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Bureau of Land Management

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Environmental Assessment
Groundwater Production Well Facility Right-of-Way
Applicant: Municipality of Anchorage, Anchorage Water and Wastewater Utility
Case File Number: AA-92450 and AA-92451
DOI-BLM-AK-A010-2010-0044-EA

Location:
N½SW¼, Sec. 3, T. 12 N., R. 3 W., Seward Meridian, Municipality of Anchorage, Alaska

Prepared by:

MWH

June 7, 2011

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Acronyms and Abbreviations

ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
ADWF	Alaska Drinking Water Fund
AFO	Anchorage Field Office
ANILCA	Alaska National Interest Lands Conservation Act
APE	Area of Potential Effect
AWWU	Anchorage Water and Wastewater Utility
BCF	Bootlegger Cove Formation
BLM	U.S. Bureau of Land Management
CEA	Chugach Electric Association
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
CTF	Campbell Tract Facility
DR	Decision Record
EA	environmental assessment
EFH	essential fish habitat
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FNBP	Far North Bicentennial Park
FONSI	Finding of No Significant Impact
gmp	gallons per minute
GP	groundwater production
HLB	Heritage Land Bank
MASS	Municipality of Anchorage Standard Specifications, 2009
mgd	million gallons per day
MOA	Municipality of Anchorage
NEPA	National Environmental Policy Act
O&M	operation and maintenance
PRMP	Proposed Resource Management Plan
PRV	Pressure Reducing Valve
ROW	right-of-way
SCADA	supervisory control and data acquisition
SF	South Fork
SPCC	Spill Control and Countermeasures
SRMA	Special Recreation Management Area
VRM	Visual Resource Management

1.0 INTRODUCTION

The Anchorage Water and Wastewater Utility (AWWU) has applied to the U.S. Bureau of Land Management (BLM) for Right-of-Way (ROW) Grants to use public lands in the Campbell Tract Facility (CTF) for construction of a groundwater production (GP) well with ancillary facilities, and a short-term ROW for a test well.

AWWU provides potable water throughout the Municipality of Anchorage (MOA). Existing sources have historically provided an ample supply; however, the 2005 Anchorage Water Master Plan (HDR, 2005) concluded that increased flexibility in the water supply system is needed. In addition, water demand projections completed for the 2005 Water Master Plan created the need to look at increasing water supply capabilities, particularly in the underserved demand areas of South and Southwest Anchorage. The 2005 Water Master Plan also recommended review of emergency water supply facilities in the event the Eklutna water supply is compromised.

In 2006, AWWU completed an analysis that showed new wells would be the most appropriate means of increasing water supply and operational flexibility. Various locations, including the Campbell Creek area, were identified as potentially favorable sites for new wells.

The Campbell Creek area is favorable for new GP well development for the following reasons.

- A high pressure, 42-inch diameter water transmission main is located nearby in Elmore Road. This pipeline is the main transmission line carrying Eklutna water to South and Southwest Anchorage. Connection of a new GP well to this transmission main would provide additional water supply capability throughout the year and emergency water supply capability in the event the Eklutna supply is compromised.
- Water system modeling completed as part of the 2005 Water Master Plan identified the need for additional water supply in South and Southwest Anchorage to meet maximum day demand within the next five years.
- A new GP well can better serve the CTF and provide a reliable emergency fire protection water source, as needed, in the future.
- This area has strong potential to be a high volume, high quality groundwater source.

The CTF was determined to be the most appropriate site for a new GP well facility, based primarily on subsurface hydrogeology and existing AWWU infrastructure. In selecting the proposed project sites, various locations were considered to take advantage of the Pressure Reducing Valve (PRV) facility, minimizing new impacts to vegetation and wetlands, recreational use, and the aesthetic value of the area. The PRV facility is in the far northwest corner of CTF. Locating the new well facility directly adjacent to the PRV facility on CTF land was the most practicable choice. The property directly to the north is owned by the MOA Heritage Land Bank (HLB), with land use restrictions and political sensitivity. The parcel to the west of Elmore Road is privately owned, with expected plans for additional residential development.

Based on potential advantages offered by the site, AWWU wants to drill and test a well adjacent to the existing AWWU PRV facility, located on BLM ROW Grant AA-86851, with an observation well located near the Smoke Jumper Trailhead and another observation well located

off BLM land near Kasuun Elementary School (Phase I). The test well would require temporary use of approximately 0.037 acres (40 feet by 40 feet) and 0.026 acres of the existing PRV pad and PRV ROW, respectively. The observation well would require temporary use of approximately 0.057 acres (25 feet by 100 feet) of BLM land near the Smoke Jumper Trailhead, as well as 0.144 acres (20 feet by 313 feet) encompassing a corridor to place the well test discharge temporary hose.

If the test well indicates the location is favorable for meeting AWWU needs, a permanent GP well and appurtenant facilities would be constructed nearby, adjacent to the PRV facility (Phase II). Locating a new well facility adjacent to the existing PRV facility would require modification of ROW Grant AA-86851 (**Figure 1**) to accommodate approximately 0.11 acres of new pad fill, with an associated short-term ROW for an additional 10 feet around the perimeter of the new pad if needed during construction, as well as 0.144 acres (20 feet by 313 feet) in which to place the well test discharge temporary hose.

In summary, the following ROW is requested:

Phase I

- ***Short-term ROW***
  - 0.026 acres of existing PRV ROW for access to test well location
  - 0.037 acres (40 feet by 40 feet) for drilling test well.
  - 0.057 acres (25 feet by 100 feet) for drilling observation well.
  - 0.144 acres (20 feet by 313 feet) for exploration well test water (groundwater) discharge conveyance corridor.

    Total temporary impact: 0.264 acres.

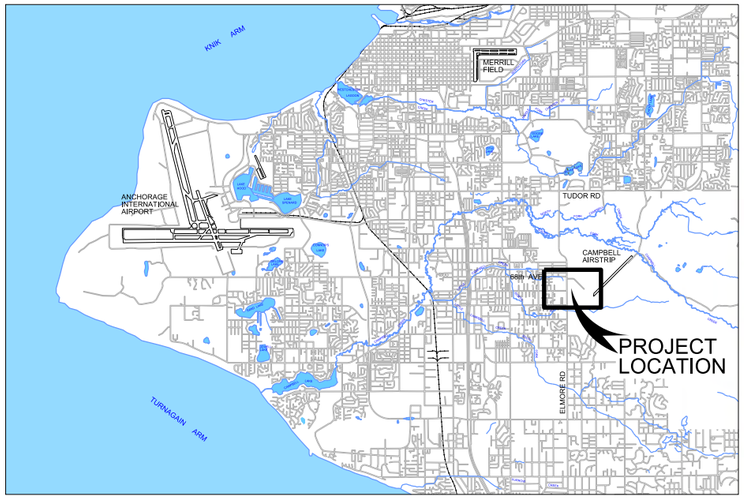
Phase II

- ***Short-term ROW***
  - 0.026 acres of existing PRV ROW for location access.
  - 0.08 acres for 10-foot construction buffer around pad.
  - 0.144 acres (20 feet by 313 feet) for production well test water (groundwater) discharge conveyance corridor.

    Total temporary impact: 0.25 acres.
- ***Permanent ROW***
  - 0.111 acres for new well facility pad.

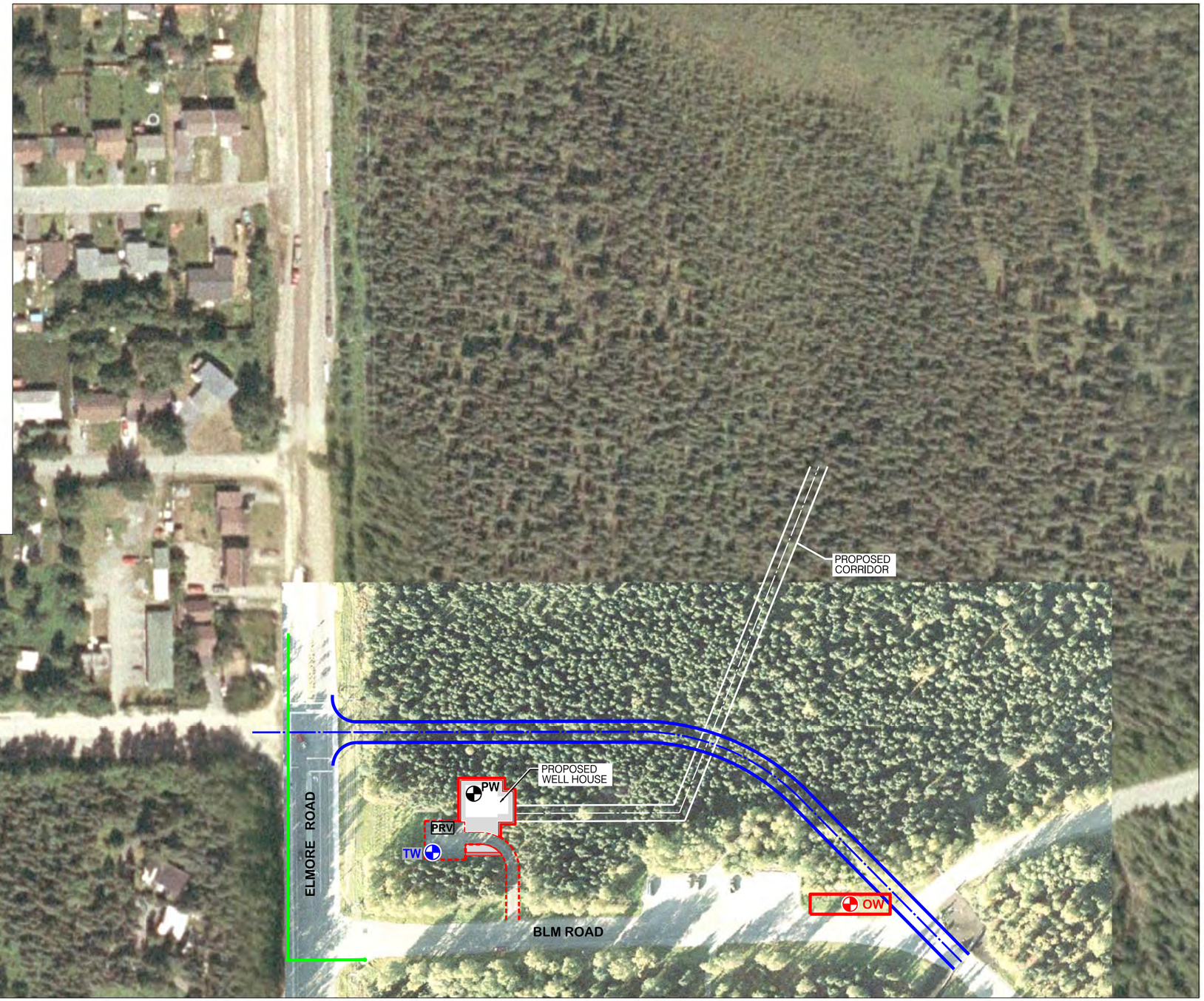
    Total permanent impact: 0.11 acres

Up to 0.069 acres would be required for a Chugach Electric Association (CEA) ROW to extend power to the new well house. The application would be filed by CEA in the future when AWWU final design and power specifications are finalized and agreements with CEA are in place.



LEGEND:

- PROJECT AREA
- FUTURE BLM ROAD
- EXISTING SEWER LINE
- EXISTING AWWU PRV FACILITY PRV = PRESSURE RELIEF VALVE
- TW — TEST WELL
- OW — OBSERVATION WELL
- OW — OBSERVATION WELL
- PW — PRODUCTION WELL



NORTH

SCALE IN FEET

0 140

FIGURE 1

ANCHORAGE WATER & WASTEWATER UTILITY
CAMPBELL TRACT GROUNDWATER PRODUCTION WELL

LOCATION AND VICINITY MAP

JOB No. 1008634.030101 TIME: 06-JUN-2011 15:43 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\Environmental Assessment\6-6-2011 Env Assessment\draft\FIG01 - Observation wells.DGN

1.1 LAND STATUS

The proposed facility is located in the far northwest portion of the BLM CTF withdrawal, specifically in N½SW¼, S3, T12N, R3W, Seward Meridian, MOA, Alaska. The withdrawal was part of a land exchange agreement between Cook Inlet Region, Inc., the State of Alaska, and the U.S. Department of the Interior (DOI) in 1976.

The agreement was ratified into law as an amendment to the Alaska Native Claims Settlement Act and allowed the BLM to retain up to 1,000 acres. After negotiations with the State of Alaska and the MOA, this acreage was reduced to the minimum needed (730 acres), and withdrawn by Public Land Order 6127 dated February 11, 1982. The BLM CTF Withdrawal was renewed in November 2000 and will be effective until 2020. In 1985, the CTF was designated as a Special Recreation Management Area (SRMA), based on its unique natural setting near a large urban area containing developed recreation facilities.

Elmore Road lies along the western boundary of the CTF. The MOA HLB holds the land directly north of the proposed project location. The remainder of the CTF is bounded by the MOA's Far North Bicentennial Park (FNBP) lands.

1.2 RELATIONSHIP TO STATUTES, REGULATIONS, POLICIES, PLANS AND OTHER ENVIRONMENTAL ANALYSES

The Proposed Action would be authorized pursuant to Title V, of the Federal Land Policy and Management Act (FLPMA) of October 21, 1976 (90 Statute 2776; 43 United States Code [U.S.C.] 1761), as amended.

1.2.1 Relationship to Statutes, Regulations, Policies, and Plans

BLM authorized actions require compliance with federal and state laws and regulations, as well as applicable local requirements. The following authorizations are required for the proposed project:

- BLM ROW Grants (Short Term and Permanent).
- U.S. Army Corps of Engineers (Corps) Section 404 Permit for wetlands fill (Nationwide Permit 12).
- Alaska Department of Environmental Conservation (ADEC) Water System Plan Review and Approval to Construct.
- Alaska Department of Natural Resources (ADNR) Temporary Water Use Permit and Permanent Water Use/Water Rights Certificate.
- MOA Noise Permit (if needed for drilling).
- MOA Building Permit.
- MOA HLB Land Use Permit.
- A ROW amendment to the existing CEA ROW AA-8319) for their powerline extension.

Copies of the ADNR Temporary Water Use Permit, ADNR Division of Coastal and Ocean Management determination that no coastal review is needed, and the Corps 404 Permit are provided in Appendix A. The remaining authorizations would be sought when the decision to proceed with Phase II is confirmed by Phase I test results.

In addition, the proposed project and subsequent actions by the BLM must consider the FLPMA, Threatened and Endangered Species Act, Essential Fish Habitat Assessment (Magnuson Stevens Act), Archaeological and Cultural Resources Clearance (National Historic Preservation Act, as amended), and Evaluation and Findings of Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA); as well as compliance with Executive Order (EO) 11988, as amended (Floodplain Management), EO 11990 (Protection of Wetlands), and EO 12898 (Environmental Justice). Other regulatory authorities may apply to this BLM assessment, including the: Air Quality Act as amended; Safe Drinking Water Act, as amended; Clean Water Act of 1977; Resource Conservation and Recovery Act of 1976; and Migratory Bird Treaty Act of 1918, as amended.

1.2.2 Relationship to Other Environmental Analyses

In 2006, the BLM completed the Ring of Fire Proposed Resource Management Plan (PRMP) and Final Environmental Impact Statement (FEIS), which evaluated management decisions for the Anchorage Field Office (AFO) and the Ring of Fire planning area. The 2008 Record of Decision approving the PRMP (Alternative D) and the FEIS, including modifications made to address comments received, is described below in Section 1.3.

In 2007, the BLM AFO prepared Environmental Assessment (EA) AK-040-07-EA-032 with a Finding of No Significant Impact (FONSI) and Decision Record (DR) for Case File AA-86851 in support of granting a ROW to the AWWU for construction of a PRV facility to alleviate water pressure problems in local communities served by the municipal water supply (USBLM, 2007b). This EA, FONSI, and DR address issues closely related to granting an additional ROW for the proposed AWWU water well facility, which is also needed to improve the municipal water supply. A tie into the PRV facility would result in a net reduction of impact over siting in another location in the CTF.

1.3 CONFORMANCE WITH LAND USE PLANS

The area requested for the proposed project ROW is covered under the following planning and environmental documentation: ***Ring of Fire Record of Decision and Approved Resource Management Plan. BLM Anchorage Field Office, Alaska, March 2008*** (BLM RMP-15; USBLM, 2008). The proposed project is consistent with the objectives outlined in BLM RMP-15, and is not in conflict with other resources in the area. BLM RMP-15 also directs that management of the CTF continue under ***A Management Plan for Public Use and Resource Management on the Bureau of Land Management Campbell Tract Facility*** (USBLM, 1988), and any future amendments to this plan (BLM RMP-15, Section 0-2, p. 15).
The 1988 CTF Management Plan identifies the proposed project area as part of Zone 1, Central Administration. Primary responsibility for management of Zone 1 lies with the BLM administrative facility manger. The CTF Management Plan contains the provision to "***Limit***

utility corridors and other rights-of-way to alignments where any impacts on existing natural conditions can be avoided or corrected. Primarily limit these alignments to previously disturbed areas." The CTF Management Plan also contains the provision to ***"limit Abbott Loop utility and road right of way expansion to the existing disturbed area and immediately adjacent areas.***"

The BLM AFO is in the process of amending the Ring of Fire PRMP to address the 730-acre CTF Administrative Site and SRMA, currently managed under the 1988 Management Plan. The BLM has begun a public scoping process for development of this new plan to guide management of the CTF for the next 10 years. Due to the estimated timeframe for the planning process, the updated plan is not expected to have an effect on the proposed project.

1.4 PURPOSE AND NEED FOR THE PROPOSED ACTION

AWWU is applying to the BLM for a ROW Grant to use the CTF lands for a GP well and ancillary facilities. The BLM will consider this application in accordance with Title 43 Code of Federal Regulations (CFR) 2800 and decide whether to issue both a Short Term ROW Grant and a Permanent ROW Grant to AWWU.

