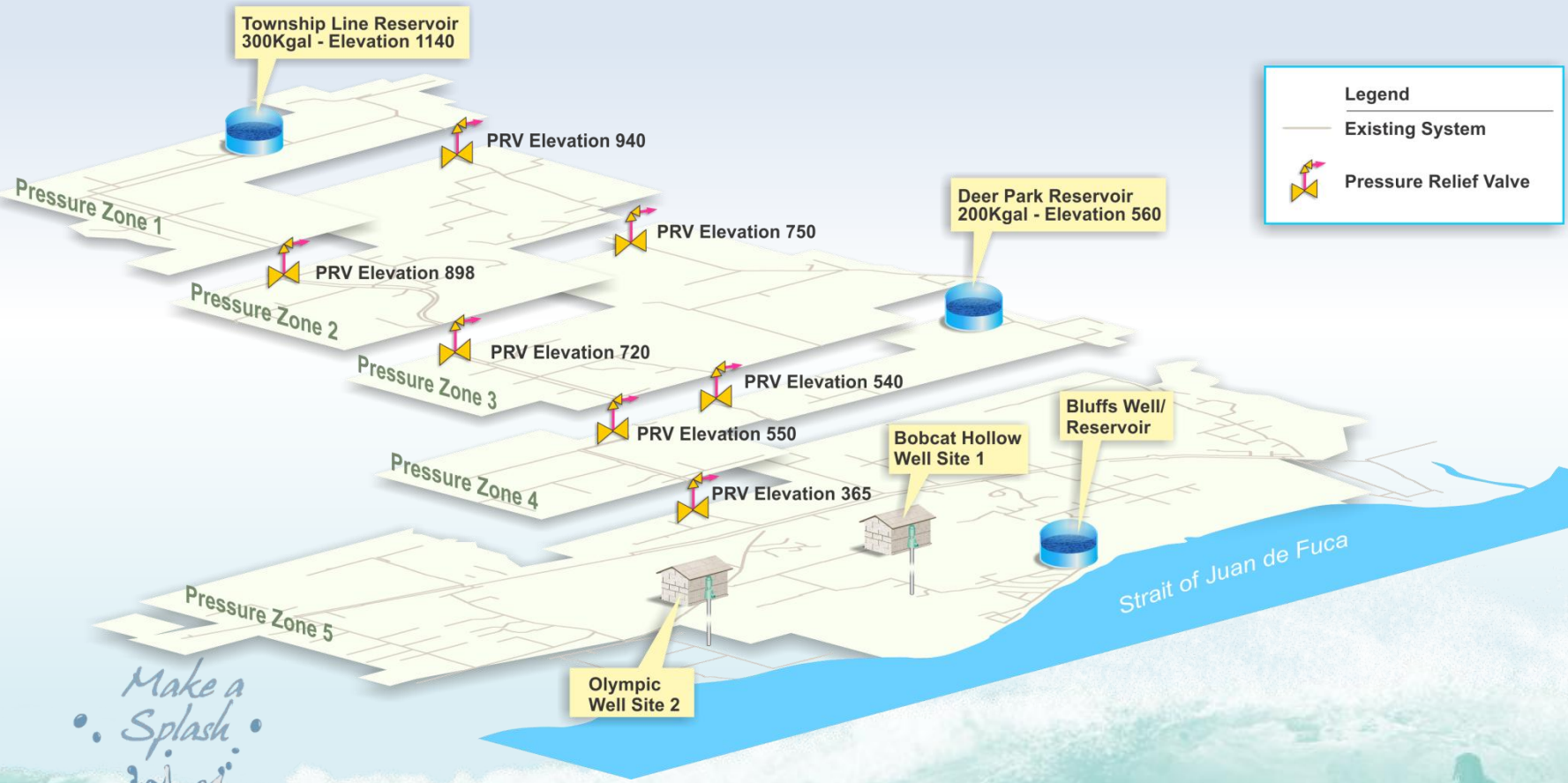
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A Recent Pilot Study Developed Design Criteria for the Manganese Treatment Facility



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Design of System Upgrades is Underway



The BCA Drives Project Schedule

- **December 2013: Finish design, bid, award project**
- **September 2014: Finish construction/start-up and commission facilities**
- **2014/2015 timeframe: Morse Creek Flow Mitigation Tasks**



Acknowledgments

- **Clallam County PUD#1 Commissioners and Staff**
 - **Doug Nass, Mike Kitz, Tom Martin, Aaron Petroff**



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Questions?