The Proposed Action and the No Action Alternative are subject to FLPMA, which authorizes the Secretary of the Interior, through the BLM, to grant, issue, or renew a ROW for distribution of water. If approved, the Proposed Action or modification as determined appropriate by this environmental analysis would be authorized under Title V of FLPMA. Although an application for use of the public domain is typically denied where the applicant owns adequate land to meet its own need [***Janet Read, BLM Case File No. AA-81642],*** the CTF is considered the most favorable public land in the area for practicably meeting the AWWU objectives and specifications for a GP well to meet water needs in South and Southwest Anchorage.

As the lead federal agency under the National Environmental Policy Act (NEPA), the BLM is responsible for analyzing potential environmental impacts of issuing a ROW Grant for the proposed project. The BLM must conduct a project-specific NEPA analysis and determine whether the proposed project should be approved, rejected, or approved with modifications, and if additional mitigation is needed. As Administrator of the Alaska Drinking Water Fund (ADWF), ADEC is required to complete a NEPA-like review, as authorized by the U.S. Environmental Protection Agency (EPA) for ADWF loans. The BLM and ADEC decision-makers will use the information and analysis provided in this EA in making ROW and loan decisions, respectively.

1.5 STAKEHOLDER INVOLVEMENT AND ISSUES

AWWU initiated agency coordination in meeting with the BLM in March 2010 to discuss the proposed project and the process for obtaining a federal ROW grant. The ROW applications, with draft Plans of Development (PODs), were filed in May 2010, and revised PODs were filed in December 2010. AWWU has coordinated with the BLM throughout development of this EA. AWWU has also coordinated with the Corps and the ADNR in the process of obtaining permits for the proposed project, including a site visit with the Corps in July 2010. Other state and federal agencies were involved in the review of permit applications. A copy of the preliminary

EA was provided to ADEC, based on their role in overseeing anticipated federal grant funding of the proposed project. Outside the BLM issues addressed in Section 4, no substantive environmental issues have been identified. The EPA commented that Little Campbell Creek was listed as an impaired watershed, and compensatory mitigation would be required for the proposed fill in wetlands.

AWWU initiated public involvement in May 2010, meeting with the Abbott Loop Community Council to describe the proposed project. A fact sheet was prepared and distributed. A copy of the fact sheet is provided in **Appendix B.** A website has been established and updated for information exchange with the public (www.CampbellTractWell.org). Following is a summary of issues identified at that meeting:

- Type and extent of impact the proposed production well would have on local wells, and how this would be monitored.
- Potential for ground subsidence as a result of large scale water withdrawal.
- How/when AWWU would share information about the results of the well testing (Phase I), and process/timing for making a decision about development of a new production well.
- How the public would be able to review and understand the results of the EA.

In August, 2010, AWWU and the BLM met with the FNBP Trails and Parks User Group. AWWU provided an overview of the proposed project and distributed the project fact sheet. Following is a summary of issues identified at that meeting:

- Location of the well near residential areas (as opposed to another location).
- Proposed site location with respect to possible extension of 68th east of Elmore.
- Location of monitoring (observation) wells.
- Potential impacts (of the production well) on surrounding residential wells.
- Process for providing property owners with results of the well testing program and access to test results.
- Potential mitigation if residential wells are impacted by the new production well.

In January 2011, AWWU meet again with the Abbott Loop Community Council to give an update on the project, including a revised fact sheet (included in **Appendix B**). No new issues were identified, but the public requested to be kept informed about the project.

Other questions presented by the public focused on size and potential production of the new well, groundwater contribution to the Anchorage water supply system (including the proposed well), and how residential wells fit into project planning.

Issues and questions presented by the public are addressed in this document. Another meeting with the Abbott Loop Community Council is planned to coordinate with public review of the EA.

2.0 PROPOSED ACTION AND ALTERNATIVES

A new groundwater source is needed to ensure the AWWU's capability to supply water to the underserved demand areas of South and Southwest Anchorage. This identified need and suitability of the Campbell Creek area for new well development were described in Section 1. The new water supply project proposed by AWWU is described below.

2.1 THE PROPOSED ACTION

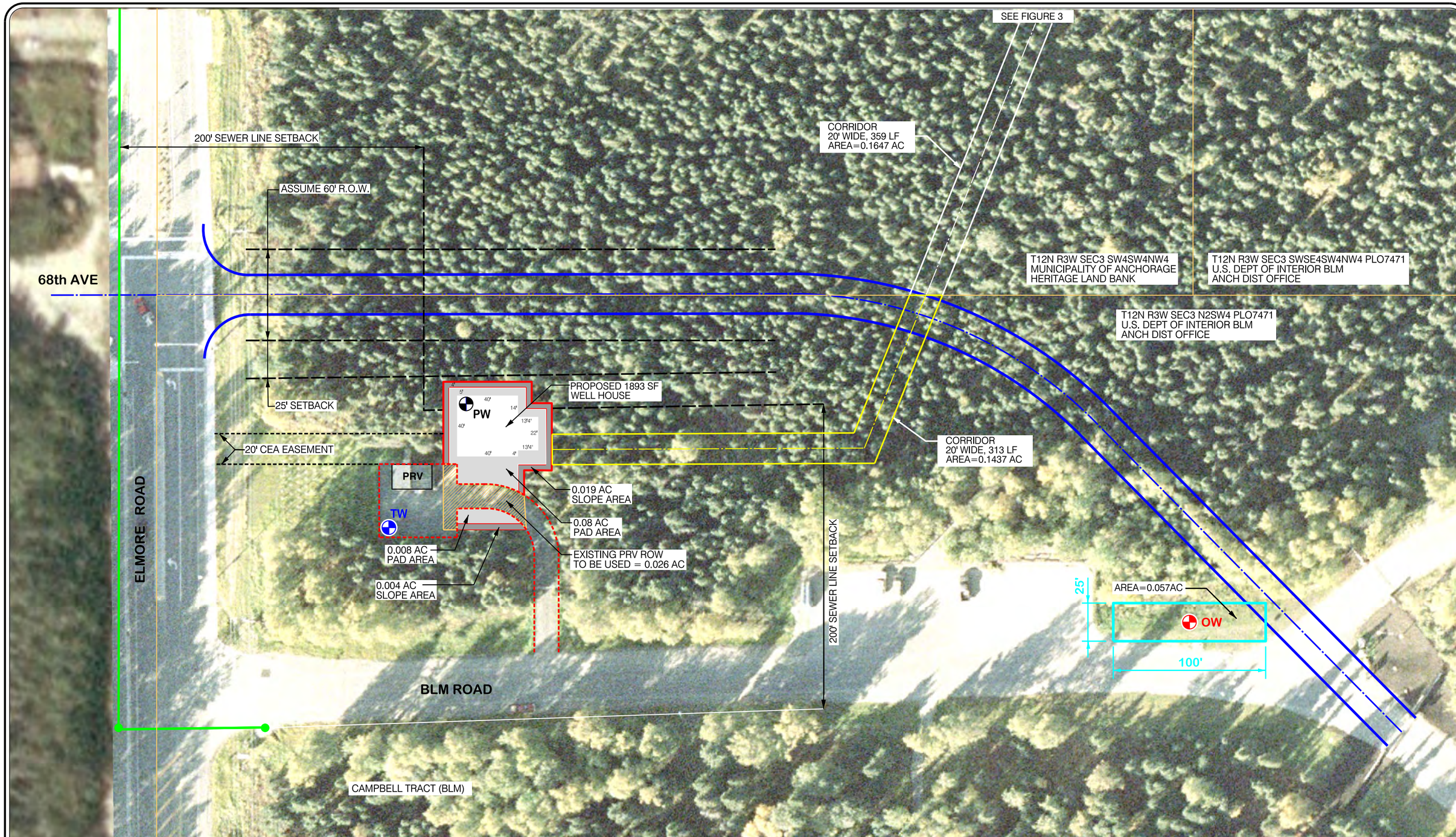
AWWU is proposing to construct and operate a new GP well that ties into the existing 42-inch water main along the east side of Elmore Road, adjacent to the CTF. A key advantage to this location is the ability to tie directly into existing infrastructure at the recently completed PRV facility located in the northwest corner of Campbell Tract near the junction of Elmore Road and BLM Road, as shown on Figure 1.

Various configurations of the new water well facilities were considered to take advantage of the existing AWWU facilities and access road, while minimizing impacts to vegetation and wetlands, recreational use, and the aesthetic value of the area. Restrictions to siting the production well and well house include:

- A 200-foot setback (production well) from sewer lines.
- Proximity of production well to test well (within 100 feet).
- Setback from property lines (based on zoning).
- Sufficient pad area for a crane to operate during well maintenance (at least 46 feet clearance adjacent to the well house).

In confirming the proposed well location, hydrogeologic studies and groundwater modeling must be completed to evaluate productivity, potential drawdown, and interaction with surface waters. The selected location for the new well would be based on these hydrogeologic considerations, as well as institutional and engineering considerations. Therefore, the proposed project would be implemented in two distinct phases: Phase I, install one temporary test well and up to two observation wells; and Phase II, install a permanent GP well and well house facility (**Figures 1** and **2**).

AWWU submitted an application to the BLM for a Temporary ROW Grant (AA-92451) for Phase I, an exploratory test well and up to two observation wells (one of which would be located on federal land) and a Permanent ROW Grant (AA-92450) for Phase II, a GP well and support facilities installed on a new pad, adjacent to the existing AWWU PRV facilities. Phase I, if approved, is planned for summer/fall 2011. If supported by Phase I results, Phase II is planned to begin in 2012; permanent pad and well house construction is planned for the fall, with site clearing, grading, and production well drilling and development taking place earlier in the year. All activities are scheduled for completion by 2013.



LEGEND: N1/2 SW1/4 SECTION 3, TOWNSHIP 12 N RANGE 3W, SEWARD MERIDIAN

- PROPOSED FILL AREA
- FUTURE BLM ROAD
- EXISTING SEWER LINE
- EXISTING AWWU PRV FACILITY PRV=PRESSURE REDUCING VALVE
- TW TEST WELL
- PW PRODUCTION WELL
- DRILL AREA
- TEMPORARY PIPE CORRIDOR (APPROXIMATE LOCATION)

TOTAL FILL AREA WITH FILL TOE
0.111 AC (4,835 SF)

CEA EASEMENT AREA
0.069 AC (3,006 SF)

NORTH

SCALE IN FEET
0 60

FIGURE 2

ANCHORAGE WATER & WASTEWATER UTILITY
CAMPBELL TRACT GROUNDWATER PRODUCTION WELL

PROJECT SITE PLAN

JOB No. 1008634.030101 TIME: 06-JUN-2011 15:49 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\Environmental Assessment\6-6-2011 Env Assessment\draft\FIG02 - Project Site Plan.dgn

2.1.1 Phase I – Exploratory Test and Observation Wells

During Phase I, AWWU would drill a test well on the existing PRV ROW and perform a pump test and water quality analyses. This would establish production capability and water quality characteristics of a permanent water well. AWWU would also drill up to two observation wells, one on federal land. These wells would help AWWU understand potential impacts and develop specific mitigation measures based on results. Phase I would be a short-term, temporary operation, with site work expected to be completed in approximately 1 month. The test well and the observation well(s) would remain in operation to monitor hydrogeologic conditions of the aquifer during construction and startup of the production well (approximately 1 year).

The test well should be located as close as practical to the eventual production well location to evaluate the specific hydrogeologic conditions at the site. Therefore, the exploratory test well is proposed to be located at the PRV facility on the existing PRV facility pad. The area temporarily needed on the pad for drilling the test well is approximately 40 feet by 40 feet.

Evaluation of the long-term impacts of pumping is greatly enhanced by the observation of drawdown at a distance from the pumped well. Therefore, when the test well is pumped, drawdown would be measured in up to two observation wells. Because the amount of water that can be pumped from the test well is limited, and the time of test pumping is limited to several days, the observation well(s) should be located relatively close to the test well. Preliminary groundwater modeling indicates that an observation well should be located within approximately 1,500 feet (estimated zone of influence) to ensure observations of drawdown during the pump test.

Two proposed locations for observation wells, as shown on Figures 1 and 2, include: 1) Kasuun Elementary School, located west of the CTF on East 68th Street, and; 2) the grassy area immediately east of the Smoke Jumper Trailhead parking lot, within an area approximately 25 feet by 100 feet. Drilling activity would require only about one-half the total area (25 feet by 50 feet), but may be located either to the east or west of the fire hydrant, so the entire site is requested for a short term ROW. To the extent possible, during the well test, water levels would also be monitored in the existing BLM wells at the CTF District offices and Science Center and in nearby private and municipal water wells, as described at the end of this section. The monitoring program is also discussed under Mitigation, in Section 2.1.3.

The well installations would require one drilling rig, and no more than two or three support vehicles. For the test well, the rig and other vehicles would park on the PRV site. For drilling the observation well near the Smoke Jumper Trailhead, the drill rig and pipe trailer would park on the grassy area east of the parking lot. Other support vehicles may use one to two spaces in the parking lot for approximately 3 days. If one of the existing water wells by the Administration Building is monitored during well tests, a car or truck may stage in visitor parking by the building three or four times during the 2-week period. While it is not expected, it may be necessary to bring in other equipment to open one of the existing BLM wells for logging data. In that case, the well might have to be left open and inactivated during the test, with barriers to control access. During the test, it is preferable that the existing wells near the office buildings not be pumped, and it may be necessary to temporarily disable the submersible pumps during

monitoring. The on-site supervisor would coordinate all monitoring activities of existing BLM wells with on-site BLM staff to minimize disruption of normal operations. The drill rig, support vehicles, and associated equipment would work within the described areas, minimizing obstruction of access to the Science Center and BLM Administrative Offices.

The drill rig, approximately 35 to 40 feet in height (with mast extended during drilling) would be used to drill both the test well and the observation well(s), using common water well drilling techniques. The proposed drilling method would be either air rotary with driven casing, or direct mud rotary. Casing materials would be mild steel. No hazardous or toxic materials would be introduced into the drilling fluid.[1] Before drilling, an underground utility check would be performed at all drilling locations to confirm locations of underground utilities. No tree removal would be required; however, there would likely be minor clearing of brush just east of the Smoke Jumper Trailhead parking lot for installing the observation well on the CTF.

Water supply for drilling would come from a hydrant located at the Campbell Tract entrance or trucked approximately 5 miles from the drilling contractor's shop. Drilling fluids would be collected, temporarily stored in a container similar to a construction bin, and hauled off site. Drill cuttings (about 4 cubic yards of sand-sized rock fragments) would be temporarily stored on site for use as foundation material in Phase II, or hauled offsite for disposal.

There would be elevated noise levels during well installation that would comply with the MOA Noise Control Ordinance (15.70). The equipment producing the highest noise level during construction and operation is the drill rig, which operates below the 80 decibel limit defined by the MOA Noise Ordinance. Well house construction would include noise-reducing materials to minimize effects from pump and generator operation.

Nominal diameter for the test well would be 8 to 10 inches. The test well is expected to be up to 500 feet deep, with 100 feet of screen. It is estimated that the actual drilling would be completed in approximately 2 days. On the surface, only a small (approximately 3-foot by 3-foot by 3-foot) structure would remain to protect the wellhead (equipment installed at the surface of the wellbore).

The observation well(s) would be drilled in a similar manner, but would be smaller and take less time to drill. The observation well(s) would be 6-inch diameter, drilled to 400 feet, with perforations. Both the test well and the observation wells may be shallower, depending on the formation encountered and budget/timing limitations. No drilling mud would be required for drilling the observation wells; drill cuttings (approximately 3 cubic yards) would be stored for use as foundation material in Phase II or hauled off site. Only a small (approximately 3-foot by 3-foot by 3-foot) well head protection structure would temporarily remain as a surface feature. When an observation well is no longer needed, it would be secured with a locking cap, leaving only a small well head that could be completed below ground surface. During construction of the observation wells – on and off the CTF – a safety plan would be in place, including use of cones and safety tape, to keep people away from equipment and activity on site. A fence could be installed, if requested by the landowner(s).

[1] A mixture of water and clayey soil or commercially available driller's mud (e.g., bentonite) that is pumped down the drill pipe to lubricate and cool the drill bit and flush out cuttings (rock fragments that result from drilling).

The test well would be pumped at the maximum practical rate for the longest practical time so that observations of drawdown could be made. The actual pumping rate would depend on aquifer characteristics encountered, but would be limited to approximately 500 gallons per minute (gpm) due to the diameter of pump that can be installed in the well. The pumping time would depend on observations made during the test, but should be a minimum of 24 hours, with 72 hours the expected test period. An estimated 0.7 million gallons per day (mgd) of groundwater would be generated during the test, and discharged offsite via a temporary, flexible hose extending approximately 1110 linear feet to the northeast. A temporary ROW corridor would be required, approximately 20 feet wide by 313 linear feet long (0.144 acres), to the edge of the CTF property line, in which to place the temporary hose (Figure 2). The corridor would continue beyond the CTF property line, extending in a northeasterly direction for an additional distance of approximately 359 linear feet (Figures 1 and 3). At the discharge point, the hose would be equipped with a temporary impoundment (stilling basin) to control flow and reduce energy and erosion potential, as shown in **Figure 3.** This is further detailed in Section 2.1.2, for the maximum-volume flow scenario (during the test of the production well). Water would discharge to the ground surface, infiltrate the biomass, draining toward the Dowling tributary of South Fork (SF) Campbell Creek, approximately 500 feet to the north.

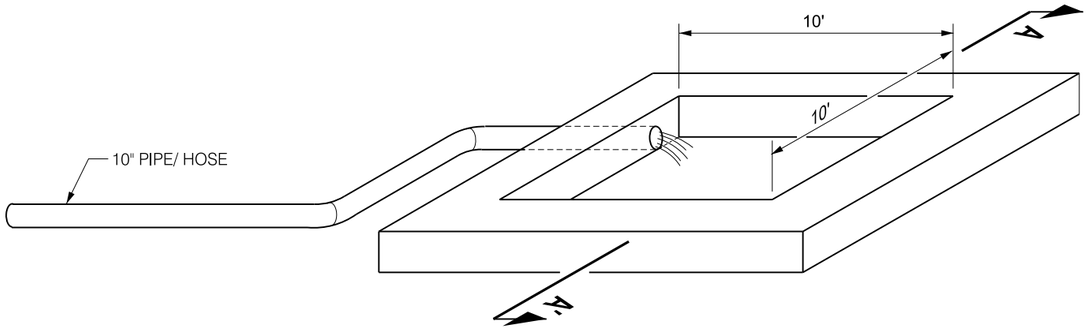
Near the end of the pumping test, water quality sampling of the test well would occur. Samples would be collected for those constituents with a maximum contaminant level for organic and inorganic contaminants, volatile organic chemicals, synthetic organic chemicals, turbidity, total coliform bacteria, and radionuclides - as defined in 18 Alaska Administrative Code (AAC) 80.300. A copy of the test results would be provided to the BLM.

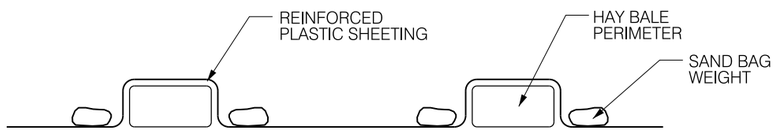
Based on the results of testing, groundwater modeling would be conducted to ensure protection of existing groundwater resources and wells. Assuming the test well is shown to be sufficient to meet AWWU water supply requirements, a new production well would be designed and completed adjacent to the existing PRV facility, as described in Section 2.1.2.

2.1.2 Phase II – Production Well and Facilities

Phase II would comprise a new GP well and a well house, constructed on a paved pad, as shown on Figure 2. Total footprint would be approximately 0.11 acres. The proposed project would require modification of the existing PRV facility ROW to accommodate the new GP well facility. The pad would incorporate a portion of the existing access road and the existing PRV facility pad to keep the new footprint as small as practicable. The size and shape of the pad are approximate and may vary slightly as the site is further evaluated. All Phase II facilities would be on public land. No future expansion of the site beyond Phase II is anticipated.

Two phases of construction are envisioned for the permanent facilities. The first would be for the drilling and development of the new permanent production well, and the second for the building (inclusive of civil, mechanical, electrical, and instrumentation work) that would house the equipment for the new production well. Development of Phase II would be accomplished using conventional construction equipment and vehicles.





SECTION **A–A'**

STILLING BASIN DETAIL

NOT TO SCALE

NOTES:

1. STILLING BASIN TO MEASURE APPROXIMATELY 10' X 10' INSIDE MINIMUM. SUBJECT TO LOCAL CONDITIONS.
2. STILLING BASIN TO BE CONSTRUCTED OF HAY BALES AS PERIMETER STRUCTURAL SUPPORT, LINED WITH REINFORCED PLASTIC SHEETING AND SAND BAGS AS EXTERIOR PERIMETER COUNTER WEIGHTS TO HOLD PLASTIC SHEETING.
3. PIPING OR HOSE TO DISCHARGE INTO STILLING BASIN. DISCHARGE END TO BE FLUTED OR ENLARGED TO REDUCE DISCHARGE VELOCITY.
4. STILLING BASIN PERIMETER WILL ACT AS WEIR ONCE FULL. PLASTIC SHEETING TO EXTEND BEYOND PERIMETER APPROXIMATELY 2-3 FEET TO MITIGATE OVERFLOW FROM IMPACTING NATURAL GROUND BELOW.
5. ALL PLACEMENT OF MATERIALS FOR THE STILLING BASIN TO BE DONE BY HAND.

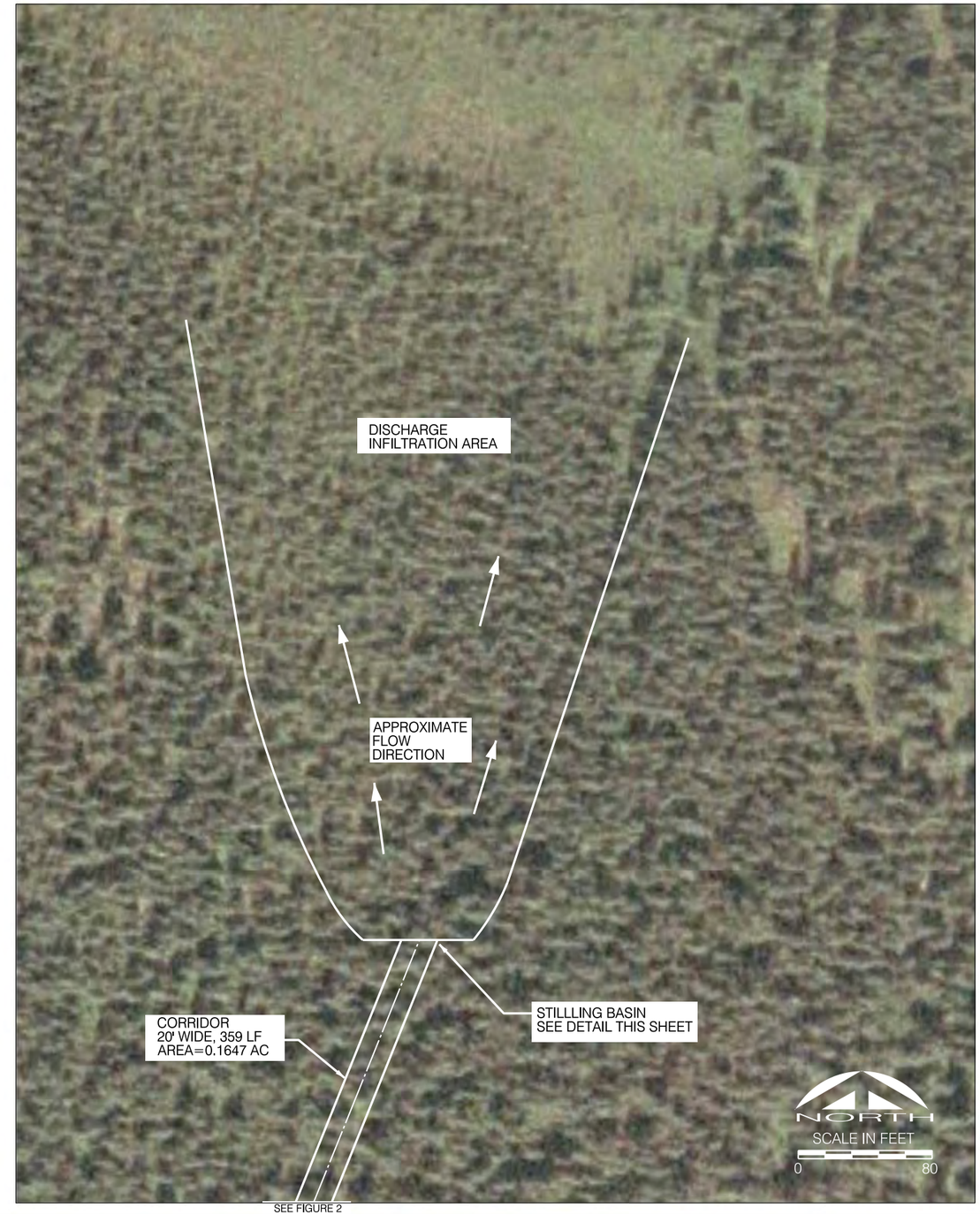


FIGURE 3

ANCHORAGE WATER & WASTEWATER UTILITY
CAMPBELL TRACT GROUNDWATER PRODUCTION WELL

DISCHARGE AREA AND STILLING BASIN

JOB No. 1008634.030101 TIME: 07-JUN-2011 15:52 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\Environmental Assessment\6-6-2011 Env Assessment\draft\FIG03 - Discharge Area and Stilling Basin.dgn

The anticipated construction sequence follows:

- Drill and temporarily cap permanent well.
- Clear and grub well house site. Haul debris off site for disposal. save organic overburden for site restoration, as appropriate.
- Prepare well house and pad site sub-grade.
- Pour foundation of well house.
- Construct well house walls.
- Install equipment inside well house.
- Connect utilities to well house.
- Place well house roof.
- Finish architectural exterior and interior work.
- Finish site and landscape work. restore construction ROW.
- Conduct facility startup.

The production well would be drilled in a manner similar to the test well, but to a depth determined during the hydrogeologic study phase, and no deeper than the test well. The size of the production well is currently unknown and would depend on results of the test well, likely in the range of 16 to 18 inches in diameter. Drilling would be a short-term, temporary operation, expected to be completed in less than 1 month. The production rate of the well would depend on the aquifer and test results. However, for permitting purposes, the maximum production potential from this well was estimated to be on the order of 2,500 gpm or 3.8 mgd.

No hazardous or toxic materials would be introduced into the drilling fluid. Drilling fluids would be collected, temporarily stored in a container similar to a construction bin, and hauled offsite for disposal. Approximately 4 cubic yards of drill cuttings would be generated and stored for use as foundation material, or hauled off site. The production well would be tested in a manner similar to the Phase I pump testing and water quality analyses, described in Section 2.1.1.

The production well would be pumped at the maximum practical rate for the longest practical time so that observations of drawdown could be made. The actual pumping rate would depend on aquifer characteristics encountered, but may be up to 2,000 gpm. The pumping time would depend on observations made during the test, but would be a minimum of 24 hours, with up to 72 hours the expected test period. An estimated 2.9 mgd of water generated during the test would be disposed of offsite via a 10-inch diameter flexible hose extending approximately 1000 feet to the northeast, along an established (although rough and unmaintained) foot trail (Figures 2 and 3). This corridor is the most practicable alignment, because it is already cleared and would not require the removal of trees, and terminates in a saturated area which forms the headwaters of the Dowling tributary of SF Campbell Creek. A temporary ROW corridor would be required, approximately 20 feet wide by 313 linear feet long (0.144 acres), to the edge of the CTF property line, in which to place the temporary hose. The corridor would continue beyond the CTF property line in a northeasterly direction, extending an additional distance of approximately 359

linear feet (Figures 1 and 3). The objective is to locate the stilling basin at a point along the corridor such that the discharge will drain naturally to the north, toward the Dowling Tributary of SF Campbell Creek. Observations during the testing period of the test well (Section 2.1.1) will provide useful information regarding the actual flow conditions at the discharge point. This information may be used to further optimize the location of the stilling basin. The pump test periods of the both the test well and the production well will be monitored to ensure that no adverse impacts occur during the tests. Any potential change in location will be coordinated with BLM and other appropriate agencies.

The maximum-volume flow scenario of the pump test would be approximately 4.5 cubic feet per second (cfs) for 3 days. To reduce the flow rate and associated erosion potential of the discharge, a temporary impoundment (e.g., stilling basin) approximately 10 feet wide by 10 feet long by 1.5 feet deep would be constructed at the end of the hose (Figure 3). The perimeter of the stilling basin would act as a weir and, once the basin is full, water would overflow its sides at a rate of approximately 0.1 cfs per foot of weir length (10 feet by four sides = 40 feet), and at a height of 1 to 1.25 inches deep. Water is expected to lose additional energy as it flows over the weir, partially infiltrates the local vegetation, and moves toward the Dowling tributary channel, approximately 500 feet to the north.

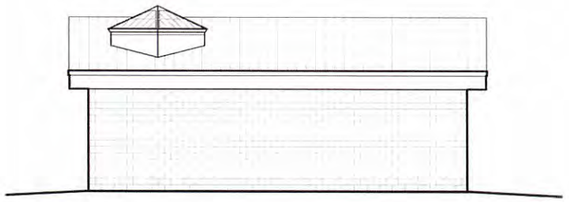
If supported by test results, the well would be completed in accordance with requirements of ADEC. The well casing would extend to the ground surface and would be fitted with a vertical turbine pump and motor as part of the well house construction contract. A very dilute chlorine solution (0.8 percent or approximately 1/5 the strength of household chlorine bleach) would be required for disinfection of the water supply entering the public distribution system. The chlorine solution would be transported to the site already in solution and there would be no mixing of solution on site. At this low concentration, the chlorine solution is not hazardous and would require no special handling.

The well would be entirely housed in a building, sized to accommodate the well pump and motor, discharge piping, electrical equipment, a low strength chlorine solution storage and feed system, and a diesel engine generator for stand-by power. The volume of storage required for the chlorine solution depends on Phase I results. The chlorine solution storage tanks will be equipped with level sensors that are monitored by a Supervisory Control and Data Acquisition (SCADA) system. The building would contain a floor drain system that would drain to a drywell.

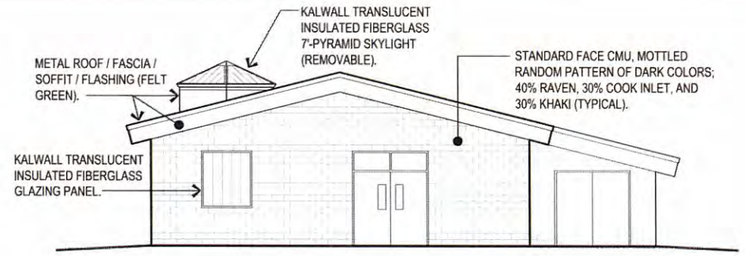
Based on history of power outages and required testing, it is estimated that the approximately 600 kilowatt stand-by generator would run approximately 20 hours per year: one-half hour each month for maintenance, and up to 14 hours for standby power. Approximately 3,000 gallons of diesel fuel would be stored in a double-walled steel tank to power the stand-by engine/generator during electricity outages. The fuel tank would be secured in a locked, covered concrete housing (providing tertiary containment), inside the secured facility.

The well house exterior would be designed to be architecturally pleasing and to blend into the natural setting of CTF, similar to the adjacent PRV facility, as stipulated by the BLM. It would have a footprint of 40 feet by 40 feet, with a 13.3-foot by 22-foot appendage for containing the emergency fuel tank (total area = 1,893 square feet) (**Figure 4**). The building would be

approximately 53 feet long to include the fuel tank, with a double slope roof, 14 feet high at the peak, to complement the PRV building, which is approximately the same height (**Figure 5**).



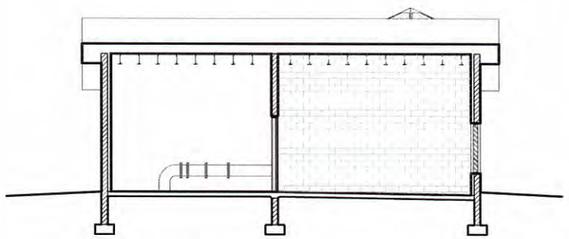
6 WEST ELEVATION
1/8" = 1'-0"



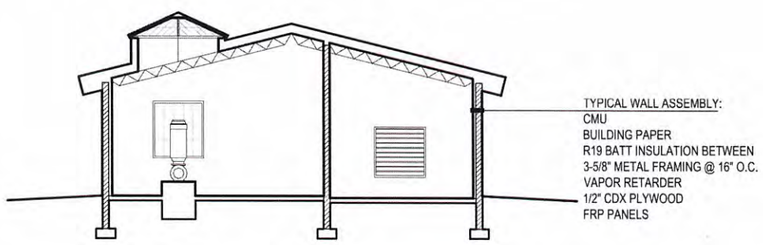
5 SOUTH ELEVATION
1/8" = 1'-0"

SHEET NOTES:

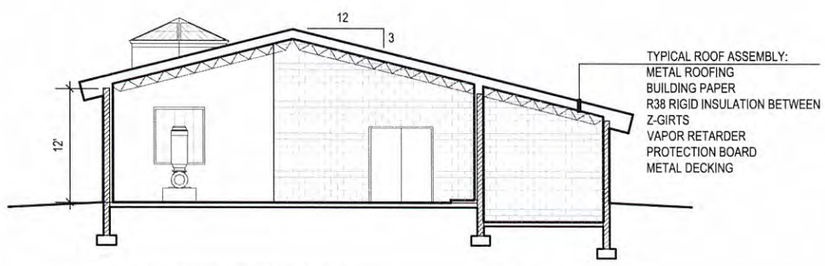
1. DIMENSIONS ARE TO FACE OF BLOCK UNLESS NOTED OTHERWISE.
2. PROVIDE FIRE BLOCKING AND DRAFT STOPS IN ACCORDANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE SECTION 717.
3. THE LOW (NORTH) END OF SLOPED FLOOR IS 4" BELOW FINISHED FLOOR.