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Conjunctive Use Concept Holds Promise to Address Short and Long Term Water Supply Issues

- **Conjunctive Use Means Using Morse Creek water (when available) and Groundwater When Surface Water Use May Be Curtailed**
- **Bluffs Creek Water Right (187 af) is equivalent to:**
 - 0.81 mgd over 75 straight days
- **New Well/s (if found to be feasible):**
 - Easily Meet current ADD
 - Supplies ~ 80 percent of the current MDD



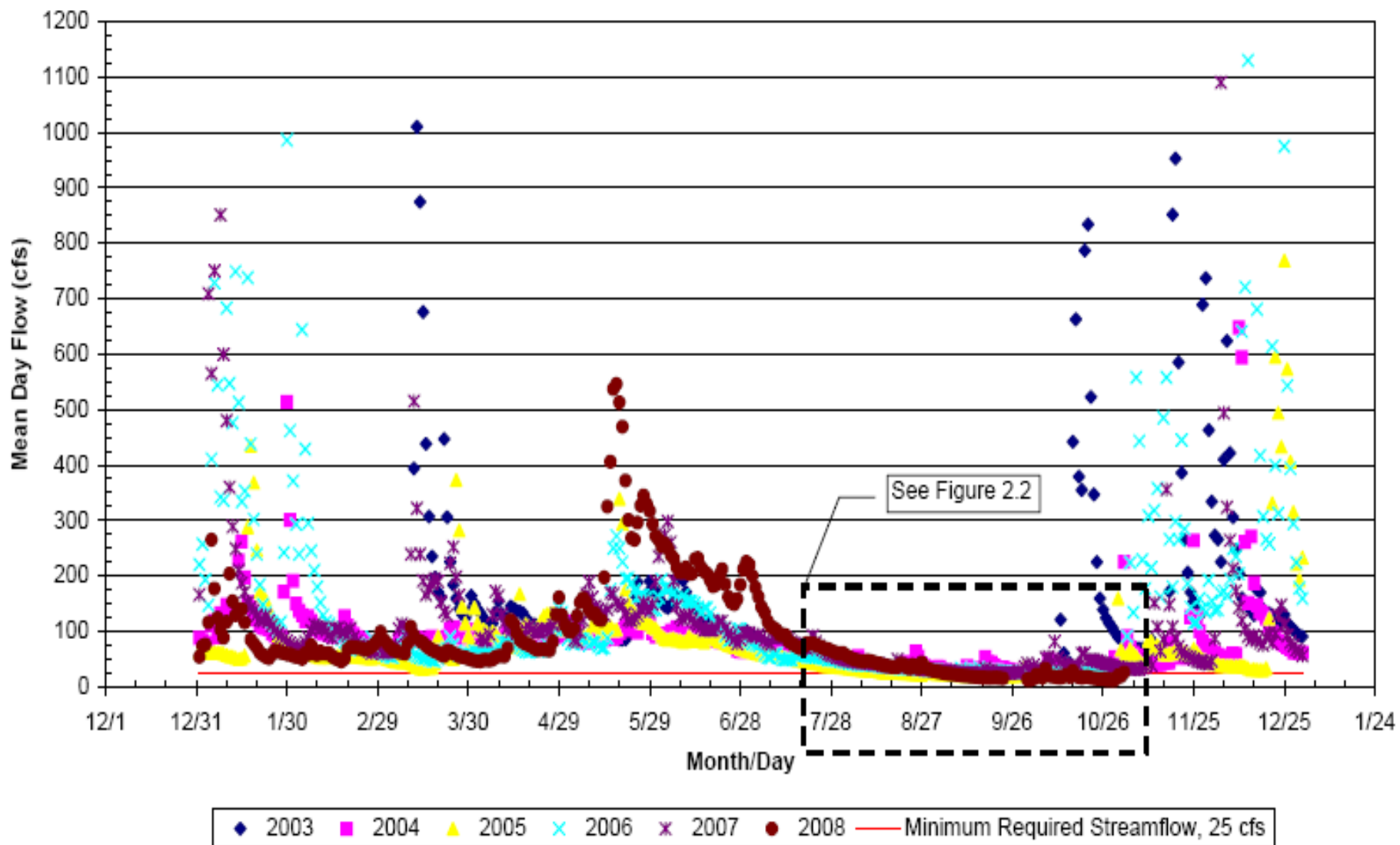


Figure 2.1
 2003 - 2008 MEAN DAY MORSE CREEK STREAMFLOW
 FAIRVIEW WATER SYSTEM SUPPLY PROJECT
 CLALLAM COUNTY

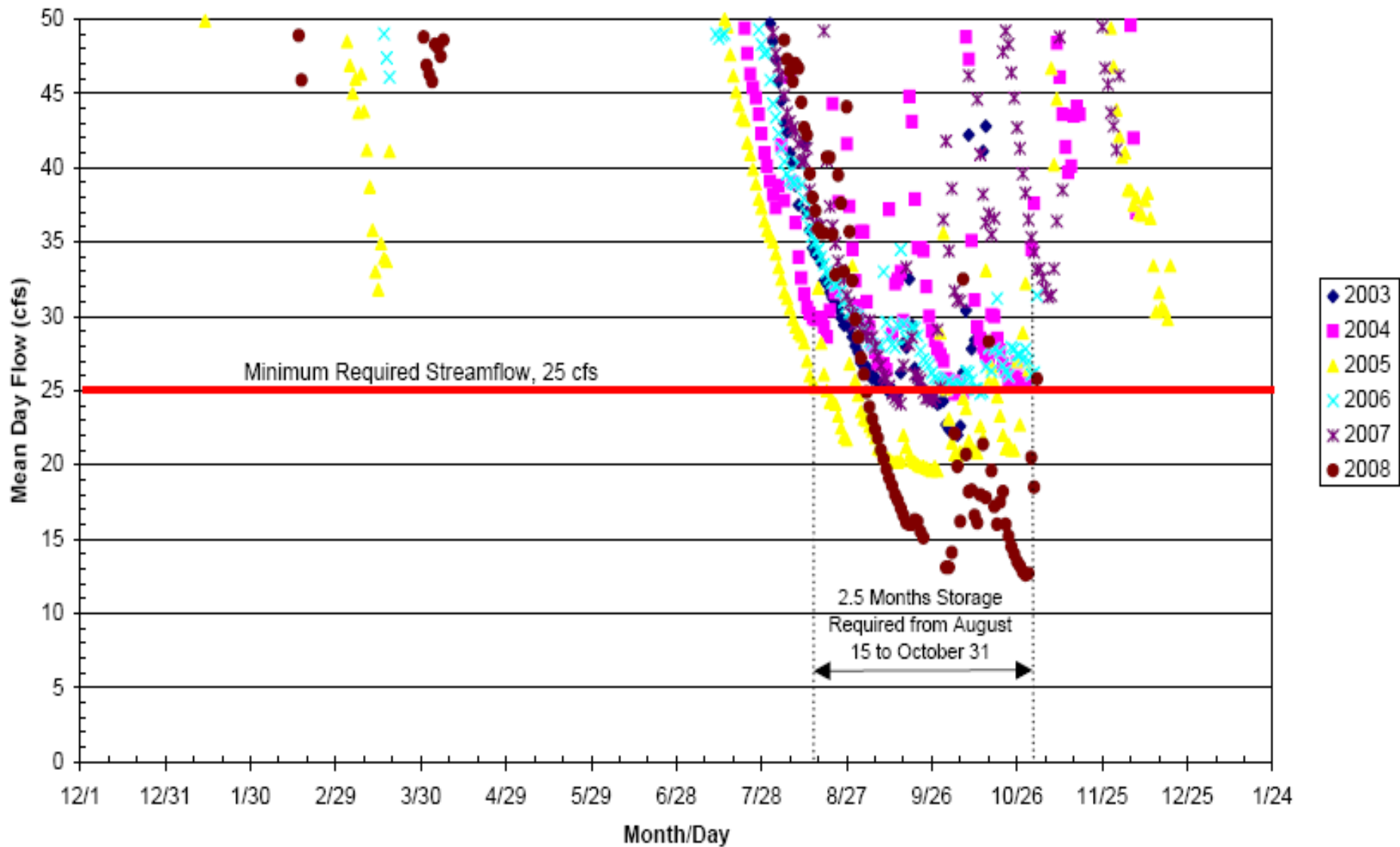


Figure 2.2
 2003 - 2008 MEAN DAY MORSE CREEK
 STREAMFLOW REQUIRED STORAGE
 FAIRVIEW WATER SYSTEM SUPPLY PROJECT
 CLALLAM COUNTY

Morse Creek Interruptible Water Right Drives the Project