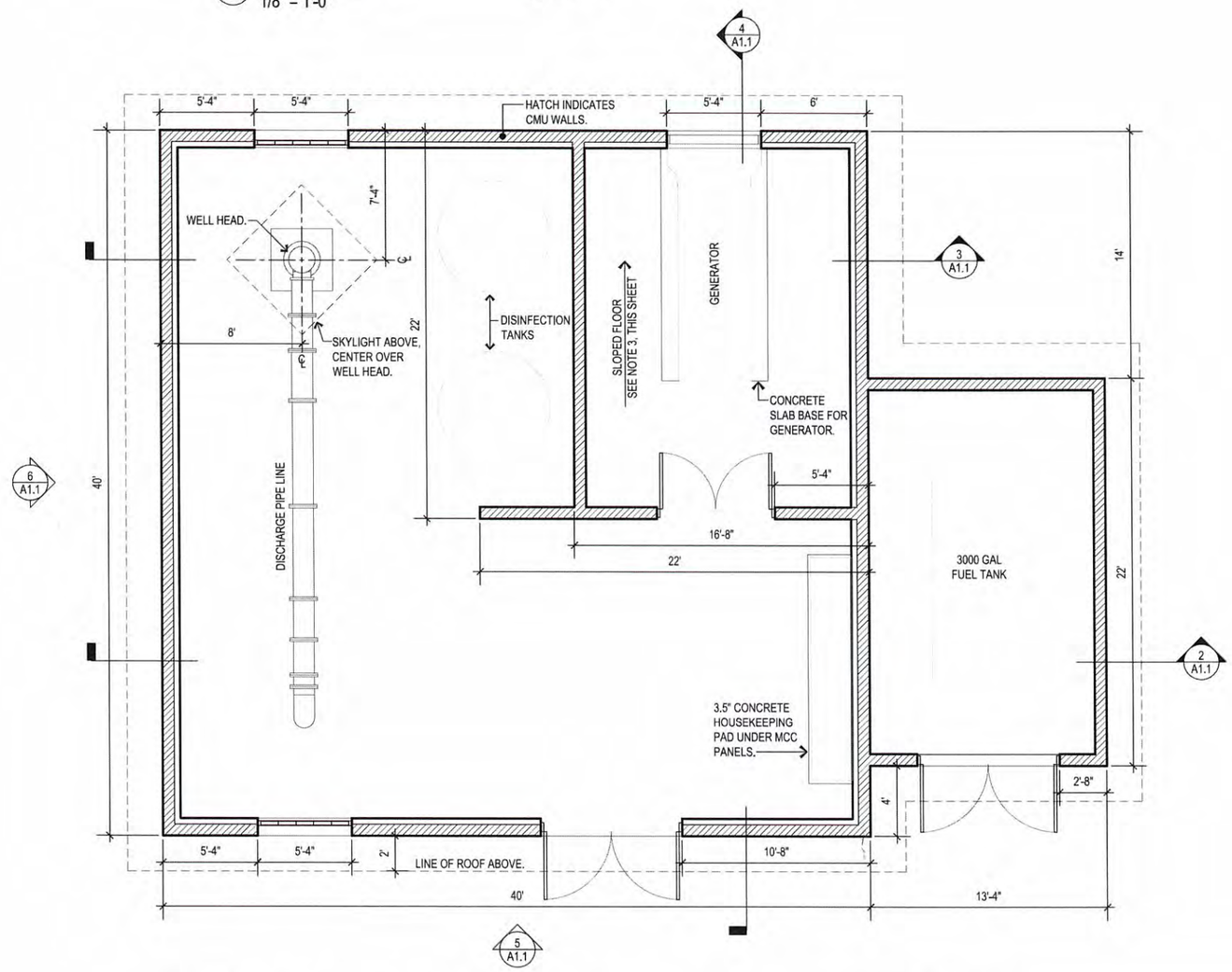
4 BUILDING SECTION
1/8" = 1'-0"



3 BUILDING SECTION
1/8" = 1'-0"



2 BUILDING SECTION
1/8" = 1'-0"



1 FIRST FLOOR PLAN
1/4" = 1'-0"

FIGURE 4

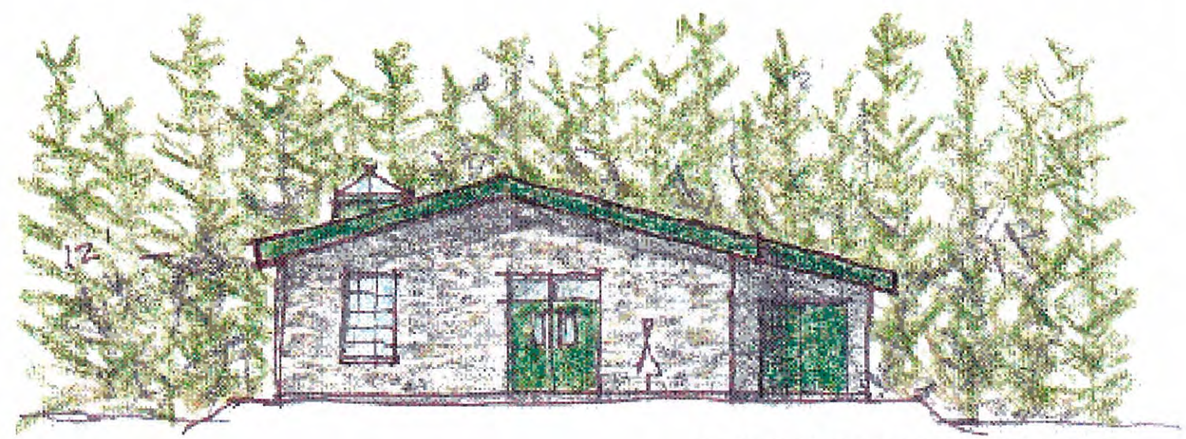
ANCHORAGE WATER & WASTEWATER UTILITY
CAMPBELL TRACT GROUNDWATER PRODUCTION WELL

WELL HOUSE PLAN

JOB No. 1008634.030101 TIME: 09-MAY-2011 12:13 FILE: D:\CAD\Projs\wwu\High Production Water Well\Water Well\Environmental Assesment\5-9-2011 Env Assesment\dref\FIG04 - Well House Plan.DGN

PERSPECTIVE VIEW (3-D MODEL)

PERSPECTIVE VIEW LOOKING UP DRIVEWAY TO PRV FACILITY



ARTIST RENDERING OF NEW WELL HOUSE

FIGURE 5

ANCHORAGE WATER & WASTEWATER UTILITY
CAMPBELL TRACT GROUNDWATER PRODUCTION WELL

WELL HOUSE EXTERIOR VIEW

JOB No. 1006634.030101 TIME: 09-MAY-2011 12:11 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\Environmental Assesment\15-9-2011 Env Assesment\draft\FIG05 - Well House Exterior View.DGN

The well house would sit on a 50-foot by 50-foot paved pad with appendages to the east and south, covering an estimated 0.11 acres. This design incorporates the existing pad and driveway, and limits new pad construction to approximately 4,000 square feet to accommodate the well house and required access/maneuvering area.

Site development would require removal of approximately 100 black spruce trees and five birch trees, along with approximately 43 dead or dying spruce trees. AWWU's drilling and construction contractors would employ best efforts to prevent the spread of invasive, non-native plants by washing the tires and undercarriage of vehicles before they enter the construction area. An additional 0.08 acres (10 feet around the permanent ROW) may be disturbed during construction, but would be restored with natural vegetation when construction is complete.

During Phase II, construction vehicles/equipment transported to and used on the site would include: a drill rig; crane to set the pump; flatbed trailers delivering the well casing, pump column sections, electrical equipment, engine generator, and miscellaneous equipment and supplies; and forklifts to move pipe and ancillary equipment and supplies on site. Drilling and construction equipment and supplies would be stored on the proposed site, the existing PRV ROW, or on existing facilities (drilling contractor's shop) outside Campbell Tract.

A work force ranging from two to 15 people would be on site, depending on the work in progress. Site workers would be required to avoid disturbing wildlife except where personal safety is an issue. Food and garbage would be managed to avoid attracting wildlife. It is expected that vehicle traffic and parking would be limited to the immediate vicinity of the existing PRV facility. Parking in BLM parking lots would be limited to a few vehicles for short periods of time. It is estimated that, at peak workforce, one or two vehicles might be required to park nearby for up to 5 days.

When operational, the site would not be manned on a regular basis; it is anticipated that AWWU personnel would visit the site two times per week. Remote control of the facility would be accomplished through the AWWU SCADA system, using the existing communications antenna located along the PRV facility access road.

Access for operation and maintenance (O&M) would be by existing roads. For periodic preventive and/or emergency maintenance, O&M staff would be present, as needed, for up to several days. Vehicles would be fueled offsite. The required dilute chlorine solution would be manufactured offsite and trucked to the site by AWWU personnel approximately once a month. The stand-by generator diesel storage tank would be refueled by a commercial fuel distributor, as needed. Based on AWWU historical records for similar facilities, the frequency of refueling is expected to be less than one time per year.

2.1.3 Mitigation

AWWU has integrated a number of mitigation measures into their proposed plan. Foremost is the entire pre-testing phase and test well. The pretesting phase includes data gathering that included conducting an inventory of recorded private and municipal wells within a 3-mile radius of the proposed test well. Information collected (as practicably available) includes well location,

depth, drilling log, water level, production data, water quality information, and assumed use. The well data is being incorporated into an established model to estimate potential production and drawdown of the test well.

During the testing phase of the test well, up to two observation wells will be monitored to calibrate the drawdown profile of the computer model. Other observation wells within a 1- to 2-mile radius would also be monitored, as allowed by private well owners. At least one BLM well near the administration building would be monitored during the pump testing period, as well as two existing AWWU wells in the vicinity. The first (Well 13) is located approximately 3,100 feet away from the test well; the second (Well 29 - Service High), is located approximately 8,000 feet away. As practicable, AWWU would monitor these observation wells as follows: for 1 week before the well test to establish baseline conditions; during the well test; and for 1 week after the test. At the observation wells, water levels would be monitored using pressure transducers and automated data loggers, with periodic manual checking using a manual electric probe.

Data obtained during the testing period will be used to calibrate the predicted drawdown model. A decision to move forward with the final GP well would be based on: projected impacts, if any, to existing nearby wells; production capacity of the well; and water quality of the groundwater to be produced from the permanent well. The overall objective of Phase I is to diligently assess potential impacts to the groundwater resource, and to determine the quantity and quality of groundwater potentially producible at that specific location. The purpose of monitoring the aquifer at observation wells is to determine if there is the potential to adversely affect the ability of other wells to produce water. Some potential impacts can be mitigated by design or operation (e.g., deepen production well or reduce draw). After design and operation measures have been factored in, if appreciable impacts are still expected, AWWU would not proceed directly with Phase II.

As supported by testing and modeling, during start up of Phase II, AWWU would again monitor the observation wells to identify impacts to the regional groundwater resource. In the event that impacts occur that were not predicted during research, modeling, testing, and re-modeling, AWWU would develop a plan to appropriately mitigate impacts associated with production. To be effective, mitigation measures would be developed and implemented on a case-by-case basis, but could include reducing draw (volume, rate, or frequency) of the production well, improving wells, or providing options for affected well owners to connect to the public distribution system.

AWWU has initiated stakeholder engagement, as described in Section 1.5. A fact sheet has been prepared and distributed, and a website has been established for information exchange with the public (www.CampbellTractWell.org). AWWU has committed to sharing results of the test well and planned production well development with stakeholders after Phase I tests and modeling are completed and before commencement of Phase II development.

Other mitigation plans proposed by AWWU are summarized below:

- Siting adjacent to existing related infrastructure (PRV) and use of existing PRV pad and access road to the maximum practicable extent.

- Project drilling and construction contractors would employ practices to ensure that all construction vehicles carry no invasive, non-native plants by washing the tires and the undercarriage of vehicles before they enter the project area.
- AWWU will require drilling and construction contractors to comply with the Municipality of Anchorage Standard Specifications (MASS 2009) to ensure compliance with applicable laws and regulations
- A spill prevention plan and general waste management plan would be required from the drilling and construction contractors to be selected in the future. The Spill Prevention, Control and Countermeasure (SPCC) Plan would meet the requirements of 40 CFR 112. This would include placing absorbent pads under equipment to catch spills and leaks. The SPCC Plan would be developed to meet federal regulations. MOA project contractors also follow standard municipal specifications for work. Waste management plans will be required of contractors, and would be submitted to BLM for review 2 weeks prior to start of related work.
- A stormwater pollution prevention and erosion control plan and dust control plan would be required of drilling and/or construction contractors (to be selected in the future), as described in the MOA Standard Specifications (MASS 2009; General Provisions, pages 21 through 23). Daily inspection of the work would be performed by AWWU representatives.
- During drilling and construction (Phase I and Phase II), a safety plan would be in place. If requested by the BLM, AWWU would place a sign near the entrance that briefly describes the project and related activities, to alert visitors entering the CTF.
- If requested by the BLM, the new CTF observation well would be cut off and closed below the surface to avoid obstructing surface use (e.g., snow plowing).
- Site workers would be required to avoid disturbing wildlife except where personal safety is an issue. Food and garbage would be managed to avoid attracting wildlife.
- Where practicable, overburden that is removed during grading or excavation would be stockpiled on site for use in restoring disturbed areas. Felled trees would be hauled offsite. All other materials would be hauled off site for disposal. Non-paved areas disturbed during construction would be re-vegetated with native plants and materials, as approved by the BLM. Final site stabilization would follow standard MOA specifications (MASS 2009), unless otherwise required by the BLM.

2.2 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

The proposed GP well at the CTF is needed for increased flexibility in meeting water supply needs in the MOA, particularly in South and Southwest Anchorage in the summer months. Current and future water needs in the MOA were described in the 2005 Anchorage Water Master Plan (HDR, 2005) prepared for AWWU. Various alternatives for increasing supply were evaluated, including upgrade of the Eklutna Water Supply and the Ship Creek Water Treatment Facility and improvement/expansion of the groundwater supply. AWWU is limited in its conveyance capacity to transfer water from the Eklutna and Ship Creek sources (located in the northeastern portion of the MOA) to south Anchorage. One identified solution to this limitation is increasing utilization of groundwater in South and Southwest Anchorage.

The 2006 Well Field Analysis completed for the AWWU (MWH, 2006) evaluated existing hydrogeologic information and recommended various potential well sites including the easternmost Campbell site. In general, the easternmost locations are favored because water can be pumped from higher elevation, reducing pumping requirements. As a result, other identified sites are not considered to have the same potential for meeting identified water needs in South and Southwest Anchorage, and are not considered further at this time.

Within the Campbell Creek area, locating a new GP well on the CTF has the advantage of proximity to existing water supply infrastructure at the PRV facility. Initially, a layout for the new facility adjacent to the PRV facility was proposed to mitigate visual impacts along the BLM road. This layout was subsequently modified due to the potential for future visual impacts to a proposed new access road to the CTF (i.e., eastward extension of 68th Avenue) that may be constructed in the future.

Consideration was also given to siting the proposed project adjacent to other facilities on the CTF, including the Campbell Creek Science Center and the BLM Administrative Offices. These locations were not analyzed in detail due to the increased need for infrastructure (e.g., connection to the existing water distribution system; natural gas, 3-phase power), access for O&M, and additional disturbance that would be associated with construction and operation of a facility in these locations. To avoid recreational conflicts, no other general CTF locations were considered.

Nearby sites were also considered but not pursued for AWWU GP well facility development. Land to the north of the CTF is owned by the MOA HLB, and land to the north, east, and south of the CTF are FNBP lands, with various land use restrictions (HLB, 2010; Agnew::Beck, 2006; MOA, 1985). Elmore Road adjoins the western boundary of the CTF, with privately owned land, primarily residential development, west of the roadway, which does not accommodate the proposed project. The site in the CTF adjacent to the PRV facility was deemed the most favorable for meeting AWWU water supply needs.

2.3 NO-ACTION ALTERNATIVE

Council of Environmental Quality (CEQ) regulations for implementing NEPA require federal agencies to explore and objectively evaluate all reasonable alternatives to the preferred alternative.

No other practicable alternatives were identified that would be less environmentally damaging. This determination was based on the likelihood of an adequate groundwater resource in the upper Campbell Creek drainage, the limited availability of suitable land in the area, and the design and siting criteria described in Section 2.1. Analysis of the No-Action Alternative is required under NEPA, and is the only alternative to the proposed project that is evaluated in this EA.

Under the No Action Alternative, AWWU would not receive an authorization to complete and test an exploratory well or construct a GP well facility on CTF land. The municipal water supply would remain insufficient to meet future peak demands in South and Southwest Anchorage.

3.0 AFFECTED ENVIRONMENT

This section describes the resources and values affected by the Proposed Action and No Action Alternative. The discussion focuses on project-specific issues identified for consideration in this EA. In addition to technical review of project consequences, AWWU has undertaken an outreach program to facilitate public awareness and solicit public comment on the proposed project. The primary issue of concern identified by the public was potential effect of drawdown by the GP well on other wells and water resources in the area.

3.1 ENVIRONMENTAL AUTHORITIES AND RESOURCES

The following resources are either present in the project area or must be evaluated by requirements of various laws or EOs:

- Threatened and Endangered Species
- Fish and Wildlife
- Air Quality
- Cultural Resources
- Subsistence
- Environmental Justice
- Human Health and Safety
- Water Resources
- Vegetation and Wetlands
- Visual Resources
- Recreation
- Solid and Hazardous Wastes
- Lands with Wilderness Characteristics

3.1.1 Threatened and Endangered Species

Under the Threatened and Endangered Species Act of 1973, as amended, the BLM is required to assess potential impact to threatened or endangered species. There are no records that an endangered or threatened species is present in the CTF, or that implementation of the proposed action would jeopardize the continued existence of a listed or proposed (to be listed) threatened or endangered species or related critical habitat (USBLM, 2007b).

3.1.2 Fish and Wildlife

Campbell Tract provides habitat for most of the terrestrial animal species found in South-central Alaska, including: moose, black and brown bear, coyote, beaver, red fox, porcupine, snowshoe hares, red squirrels, and several species of microtine rodents. Twenty bird species are present year round and an additional 21 migrant species breed in the CTF, including the forest habitat along Elmore Road (USBLM, 2009b). At the proposed project site, proximity to the road and trailhead activity may diminish the quality of habitat for some animals.

3.1.3 Air Quality

Air quality in the CTF area is generally good and is expected to remain below applicable ambient air quality standards and increments (DOWL, 2005a).

3.1.4 Cultural Resources

Federal actions require review under Section 106 of the National Historic Preservation Act (NHPA) of 1966. The Section 106 process must be complete before a ROW grant is issued.

No cultural resources are known to exist in the vicinity of the Area of Potential Effect (APE). There are documented World War Two historic resources within the boundaries of the CTF (ANC-01385), some of which are located within 1 mile of the APE. No other cultural resources are known to exist within 1 mile of the APE, or within the viewshed of the APE, including on BLM land, private lands, or HLB property. A survey conducted for the Elmore Road extension ROW found no cultural resources along the western boundary of the CTF and immediately west of the proposed project site (DOWL, 2005a and 2005b). A survey for the adjacent AWWU PRV APE and its vicinity was conducted in 2007, and no cultural resources were found (Redding, 2007). Adjacent HLB lands were assessed in support of the Bragaw extension, and no formally recognized historical landmarks were found (Agnew::Beck, 2006).

3.1.5 Subsistence

The Campbell Tract lands are Federal Public Lands within the meaning of ANILCA 102(3), and under the jurisdiction of the Federal Subsistence Board, and are subject to the Subsistence Management Regulations for the Harvest of Wildlife, Fish, and Shellfish on Federal Public Lands in Alaska. In accordance with the regulations, the Campbell Tract Facility falls within the Anchorage Management Area (GMU 14C) which is closed to the subsistence taking of wildlife. Relevant to the taking of fish and shellfish on general domain lands managed by the BLM, regulations apply only on non-navigable waters. Federal subsistence fishing regulations for the remainder portion of Cook Inlet only allow harvest of fish other than salmon, Dolly Varden, trout, char, smelt, grayling, and burbot.

3.1.6 Environmental Justice

EO 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations. Based on the 2000 U.S. Census statistics, there are no disproportionate distributions of low-income or minority populations in South and Southwest Anchorage, the area expected to be most affected by the proposed project (CH2M Hill, 2007).

3.1.7 Human Health and Safety

AWWU has identified a need for increasing public water supply capabilities, particularly in the underserved demand areas of South and Southwest Anchorage, as well as a need to consider emergency water supplies in the event the Eklutna water supply is compromised. Studies showed that new groundwater wells would be the most appropriate means of increasing water supply and

operational flexibility. The Campbell Creek area was identified as an advantageous location. Phase I of the proposed project would occur on public lands of the CTF (test well and observation well) and Kasuun Elementary School (observation well). Phase II would occur primarily on public lands of the CTF, with some off site well monitoring. The test well and the proposed new production well facilities would have restricted access. The observation wells are in more exposed locations, frequented by members of the public.

3.1.8 Water Resources

Water resources in areas potentially affected by the project are present as surface water – creeks, lakes, and ponds – as well as groundwater. The South Fork of Campbell Creek and North Fork of Little Campbell Creek cross the CTF near the northern and southern boundaries, respectively. There are no lakes or significant ponds on the CTF, but there are several lakes and ponds in the Campbell Creek watershed outside the CTF. Campbell Creek has a drainage area of approximately 70 square miles, from the edge of the Chugach Mountains to Cook Inlet. Near its mouth, Campbell Creek was dammed to create Campbell Lake. Little Campbell Creek, a major tributary to Campbell Creek, is formed by two main forks - North Fork and SF - which drain about 19 square miles of the Campbell Creek watershed (WMS, 2007).

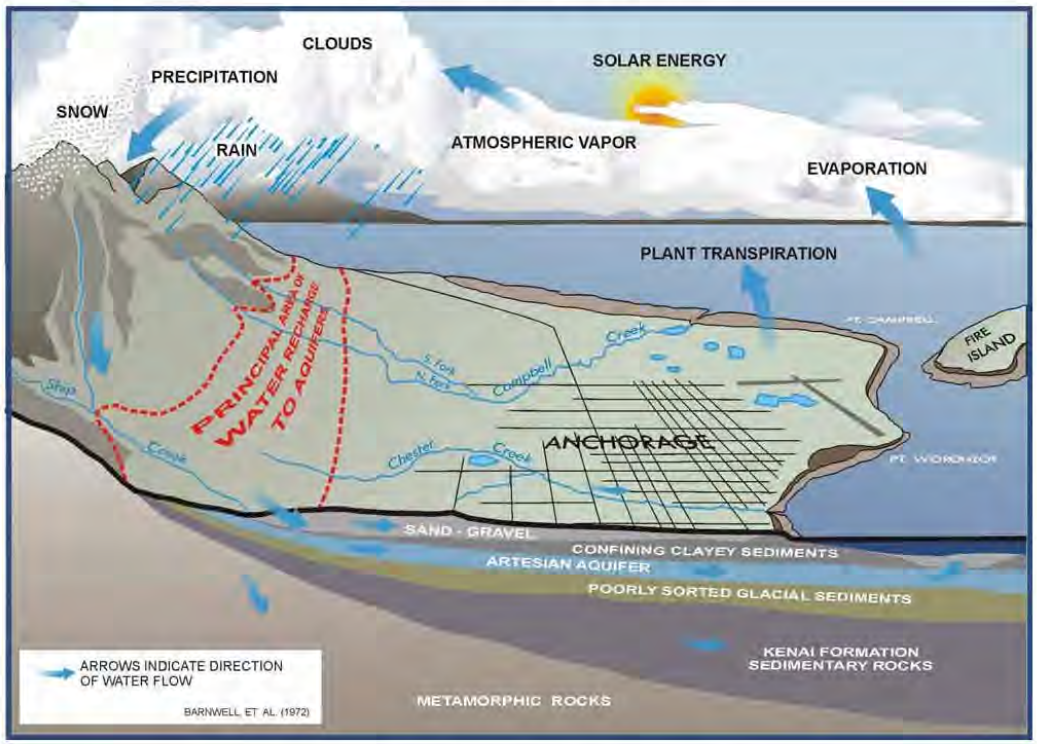
The Dowling tributary of SF Campbell Creek is located approximately 500 feet north of the proposed discharge location of well test water. The tributary begins approximately 0.7 miles upstream of its confluence with SF Campbell Creek, and approximately 1.7 miles downstream from a U.S. Geological Survey (USGS) stream gage station. Long-term stream gage records are available, and are detailed further in Section 4.1.8.

Groundwater is contained in saturated zones (aquifers) of unconsolidated surficial deposits and metamorphic bedrock underlying Hillside areas. Groundwater flows toward Cook Inlet from primary recharge areas in the Chugach Mountains and other upland areas of the coastal plain. Much of the flow discharges directly into Cook Inlet.

In the Anchorage Bowl, a shallow unconfined aquifer is present which receives regular input from runoff and surface water (lakes and creeks). The unconfined aquifer is hydraulically connected to the many streams and lakes in Anchorage. Campbell Creek and its tributaries provide large quantities of water to the unconfined aquifer as they cross their alluvial fans which are the principal recharge areas, as shown on **Figure 6**.

The unconfined aquifer is also recharged over wide areas of the Anchorage Bowl by direct infiltration of precipitation. Downstream of the recharge area, the creeks gain water back from the aquifer, which discharges large quantities of water to creeks, lakes, wetlands and storm drains that ultimately flow to the creeks (Brabets et al., 1999).

Figure 6 Anchorage Area Aquifers



(Source: MWH, 2006)

A lower confined aquifer forms the Anchorage artesian system below the shallow unconfined aquifer. The Bootlegger Cove Formation (BCF) acts as a confining layer to the Anchorage artesian system by limiting surface water infiltration and downward flow, from both the upper unconfined aquifer and surface water infiltration. The BCF is more than 100 feet thick near the coast, becoming progressively thinner toward the mountain front, and vanishing along an approximate line from middle Fort Richardson to the south-southeast (Brabets et al., 1999).

The confined aquifer, ranging from 100 to 700 feet below land surface, historically has been the principal aquifer from which AWWU draws its well water (MWH, 2006). At its peak in 1985, public water supply wells in Anchorage produced more than 10 mgd from 13 wells. During this time of peak production, the potentiometric surface of the confined aquifer declined approximately 50 feet in the lower part of the Ship Creek basin (Moran and Galloway, 2006; Brabets et al., 1999). Groundwater levels in some areas subsequently recovered due to reduced extraction (Moran and Galloway, 2006).

3.1.8.1 Surface Water Interactions

Surface water interactions with groundwater in the Anchorage Bowl have not been well quantified. The potentiometric surface of the confined (lower) aquifer demonstrates little interaction between surface water and groundwater (Moran and Galloway, 2006). Whether pumping from the underlying confined aquifer induces significant downward leakage through

the confining layer cannot be readily deduced, because the leakage is small relative to the ability of the unconfined aquifer to capture water from streams and lakes (Brabets et al., 1999).

It is estimated that 75 mgd of water recharge the aquifers and artesian systems of the Anchorage Bowl (Moran and Galloway, 2006). Over the long term, under natural conditions, the average discharge is approximately equal to the average recharge (Moran and Galloway, 2006).

3.1.8.2 Ground Water Quality

The major influences on groundwater quality are mineral composition of soils and rocks and urban contaminants (Glass et al., 2004). Naturally occurring iron, manganese, and arsenic are the most common water quality problems in the Anchorage Bowl (MOA, 2004). The most widespread anthropogenic contaminant is nitrate from wastewater systems, but may also include petroleum products, fertilizers, and pesticides.

The shallow, unconfined perched aquifer is in contact with lakes and creeks, subject to groundwater contamination from these surface water sources (MWH, 2006). Groundwater pollution in Anchorage may come from infiltration of surface runoff that has been contaminated (Ashley and Smith, 1999). Human activities introduce contaminants, increasing quantities of undesirable chemicals that can have negative effects on local wildlife, vegetation, and communities. These interactions may lead to a decrease in groundwater quality over time.

The quality of Anchorage-area groundwater is generally considered to be good (Moran and Galloway, 2006). However, isolated areas of contamination due to oil and fuel spills and waste-disposal sites have introduced contaminants into Anchorage-area groundwater. Leachate from septic systems, landfills, and other disposal sites has also introduced coliform bacteria and increased concentrations of iron, manganese, dissolved organic carbon, and chloride into local groundwater sources (Moran and Galloway, 2006).

The BLM owns and operates a public water system (transient/non-community) in the CTF, consisting of three wells that supply year-round water needs the Campbell Creek Science Center and meets some of the needs for the other BLM facilities located within the CTF (USBLM, 2007a). Well depths are up to 349 feet below ground surface. Based on records provided by the BLM, the produced groundwater typically meets ADEC public water system requirements. In 2001, ADEC rated the existing Class A BLM water system as having a low overall vulnerability to contamination. Although a public water supply line was recently constructed from the PRV facility to the BLM administration building, the two groundwater wells at that site are still in use for irrigation water supply.

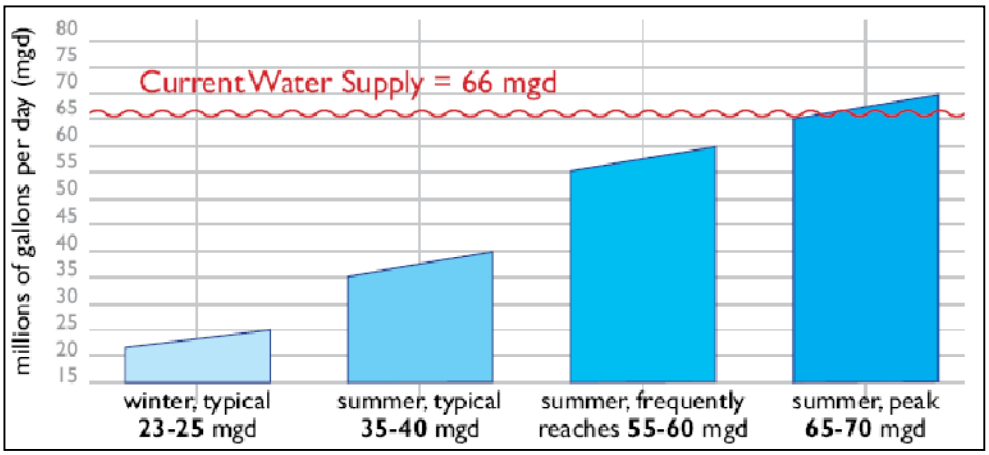
3.1.8.3 Anchorage Water Supply

In 2002, the AWWU delivered an average 27.6 mgd of water to more than 52,600 customers. About 83 percent of this was surface water from Eklutna Lake (79 percent) and Ship Creek (4 percent). The remaining 17 percent (4.7 mgd) was pumped from local aquifers. Private domestic wells contributed approximately 8.7 mgd (estimated) of ground water for a total 36.3 mgd of

water to meet demand in Anchorage in 2002 (Moran and Galloway, 2006). There are no sole source aquifer recharge areas in Anchorage (ADEC, 2010).

As the population grows, the demand for water increases. The 2005 Water Master Plan estimates that, in 2024, the average daily requirements for AWWU will be 44.7 mgd, and the peak average water demand will be 60.2 mgd. **Figure 7** shows the most recent estimates of water supply and demand in the MOA (AWWU, 2010).

Figure 7 2009 Water Demand for the Municipality of Anchorage



Source: AWWU, 2010

According to the 2005 Water Master Plan, Eklutna Lake could provide up to 100 mgd, but is currently limited by the 35 mgd capacity of the Eklutna Water Treatment Facility. Expansion of the treatment facility would require substantial capital investment and would consume water currently used for generation of electricity at the Eklutna power plant. Ship Creek supplies are limited by water rights and by seasonal availability, ranging from 10.5 mgd in the winter to a maximum of 24 mgd in the summer. During periods of peak demand, AWWU can provide up to approximately 15.5 mgd from municipal groundwater wells. The 2005 Water Master Plan recommends further development of Anchorage groundwater supplies to augment surface water supplies and diversify AWWU's water supply network (HDR, 2005).

Sustainable yield can be defined as the maximum average annual amount that can be pumped from an aquifer without adverse effects. Such effects include excessive drawdown in wells, declining streamflow and associated habitat impacts, saltwater intrusion, and possibly downward migration of contaminants and land subsidence (MWH, 2006). Based on previous studies (Barnwell et al., 1972), and accounting for other users, the 2005 Water Master Plan assumes the potential groundwater yield available for use by the AWWU is 22 to 23 mgd (HDR, 2005). No recent work quantitatively updating the original estimates reported in the 2005 Water Master Plan was identified.

3.1.9 Vegetation and Wetlands

The vicinity of the project consists of vegetation commonly found in the general area. A portion of the proposed project area was determined to be a forested wetland mosaic. Details of the wetlands delineation are included in the 404 permit issued by the Corps and provided in **Appendix A**.

Soils in the proposed discharge area, approximately 1,000 feet northeast of the PRV facility, are composed of very poorly-drained Doroshin peats, typically supporting stunted black spruce woodland and open forest, mixed paper birch-spruce forest, and bluejoint reedgrass meadows. Doroshin peats are hydric, slightly-sloped with frequent ponding, and have very slow infiltration rates (USDA, 2001). The proposed discharge area is classified as a Class A wetland (MOA, 2008), consisting of freshwater forested/shrub and freshwater emergent wetlands (USFWS, 2011).

3.1.9.1 General Characteristics

Forested areas in the vicinity consist primarily of black spruce, white spruce, paper birch, alder and willow. The understory consists of moss, grasses and other herbaceous broadleaf plants. All species are commonly found in the general area (USBLM, 2000). The CTF is mostly wooded land, adjoined to the north, east, and south by FNBP and MOA HLB lands – collectively a total of approximately 5,000 contiguous acres of forested landscape (USBLM, 2009c).

3.1.9.2 Invasive, Non-Native Plants

In 2006, an invasive non-native plant survey was conducted at Campbell Tract, with subsequent surveys in 2008, 2009, and 2010. There has been an observed 150 percent increase from 20 invasive species in 2006 to 50 invasive species in 2010 (USBLM, 2011).

3.1.10 Visual Resources

No visual resource inventory has been conducted for the CTF. The lands do, however, fall under the purview of the Ring of Fire Management Plan. Visual Resource Management (VRM) direction for the CTF lands fall under VRM Class IV objective that "***provides for management activities that would make major modifications to the existing character of the landscape; change may be very high and while reflecting the basic elements of the landscape, may dominate the view***" (USBLM, 2009c). None the less, the CTF is known for its natural setting, especially considering other developed areas of the MOA.

3.1.11 Recreation

The CTF is an SRMA, designed for non-motorized recreational use, and its proximity to urban development places high demand on the site from a variety of users. Recreational users of the CTF are primarily residents of Anchorage and nearby communities. Recreation management is directed by the CTF Management Plan (USBLM, 1988).

Popular year round recreational activities include walking, running, mountain-biking, skiing, snowshoeing, dog-mushing, and horseback riding through the CTF. Many users are nearby residents who use the area regularly for exercise. Regular competitive events at CTF include the Nordic Ski Club Tour of Anchorage and the World Sled Dog Championship Races.

Most recreation occurs on trails that were developed on old tank roads and airplane taxiways. There are approximately 12 miles of developed trails on CTF, some of which link to a wider trail system on the adjoining FNBP. The most recent (2010) Campbell Tract annual visitation was 131,608 people. Access is gained from two formal on-site trailheads and four trails entering from the FNBP. Established trailheads with parking include the Smoke Jumper Trailhead located at the main CTF AFO complex entrance, and the Campbell Airstrip Trailhead located at Mile 1.1 on Campbell Airstrip Road (USBLM, 2009b).

3.1.12 Solid and Hazardous Wastes

Three underground storage tanks were removed from the CTF in the early 1990s, from a site on the edge of the flightline (USBLM, pers. comm., 2010). Contaminated dirt was found in the area and along supply lines, with soil removed in this area to mitigate the contamination (DOWL, 2005a). In addition, soil surrounding a dry well in the vehicle maintenance shop near the BLM office building was found to have motor oil contamination. The well received liquids from five floor drains until 2003. Dry well sludge was contaminated with several metals, a polychlorinated biphenyls (Aroclor-1254) and diesel-range organics. Arsenic and chromium in perimeter soils exceeded ADEC cleanup levels, but was attributed to the natural occurrences of these metals in soil (URS, 2004). No other contaminated sites were identified on the CTF.[2]

A number of public drinking water protection areas have been designated by ADEC, including the three wells at the CTF, which suggests there are no contaminated sites in the area.[3]

3.1.13 Lands with Wilderness Characteristics

In conformance with Secretarial Order 3310, proposed actions must be reviewed for the following Wilderness Characteristics:

- Size – roadless areas of over 5,000 acres of contiguous BLM lands.
- Naturalness – affected primarily by the forces of nature, with the works of humans substantially unnoticeable to the average visitor.
- Outstanding opportunities for solitude or a primitive and unconfined type of recreation.
- Supplemental values - if size, naturalness, and solitude/outstanding opportunities are met, then consider if the area contains ecological, geological, or other features of scientific, educational, scenic, or historical value. Supplemental values are not required to be present in order to classify an area as Lands with Wilderness Characteristics.