Year of Flow Data	Total Number of Days Below 25 cfs	Total Number of Consecutive Days Below 25 cfs
2003	16	13
2004	3	2
2005	58	29
2006	2	2
2007	9	5
2008	14	7



Water Demands May Double by 2038

Average Day Demand (ADD) and MDD Projections⁽¹⁾ Fairview Water System Supply Project PUD No. 1 of Clallam County

Demand	2008	2038
ADD, mgd	0.39	0.81
MDD, mgd	0.96	2.00

Notes:

(1)Referenced Table 1.9 of "Technical Memorandum No. 1, Water Requirements, Revised Draft", Carollo, October 2008.



Existing Water Rights Are Not Fully Used At Present

Projected Water Use and Annual (Qa) Water Rights Comparison

Water Source	2008 Planning Projection Water Needs	2008 (Current) Water Rights (Unrealized)	2038 Projected Water Use
Morse Creek	~ 358 (ac-ft)	379 (ac-ft)	TBD
Bluffs Well	~ 79 (ac-ft)	187 (ac-ft)	TBD
Total	~ 437 (ac-ft)	566 (ac-ft)	907 (ac-ft)
Equivalent Average Day Demand (ADD)	<u>0.39 (mgd)</u>	<u>0.51 (mgd)</u>	<u>0.81 (mgd)</u>