The proposed project lands contain none of the above listed wilderness characteristics.

[2] ADEC Contaminated Sites and Leaking Underground Storage Tank location maps available at http://www.dec.state.ak.us/spar/csp/db_search.htm
[3] A map of public drinking water protection areas is available at http://www.arcgis.com/home/webmap/print.htm.

4.0 ENVIRONMENTAL CONSEQUENCES

Under CFR 1508.8, NEPA analyses must address direct and indirect effects of the proposed action and alternatives on the quality of the human environment. Additionally, cumulative effects must be analyzed. Cumulative effects are the impacts resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

4.1 EFFECTS OF THE PROPOSED ACTION

Under this alternative, the BLM-AFO would issue a short-term ROW grant for the Phase I activities and a permanent ROW grant for installation of a new GP well and ancillary facilities. Potential impacts to the environment would be minimized due to site location, existing facilities, and planned site controls and mitigation, as discussed below.

As described in Section 3.1, resources that are not present in the affected area, and for which no effects from the proposed action are expected include:

- Threatened and Endangered Species
- Lands with Wilderness Characteristics

Resources that are present in the area, but not expected to be affected to a degree that requires detailed analysis are discussed first, and include:

- Fish and Wildlife
- Air Quality
- Cultural Resources
- Subsistence
- Environmental Justice
- Human Health and Safety

Resources that are identified as present, with potential for impacts requiring further analysis are then discussed, and include:

- Water Resources
- Vegetation and Wetlands
- Visual Resources
- Recreation
- Solid and Hazardous Wastes

4.1.1 Threatened and Endangered Species

No Threatened and Endangered Species are present in the affected area, therefore; no effects to Threatened and Endangered Species are expected. No further analysis is necessary at this time.

4.1.2 Fish and Wildlife

Effects from the project include short-term disturbance during construction and periodic maintenance during operations. Routine visits to the site should have no more impact on wildlife than from hikers, bikers, and skiers in the CTF. There would be a small loss (approximately 0.11 acres) of wildlife habitat that is common in Campbell Tract and the adjacent HLB lands and FNBP. Potential secondary effects to wetland and riparian habitat are addressed under those resources. No effect on Essential Fish Habitat is expected; the BLM AFO wildlife biologist will make a determination prior to commencement of project activities.

4.1.3 Air Quality

The BLM is required to consider the effects of greenhouse gas emissions associated with BLM-authorized activities and to ensure that BLM activities, programs, and projects comply with applicable air quality standards (USBLM, 2009a; CEQ, 2010). Air quality is determined by atmospheric emissions and pollutants, and includes noise and visibility.

Based on the small number and size of emission sources (e.g., drill rig, construction vehicles, and pumps) and relatively short duration, emissions from construction activity are considered minor, particularly when compared with the emissions from the nearby traffic on Elmore Road. Some dust may be generated during construction, but is expected to be fairly minor due to the small area disturbed prior to paving, use of existing roads and pads for access and staging, and the required dust control plans.[4]

After construction, most operational equipment would be electric-powered. Small, intermittent impacts on air quality could come from operation of the stand-by diesel generator, but this is expected to be minor and temporary. Based on historical records, it is estimated that the generator would be run approximately 20 hours a year. Running the standby generator an estimated 20 hours a year would result in emissions of approximately 12.6 metric tons per year of carbon dioxide (CO_2) equivalents (i.e., CO_2, methane, and nitrogen oxides). Based on the type and limited use of equipment, emissions from the proposed project would fall below the threshold requiring an air quality permit from ADEC; however, a preapproved emission limit would be requested.

Noise generated by the project would be most obvious during drilling and construction. Drilling is short term, and the rig operates below the 80 decibel limit defined by the MOA Noise Ordinance. To roughly simulate impacts of operations, AWWU collected noise measurements at a similar facility (Well 7) on Denali and 40th Street in Anchorage. At both the east wall of the well house (near the pump) and 50 feet east of the well house, noise levels were within the range of traffic noise measured on the sidewalk along Denali Street (58 to 72 decibels). There would be an increase in noise when the standby generator is operating and during pump startup; however, it would be limited to approximately 0.5 hours a month for O&M and periods when the electric power is not available, estimated for analysis purposes at 14 hours a year.

[4] Under the 2009 MASS: For dust and mud control, the Contractor shall maintain all excavations, embankments, stockpiles, access roads, waste areas, borrow areas, and all other Work areas free from excess dust and mud to avoid causing a hazard or nuisance to others.

In summary, impacts to air quality from construction and operation of the proposed GP well and ancillary facilities are expected to be minor with no appreciable effect on long term air quality, including noise, in the project area or the region. No further analysis of proposed project impacts on air quality is necessary at this time.

4.1.4 Cultural Resources

Based upon previous surveys of the APE and adjacent areas, as well as previous disturbance from the adjacent AWWU ROW, the potential for finding cultural resources in the project area is low. The BLM AFO archaeologist will make a determination in accordance with Section 106 prior to commencement of project activities.

4.1.5 Subsistence

The proposed action would not impact fisheries resources available for subsistence use. The proposed action would not alter the distribution, migration, or location of harvestable fisheries resource and would not create any legal or physical barriers that would limit access by subsistence users of the fisheries resources. Under current federal subsistence regulations, the area is closed to the hunting of wildlife. There are no harvestable wildlife resources. The proposed action would not alter the distribution, migration, or location of wildlife resources. The proposed action would not create any legal or physical barriers that would limit subsistence harvest and access. The proposed action would not appreciably impact any other harvestable resources such as wood, water, berries, or vegetation.

In summary, the proposed action would not significantly restrict federal subsistence uses, decrease the abundance of federal subsistence resources, alter the distribution or movement of federal subsistence resources, or limit qualified federal subsistence users access from currently existing conditions.

4.1.6 Environmental Justice

As evaluated under EO 12898, no disproportionately high and adverse human health or environmental effect on minority or low income communities is expected, and no further analysis of project impacts on environmental justice is necessary at this time.

4.1.7 Human Health and Safety

AWWU would have safety measures in place to restrict people from the construction sites. The GP well would have restricted access during construction and operations. The GP well would produce additional water supply and increase flexibility in meeting demand for potable water and providing additional contingency for firefighting in the MOA. No significant impacts to human health and safety are expected; therefore, no further analysis of project impacts on human helath and safety is necessary at this time.

4.1.8 Water Resources

Water supply for well drilling and testing would come from a hydrant located at the entrance of Campbell Tract, or would be trucked from the drilling contractors shop. No direct impact to surface waters or CTF water supply is expected from this demand.

The development of groundwater resources has several potential impacts. Groundwater could supplement existing surface water supplies in the MOA, alleviating shortfalls in meeting peak demand in South and Southwest Anchorage, including emergency supply, which would be a positive impact. Drawdown from groundwater pumping could negatively impact wetlands and riparian zones and could reduce production in other local wells (Moran and Galloway, 2006).

Drawdown may occur in an overlying, unconfined aquifer in response to the pumping of an underlying confined aquifer when a semi-permeable confining layer is present between them. This phenomenon has been documented in the Ship Creek area, whereby pumping high volumes of groundwater affected shallow groundwater levels and stream flow in Ship Creek (Moran and Galloway, 2006).

Similar impacts of drawdown could result from withdrawal of groundwater at the proposed GP well. This potential will be evaluated by the proposed site specific research, pre and post test modeling, and evaluation of impacts from the test well and observation well(s) prior to construction of a permanent well. During the testing phase (Phase I), the flow, drawdown, and potential effect on local water wells would be evaluated. Modeling and monitoring would be used to evaluate the long-term productivity of the GPwell and associated effects of pumping on groundwater resources, local wells, wetlands and streams.

Well test water (clean, untreated groundwater) would be discharged offsite to the northeast, approximately 500 feet south of the headwaters of the Dowling tributary of SF Campbell Creek. Although the tributary is well north of the discharge point, potential impacts of the well test water were assessed. Streamflow information is unavailable for the Dowling tributary. However, long-term streamflow data for SF Campbell Creek is available, as noted in Section 3.1.8, and was used to calculate the potential increase in mean monthly discharge, based on the production well test pump rate of 2,000 gpm (4.5 cfs). Assuming the maximum-volume discharge to the creek, (i.e., 4.5 cfs; zero infiltration), the increased streamflows, expressed as percentage influxes, are presented in **Table 1**.

During frozen periods it would be unlikely that the additional water would actually contribute to increased streamflows; water would more likely pond locally and freeze, or overflow along the stream channel above the frozen surface of the creek. If conducted between May and October, the volume of water added to the SF Campbell Creek system would be increased by less than 15 percent.

Table 1 Estimated Impact on Mean Monthly Discharge of SF Campbell Creek

YEAR	Monthly Mean Discharge* (cfs)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean of monthly Discharge	13	9.1	7.5	8.4	34	97	77	62	61	44	26	17
Add 4.5 cfs	17.5	13.6	12	12.9	38.5	101.5	81.5	66.5	65.5	48.5	30.5	21.5
% Difference	34.6%	49.5%	60.0%	53.6%	13.2%	4.6%	5.8%	7.3%	7.4%	10.2%	17.3%	26.5%

*Calculation Period: 7/1/1947 - 9/30/2001

The relatively short distance from the tributary and its confluence with SF Campbell Creek (0.7 miles) provides a reasonable basis for the development of mitigation measures. Given the mitigation measures proposed (temporary hose and impoundment), the relatively flat local topography, and the wetlands vegetation in the area, it is expected that the 4.5 cfs discharge will lose much of its energy, pond in the area of the impoundment, and then move slowly toward the Dowling tributary, similar to conditions during heavy rain events. Additionally, the historic capacity of SF Campbell Creek to carry significantly larger volumes of water than those being proposed indicates that an additional 4.5 cfs would have little impact on the creek or fish habitat.

Proposed mitigation was described in Section 2.1.3. In summary, AWWU would monitor observations to calibrate models, determine baseline conditions, and evaluate impacts of groundwater production on other wells in the area. Some potential impacts could be further mitigated by design or operation (e.g., deepen production well or reduce draw). After design and operation measures have been factored in, if appreciable impacts are still expected, AWWU would not proceed directly with Phase II.

AWWU has initiated stakeholder engagement, as described in Section 1.5. AWWU has committed to sharing results of the test well and planned production well development with stakeholders after Phase I tests and modeling are completed and before commencement of Phase II development.

4.1.9 Vegetation

During Phase I, no vegetation would be cleared, because the test well can be installed within the footprint of the existing PRV facility. The proposed CTF observation well is in an area that has been previously developed, as is the proposed observation well at Kasuun Elementary School.

During Phase II, vegetation would be cleared within the defined 0.11-acre permanent pad ROW. This would involve removal of approximately 100 black spruce trees and five birch trees, as well as approximately 43 dead or dying spruce trees and smaller vegetation and ground cover. During construction, an approximately 0.08-acre area (i.e., 10 feet around the permanent ROW) may be disturbed within the short-term ROW. No space outside the delineated working zone would be disturbed. The dust control plan and erosion control plan described in Section 2.1.3 would mitigate impacts to local vegetation. In completing the project, the work surface of the well

facility pad would be paved. This would increase the impervious area, which may result in small localized changes in runoff, drainage, and local vegetation patterns. During construction, the organic ground cover would be removed and stockpiled where practicable for use in preparing disturbed areas for revegetation. Disturbed areas would be restored with native plants and materials, based on MOA specifications, and as approved by the BLM.[5]

Traffic to the site during construction and during the occasional maintenance checks could have the potential of introducing invasive or undesirable plant species into the proposed project area (USBLM, 2009b). Best Management Practices as outlined in the BLM AK Invasive Species Policy would be implemented to prevent invasive species introduction and spread.[6] Site reclamation activities would be implemented soon after construction to minimize the spread and introduction of new, non-native species. AWWU's drilling contractors would also employ practices to ensure that all construction vehicles carry no invasive, non-native plants by washing the tires and the undercarriage of vehicles before they enter the project area. Additionally, washing equipment to remove material that could contain weed seeds or other propagates would help ensure that equipment is weed and weed seed free.

Based on the widespread occurrence of forested ecosystem in the Anchorage Bowl, the impact of lost vegetation is considered minor. Additionally, impacts to vegetation would be mitigated by proposed measures to decrease the spread of invasive, non-native species and revegetation of the disturbed areas in the construction ROW.

High rates of groundwater withdrawal could result in drawdown of the water table which could cause ecological impacts to surface ecosystems that are dependent on groundwater (Grantham, 1996). For example, some wetlands may be located in ground water discharge zones and riparian communities may be dependent on shallow alluvial aquifers. The transition environment between aquatic and terrestrial ecosystems, wetlands, and riparian zones is complex, and unknown at the site. In general, it is possible that groundwater drawdown could:

- Result in fluctuating levels of the groundwater table in excess of a species limit of tolerance.
- Reduce groundwater discharge to streams and wetlands on a temporary or long term basis.
- Induce recharge of underlying saturated zones derived from drainage of surficial aquifers.
- Change the geomorphology (e.g., subsidence, river channel morphology).
- Alter the geochemical environment beyond a species limit of tolerance.

The extent to which these effects could occur varies widely, based on volume and rate of drawdown and recharge, as well as local conditions (Grantham, 1996).
The proposed groundwater research, modeling, pump testing, monitoring, and mitigation measures (described in Section 2.1.3) are expected to avoid or mitigate appreciable impact on vegetation and vegetation communities.

[5] Mass, 2009: calls for for establishment of a uniform and evenly distributed perennial vegetative cover with a density of seventy percent (70%) of the native background vegetative cover for the area, on unpaved areas when soil disturbing activities have been completed.
[6] BLM AK Invasive Species Policy

4.1.10 Visual Resources

The proposed site is along the western boundary of Campbell Tract, adjacent to a busy roadway, with no scenic vistas. The proposed action would be consistent with the VRM Class IV objective. The general area is forested, with some previous development (e.g., PRV facility; BLM access road). Drilling and construction activities would be visible near the entrance to the CTF.

Visual effects would be mitigated by adding the project next to an existing AWWU facility, and away from trails and primary use areas of Campbell Tract. Phase I activities would occur on the parking lot of the existing PRV facility, with visual impacts minimal and short term. The permanent well house pad and new well house facilities would be visible looking down the existing PRV facility access road from BLM Road, but are otherwise screened by trees and other native vegetation. The Phase II facilities have been sited and designed to minimize visual impact on the public – from both the existing CTF access road and the proposed CTF access road to the north, along the BLM property line. The new well house would be designed so the exterior is compatible with the existing PRV facility and the local environment, with final plans approved by the BLM. Removal of native vegetation would be restricted to the designated ROW, with surrounding vegetation protected and retained for visual screening to the extent practicable. Other disturbed areas would be revegetated, as described in Section 4.1.9 to increase the visual buffer between the facilities and the entrance road to CTF.

4.1.11 Recreation

The proposed project site is adjacent to the existing AWWU PRV facility. Project siting at this location would avoid trails and areas of common recreational use. There would be some disturbance to recreational users due to noise generated during drilling and construction, but this is expected to be short term and temporary. Based on estimates of construction activities, up to two visitor parking spaces could be occupied by project vehicles for a maximum of 5 days. There would also be some visual impact due to a new building, but this would be mitigated by design and siting of the new facilities, as described in Section 4.1.10.

4.1.12 Solid and Hazardous Wastes

The project includes the management of fuel, other petroleum products (e.g., lubricants), and the dilute chlorine solution used in treatment. Drilling fluids (non toxic and non hazardous) would be contained during drilling and hauled offsite; drill cuttings would be used on site as foundation material under the area to be paved or hauled offsite. Fluids could potentially leak from various types of containers, equipment, and vehicles at the work site, but this would be mitigated by use of absorbent pads under the equipment. Based on previous reported sites of contamination at the CTF and the cleanup performed at those sites, there is expected to be little chance of encountering contaminated materials in developing the GP well. Water quality of the groundwater would be tested during Phase I and Phase II, and during operations, which is expected to detect any presence of contaminants in the groundwater.

During project development and operation, the potential for impact from an accidental release of fuel and/or other hazardous substances would be reduced and mitigated by having plans in place for spill prevention, response, and waste management. During the construction phase, all equipment and materials would be organized and stored in designated work areas on the existing PRV facility pad, or the new well facility pad site. During operations, fuel for the emergency generator on site would be stored in a double-walled tank, within a covered, secondary containment area. The overall effect of hazardous and solid wastes is expected to be no more than minor, with the effects from construction equipment and activity restricted to a defined location over a short period of time.

4.1.13 Lands with Wilderness Characteristics

No Lands with Wilderness Characteristics are present in the affected area,; therefore, no effects to Lands with Wilderness Characteristics are expected. No further analysis is necessary at this time.

4.2 IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, AWWU's application for a ROW would be denied and there would be no construction and installation of a water well, well house, work surface, and connecting utilities and no direct impacts to the BLM-managed lands outlined in this EA.

4.2.1 Threatened and Endangered Species

No Threatened and Endangered Species are present in the affected area; therefore, no effects to Threatened and Endangered Species are expected.

4.2.2 Fish and Wildlife

There would be no direct effect on fish and wildlife due to denying the AWWU application for a ROW grant. However, the proposed increase in operational flexibility and fire protection in South and Southwest Anchorage would not be provided, with potential effects on fish and wildlife and their habitat in the event of a wildfire.

4.2.3 Air Quality

No effect on air quality is expected.

4.2.4 Cultural Resources

No effect on cultural resources is expected.

4.2.5 Subsistence

No change would be expected in existing subsistence access to, or use of, subsistence resources in the CTF.

4.2.6 Environmental Justice

No disproportionate impact to low income or minority populations is expected.

4.2.7 Human Health and Safety

Denying the ROW grant would not provide the potential for AWWU to supplement the water supply to the underserved demand areas of South and Southwest Anchorage or provide increased flexibility in operations or fire protection in the MOA.

4.2.8 Water Resources

No impact on surface waters or groundwater in CTF would be expected. However, there would be no new groundwater source in the Campbell Creek area for supplementing the AWWU water supply to meet peak day demands and emergency requirements. This could result in water use restrictions, shortages, and/or insufficient flow for firefighting, particularly in South and Southwest Anchorage, including Campbell Tract.

4.2.9 Vegetation

No vegetation would be lost or altered as a result of denying the AWWU ROW grant.

4.2.10 Visual Resources

There would be no new visual impact along the entrance road (existing or proposed) to the CTF as a result of denying the AWWU ROW grant. The PRV site would dominate the existing developed site, but no additional vegetation buffer or forest canopy would be lost at the site.

4.2.11 Recreation

No impact to recreation use would be expected as a result of denying the AWWU ROW grant.

4.2.12 Solid and Hazardous Wastes

The risk of environmental harm due to spills of petroleum products and hazardous/solid wastes would be reduced by denying the AWWU\ ROW grant

4.2.13 Lands with Wilderness Characteristics

Under the no action alternative, there would be no activities taking place on public lands and no potential impacts to Lands with Wilderness Characteristics.

4.3 CUMULATIVE IMPACTS

Cumulative impacts are assessed by combining the potential environmental impacts of the alternatives with the impacts of current, previous, and reasonably foreseeable future projects in

the CTF and surrounding area. This analysis is focused on resources expected to be most affected by the proposed project.

There could be a cumulative effect of groundwater withdrawal for residential use, firefighting, industrial use, cooling systems, energy supply, hatcheries, etc. in the foreseeable future. Recent information on groundwater resources is sparse, and private, industrial, and commercial use is difficult to estimate. The allocation assumed to be available for the AWWU was based on studies by Barnwell et al. (1972) that suggested an average annual pumping rate of 30 mgd represents maximum practical yield, but noted as much as 40 mgd could be available utilizing conjunctive use of surface water (MWH, 2006).

The estimated 22 to 23 mgd available for AWWU use considered other existing and potential users on a regional basis. Users should obtain water rights from ADNR and drinking water approvals from ADEC, which represents an element of control on consumption. However, AWWU research shows that agency records are incomplete and there are users with no public record. It is expected that the unrecorded users represent a relatively minor component, and that the cumulative impact of withdrawal could be mitigated by controlling use if an appreciable negative impact occurs in the future. Potential effects resulting from groundwater level decline due to pumping would be evaluated in detail after data from the test well is available.

The proposed project is not expected to have more than minor cumulative impact on vegetation in the surrounding environment. There is similar vegetation throughout the CTF and adjacent park lands, and efforts are proposed to control spread of invasive species. There are no proposed or reasonably foreseeable projects that would affect significant amounts of vegetation within the area of the proposed project.

The CTF is a recreation area subject to urban encroachment along its western boundary. The expansion of Abbott Loop Road (now Elmore Road) increased the public awareness and visibility of CTF. Housing developments press against that boundary, as well as the western boundary of the adjacent FNBP. The MOA has built ball fields and parking lots to the south of the CTF. The population of Anchorage continues to grow and land suitable for development is at a premium. Urban encroachment will continue to affect the CTF. This is evidenced by the numerous small utility projects (e.g., power lines, gas lines, sewer lines, and water facilities) and communication facilities (e.g., telephone lines and cell phone towers) constructed in the CTF and the surrounding area for community support.

There are also a number of actions planned, proposed, or occurring now on the CTF, some directly related to the CTF (e.g., bridge, trail, and road maintenance). The planned project with potentially the largest contribution to cumulative effects is the new access road into the CTF to alleviate traffic concerns with the current access. This new road (68th Avenue extension) is shown on Figures 1 and 2, just north of the proposed GP well. The proposed GP well project is adjacent to the existing PRV facility, but sited away from most other current and reasonably foreseeable projects, and presents a relatively low level of human intrusion on the environment. Grouping AWWU facilities reduces the overall impact to the CTF. Locating the site in consideration of visibility from both the existing access road, and the proposed access road ROW, is expected to mitigate visual impacts to the CTF visitors.

In summary, the GP well facility is expected to make a relatively small contribution to overall cumulative effects when considered with other current and reasonably foreseeable actions in the surrounding CTF environment.

5.0 CONSULTATION AND COORDINATION

5.1 PERSONS AND AGENCIES CONSULTED

Persons and agencies consulted during preparation of this EA included:

- BLM, Stephen Fusilier, Lands Branch Manager
- BLM, Robin Rodriguez, Realty Specialist
- BLM, Harrison Griffin, Realty Specialist
- Laurie Thorpe, Natural Resource Specialist
- Bruce Seppi, Wildlife Biologist
- Merlyn Schelske, Fisheries Biologist
- Geoff Beyersdorf, Natural Resource Specialist (Subsistence)
- Jorjena Daly, Recreation Planner
- Jenny Blanchard, Archeologist
- ADEC, Jim Baumgartner, Air Quality
- ADEC, Beth Verelli, Alaska Drinking Water Fund Grants
- U.S. Army Corps of Engineers, Joe White, Wetlands
- Abbott Loop Community Council
- Far North Bicentennial Park Trails and Parks User Group

Water well records consulted included: ADNR, ADEC, U.S. Geological Survey (USGS), Alaska Division of Geological and Geophysical Surveys

5.2 LIST OF PREPARERS

Preparers of this EA included:

- Sandra Hamann, MWH Principal Environmental Scientist
- Victor Harris, PG, MWH Principal Hydrogeologist
- Don Spiegel, PE, MWH Principal Engineer
- Heather Williams, MWH Senior Engineer
- Doug Quist, MWH Chemist
- John Marshall, PhD, MWH Biologist
- Stephen Trimble, MWH Associate Geologist
- Charles Larson, MWH Health & Safety Coordinator
- Greg Geddes, MWH Student Intern/Research Assistant
- Sarah Callaway, MWH Senior Environmental Scientist

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APPENDIX A

Permits and Authorizations

STATE OF ALASKA

SEAN PARNELL, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF COASTAL AND OCEAN MANAGEMENT
http://www.alaskacoast.state.ak.us

- *SOUTHCENTRAL REGIONAL OFFICE*
  550 W 7th AVENUE SUITE 705
  ANCHORAGE, ALASKA 99501
  PH: (907) 269-7470 FAX: (907) 269-3981
- *CENTRAL OFFICE*
  P.O. Box 111030
  JUNEAU, ALASKA 99811-1030
  PH: (907) 465-3562 FAX: (907) 465-3075
- *PIPELINE COORDINATOR'S OFFICE*
  411 WEST 4TH AVENUE, SUITE 2C
  ANCHORAGE, ALASKA 99501
  PH: (907) 2857-1351 FAX: (907) 272-3829

October 6, 2010

Sandra Hamann
1835 S. Bragaw Street, Ste. 350
Anchorage, AK 99508

for

Municipality of Anchorage
Anchorage Water and Wastewater Utility
3000 Arctic Boulevard
Anchorage, AK 99503

SUBJECT: **ACMP REVIEW NOT REQUIRED AT THIS TIME**
The proposed project is to place an observation well near Kasuun Elementary School as part of the development of a new groundwater production facility on nearby BLM land.
ID2010-0936AA

Dear Mr. Hamann:

The Division of Coastal & Ocean Management (DCOM) has reviewed the Coastal Project Questionnaire (CPQ) and other pertinent information regarding the above referenced project. Based upon the information you have supplied, your proposed project does not require a State review for consistency with the Alaska Coastal Management Program (ACMP), because it does not require permits subject to the ACMP.

You are not relieved from obtaining required permits and approvals from state, federal or local agencies before you begin the proposed work. Nothing in this letter excuses you from compliance with other statutes, ordinances, or regulations that may affect any proposed work.

This decision is ONLY for the proposed project as described. If there are any changes to the proposed project, including its intended use, prior to or during its siting, construction, or operation,

contact this office immediately to determine if further review and approval of the revised project is necessary.

Thank you for your cooperation with the ACMP.

Sincerely,

Jim Renkert
Project Review Coordinator

encl: CPQ

cc:

DNR/ DMLW	DNR
Marla Carter	ADFG
Fran Roche	DEC - JNU
Jeff Urbanus,	Municipality of Anchorage
Karen Keesecker,	Municipality of Anchorage
Kellie Westphal	DNR/DMLW
Linda Markham	ADOT/PF
Mike Daigneault	ADFG/Habitat
Sean Palmer	DEC - ANC
Joanne Schmidt	DCOM
SHPO	DNR/SHPO
Thede Tobish,	Municipality of Anchorage
USACE Regulatory Branch	USACE
De Anne S.P. Stevens	DGGS

REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
ANCHORAGE FIELD OFFICE
1600 A STREET SUITE 110
ANCHORAGE ALASKA 99501

MAR 29 2011

Regulatory Division
POA-2010-316

Mr. Tom Winkler, P.E.
Municipality of Anchorage
Anchorage Water and Wastewater Utility
3000 Arctic Boulevard
Anchorage Alaska 99503-3813

Dear Mr. Winkler:

This is in response to your September 15, 2010, application for a Department of the Army (DA) permit, to construct a Groundwater Production Facility. The pump house will be 40-foot by 40-foot, with an attached 18-foot by 13.5-foot fuel storage house. The pad will have 5 feet of level surface around the perimeter, with the toe of the fill extending 5 additional feet. The project will result in 0.06-acre of wetland fill for the well housing pad and access road. It has been assigned file number POA-2010-316, Little Campbell Creek, which should be referred to in all future correspondence with this office. The project site is located within Section 3, T. 12 N., R. 3 W., Seward Meridian; USGS Quad Map Anchorage A-8; Latitude 61.1588° N., Longitude -149.8029° W.; in wetland unit 28; on map #58 of the Municipality of Anchorage Wetland Atlas, 2008 edition; just east of Elmore Road, north of the BLM access road for the Campbell Tract Educational Facility; in Anchorage, Alaska.

DA permit authorization is necessary because your project would involve placement of fill material into waters of the U.S. under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which would be performed in accordance with the enclosed plan (sheets 1-4), dated August 18, 2010, is authorized by Nationwide Permit (NWP) No. 12, Utility Line Activities. NWP No. 12 and its associated Regional and General Conditions can be accessed at our website at www.poa.usace.army.mil/reg. Regional Conditions **E and F** apply to your project. You must comply with all terms and conditions associated with NWP No. 12.

Further, please note General Condition 26 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosed is the form for you to complete and return to us.

This verification is valid until the NWPs are modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2012. It is incumbent upon you to remain informed

of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permits are modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWPs to complete the activity under the present terms and conditions of these nationwide permits.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

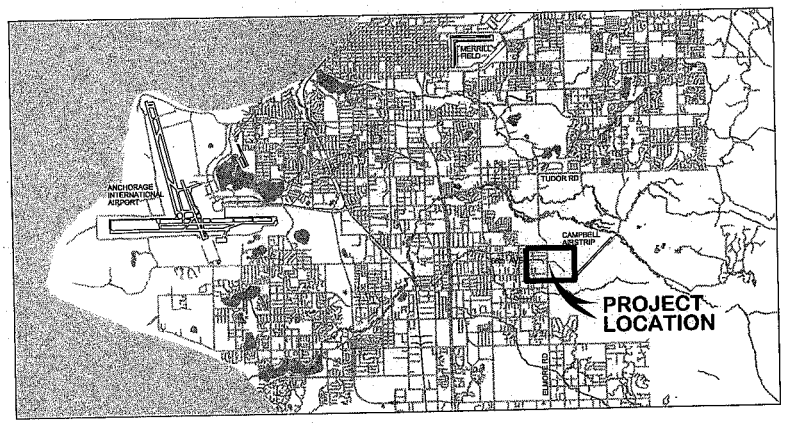
You may contact me via email at shane.m.mccoy@usace.army.mil, by mail at the address above, by phone at (907) 753-2715, if you have questions or to request paper copies of the jurisdictional determination, regional and/or general conditions. For additional information about our Regulatory Program, visit our web site at www.poa.usace.army.mil/reg.

Sincerely,

Shane M. McCoy

Shane McCoy
Regulatory Specialist

Enclosures



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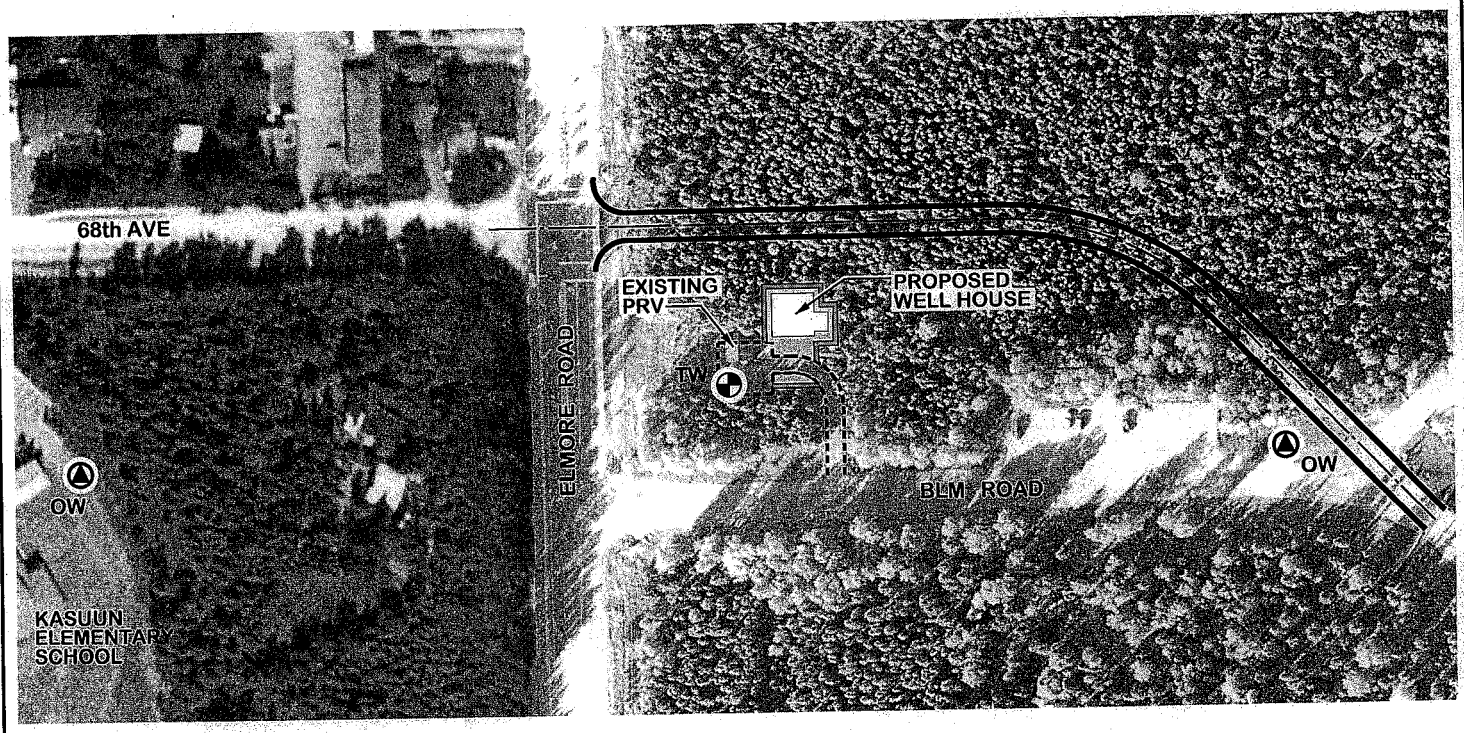


LEGEND:

- PROPOSED AREA
- PROPOSED BLM ROAD
- EXISTING AWWU PRV FACILITY
- PRV PRESSURE RELIEF VALVE
- TW PROPOSED TEST WELL LOCATION
- OW PROPOSED OBSERVATION WELL LOCATION

PURPOSE: GROUNDWATER PRODUCTION WELL FACILITIES

DATUM: ASSUMED

ADJACENT PROPERTY OWNERS: BLM, MOA

PROJECT LOCATION AND VICINITY MAP

SCALE IN FEET 0 180

GROUNDWATER PRODUCTION WELL PROJECT

N1/2, SW 1/4 SECTION 3, T.12N, R.3W SEWARD MERIDIAN

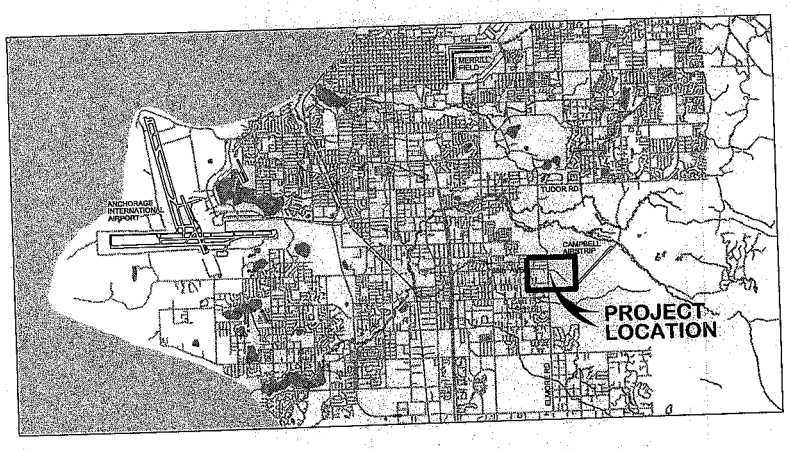
POA-2010-316, Little Campbell Creek
Anchorage Water and Wastewater Utility
Nationwide Permit, #12, Utility Line Activities

Sheet 1 of 4 ; dated August 18, 2010

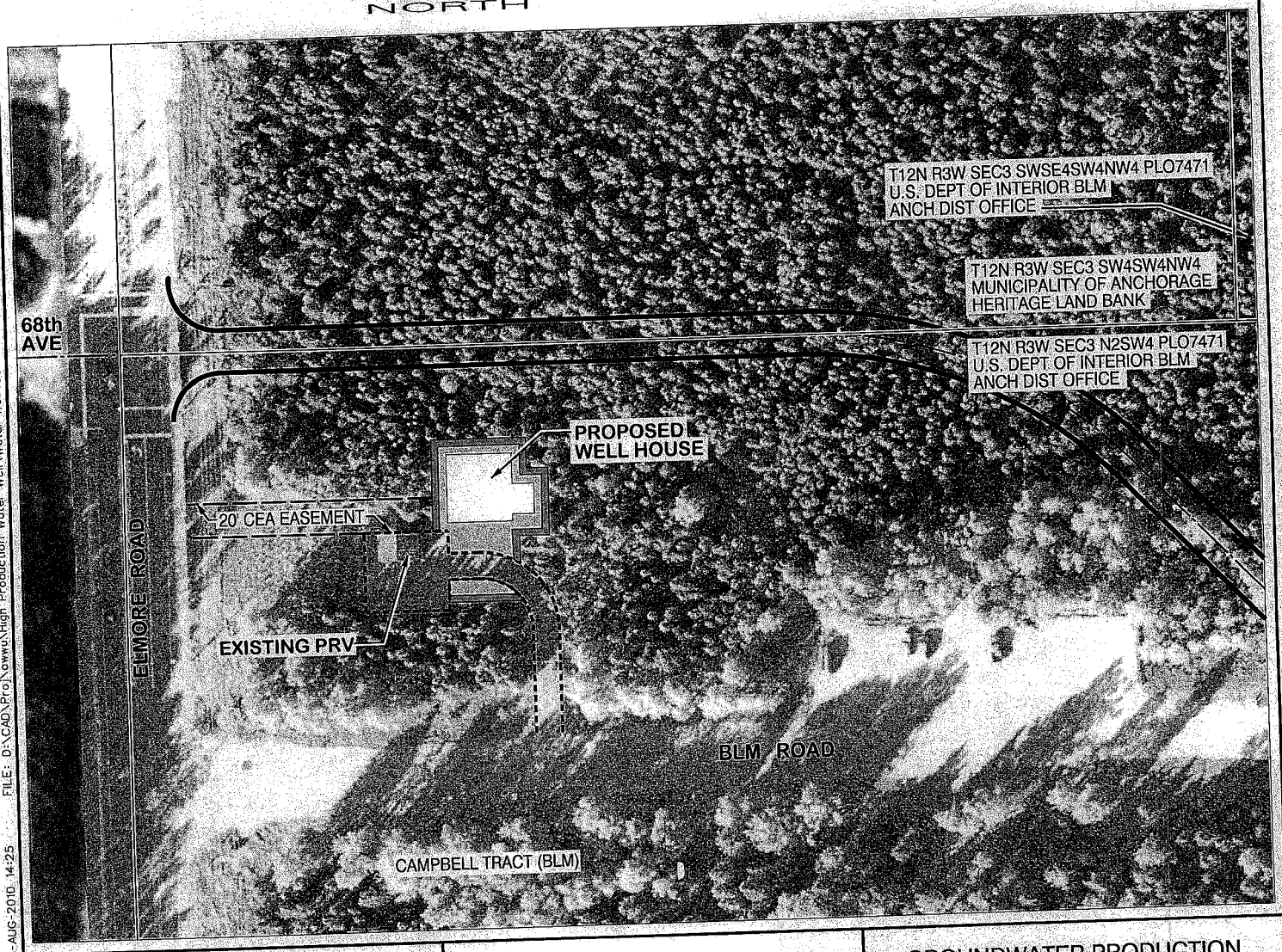
JOB No. 1008634.010101 TIME: 18-AUG-2010 11:02 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\COE\8-18-2010\Sheet 01.dgn

LEGEND:

- PROPOSED AREA
- PROPOSED BLM ROAD
- EXISTING AWWU PRV FACILITY
- CEA EASEMENT
- CEA — CHUGACH ELECTRIC ASSOCIATION
- PRV — PRESSURE RELIEF VALVE



NORTH



PURPOSE: GROUNDWATER PRODUCTION WELL FACILITIES

DATUM: ASSUMED

ADJACENT PROPERTY OWNERS: BLM, MOA

PROJECT SITE PLAN

SCALE IN FEET
0 100

GROUNDWATER PRODUCTION WELL PROJECT

N1/2, SW 1/4 SECTION 3, T.12N, R.3W SEWARD MERIDIAN

POA-2010-316, Little Campbell Creek
Anchorage Water and Wastewater Utility
Nationwide Permit, #12, Utility Line Activities

Sheet 2 of 4 ; dated August 18, 2010

JOB No. 1008634.010101 TIME: 18-AUG-2010 14:25 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\COE\8-18-2010\Sheet 02.dgn

LEGEND:

PROPOSED AREA

EXISTING AWWU PRV FACILITY

CEA EASEMENT

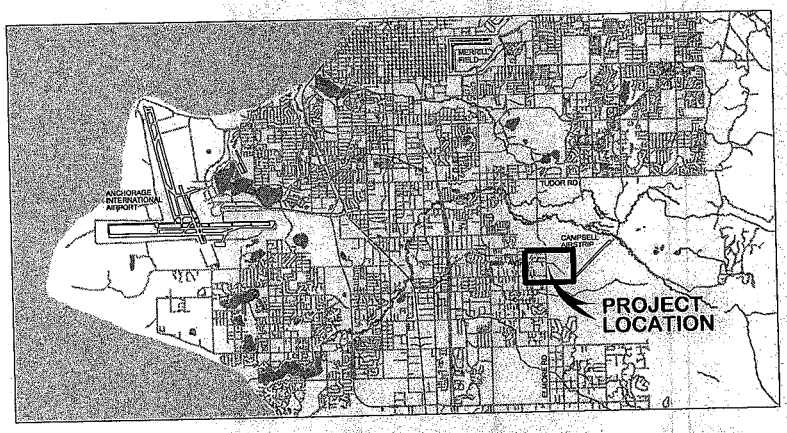
CEA CHUGACH ELECTRIC ASSOCIATION

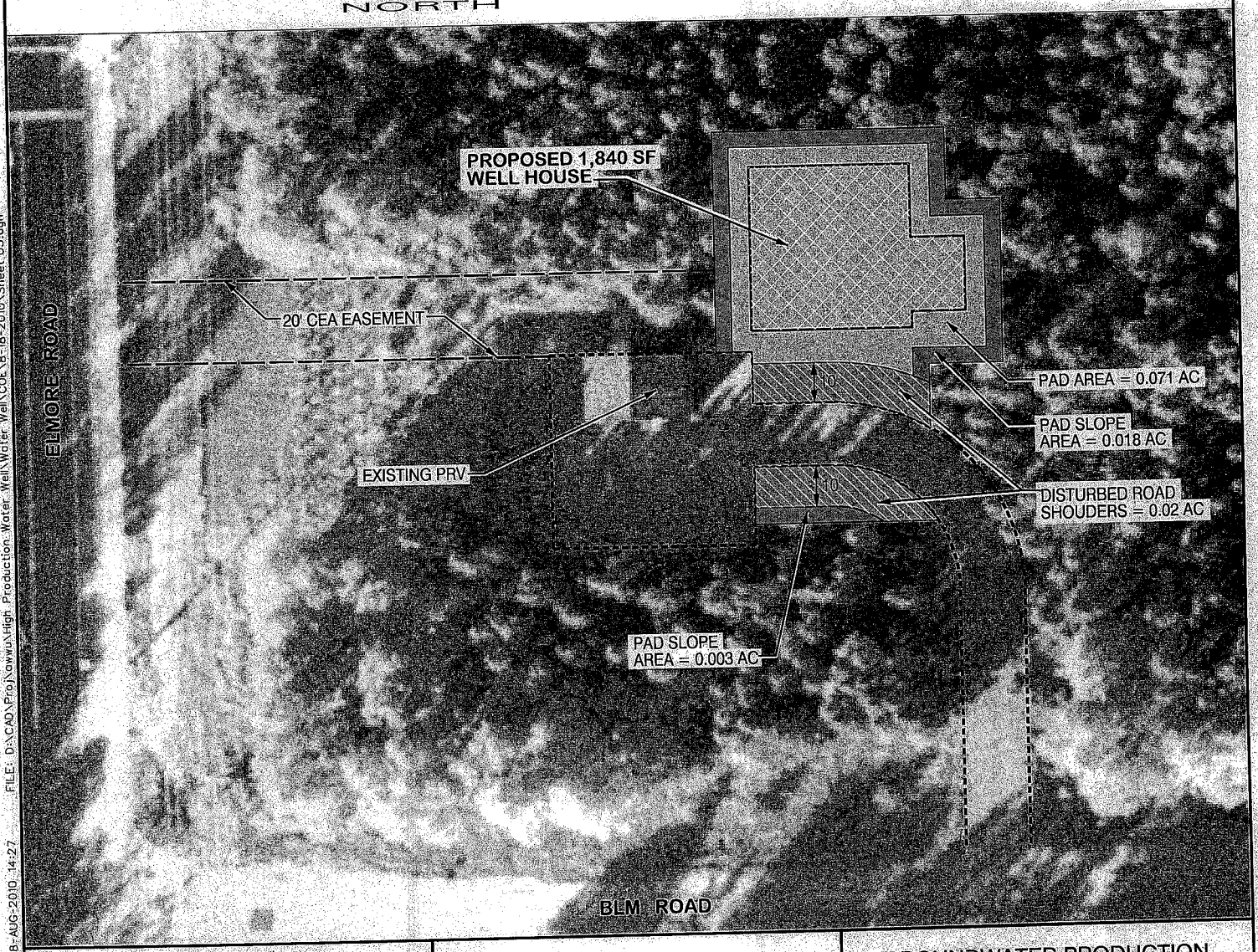
PRV PRESSURE RELIEF VALVE

TOTAL FILL AREA - 0.111 AC (4,852 SF);
WETLAND MOSAIC - 0.092 AC (3,983 SF)
WETLAND FILL (60% WETLAND MOSAIC) - 0.055 AC (2,390 SF)

CEA EASEMENT AREA
0.069 AC (3,006 SF)

NORTH





PURPOSE: GROUNDWATER PRODUCTION WELL FACILITIES

DATUM: ASSUMED

ADJACENT PROPERTY OWNERS: BLM, MOA

PROJECT SITE PLAN
WETLANDS

SCALE IN FEET
0 40

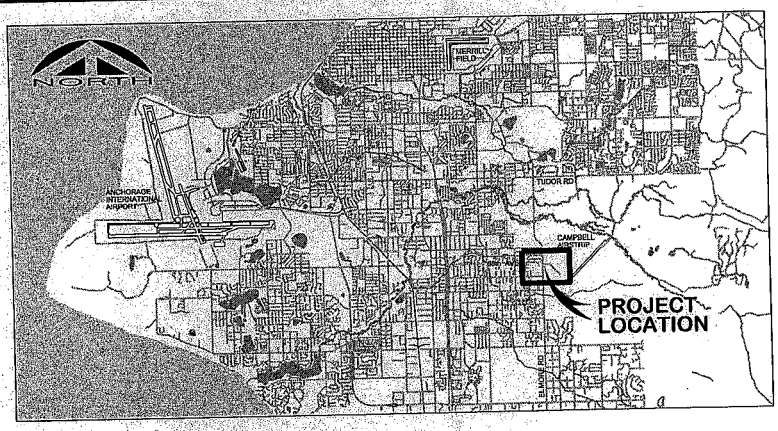
GROUNDWATER PRODUCTION WELL PROJECT

N1/2, SW 1/4 SECTION 3, T.12N, R.3W
SEWARD MERIDIAN

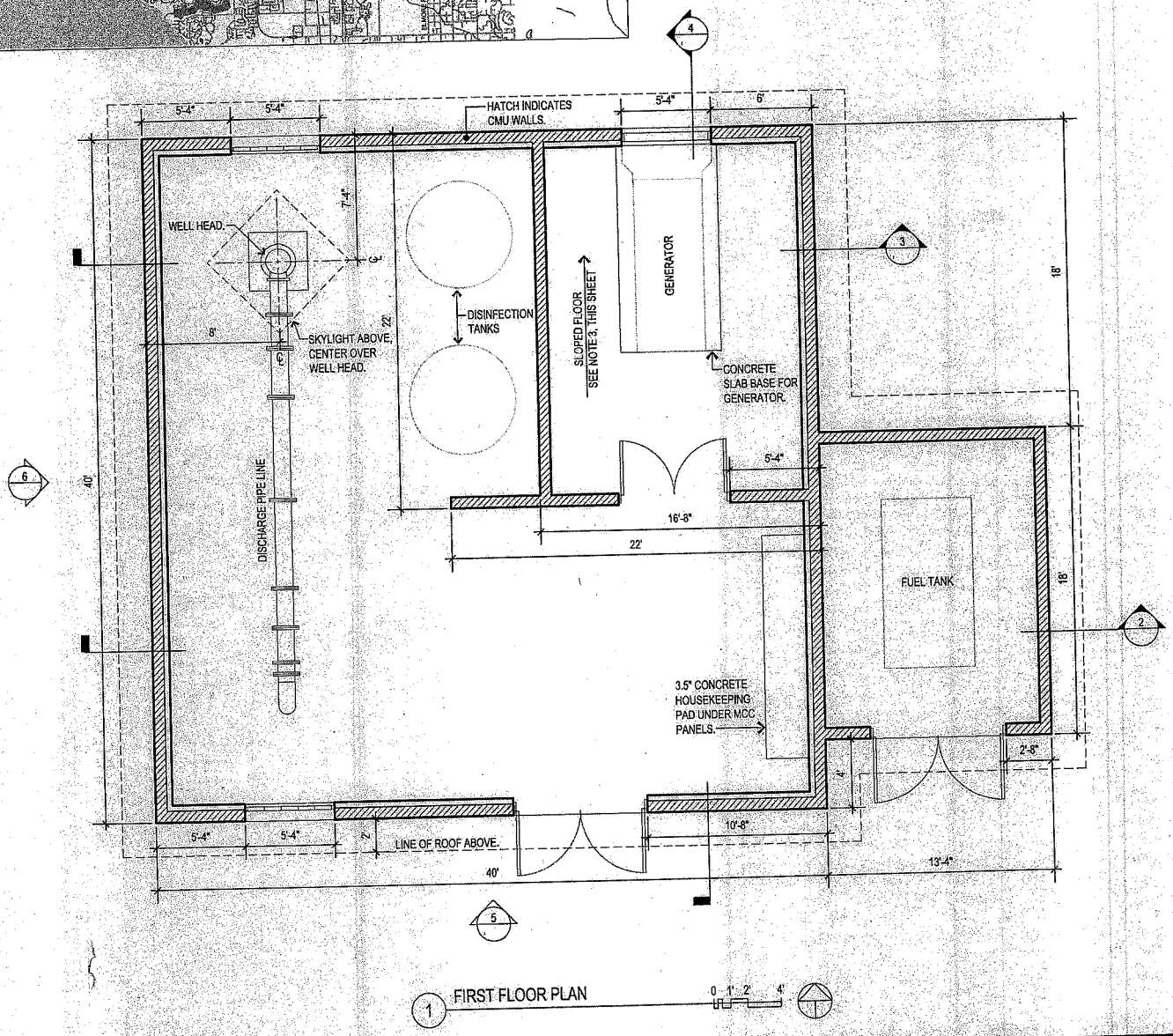
POA-2010-316, Little Campbell Creek
Anchorage Water and Wastewater Utility
Nationwide Permit, #12, Utility Line Activities

Sheet 3 of 4 ; dated August 18, 2010

JOB No. 1008634-010101 TIME: 18-AUG-2010 14:27 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\COE\8-18-2010\Sheet 03.dgn



SHEET NOTES:
1. DIMENSIONS ARE TO FACE OF BLOCK UNLESS NOTED OTHERWISE.
2. PROVIDE FIRE BLOCKING AND DRAFT STOPS IN ACCORDANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE SECTION 717.
3. THE LOW (NORTH) END OF SLOPED FLOOR IS 4" BELOW FINISHED FLOOR.



PURPOSE: GROUNDWATER PRODUCTION WELL FACILITIES

DATUM: ASSUMED

ADJACENT PROPERTY OWNERS: BLM, MOA

FIRST FLOOR PLAN

SCALE AS SHOWN

GROUNDWATER PRODUCTION WELL PROJECT

N1/2, SW 1/4 SECTION 3, T.12N, R.3W SEWARD MERIDIAN

POA-2010-316, Little Campbell Creek
Anchorage Water and Wastewater Utility
Nationwide Permit, #12, Utility Line Activities

Sheet 4 of 4 ; dated August 18, 2010

JOB No. 1008634.010101 TIME: 18-AUG-2010 11:00 FILE: D:\CAD\Proj\awwu\High Production Water Well\Water Well\COE\8-18-2010\Sheet 04.dgn

STATE OF ALASKA

SEAN PARNELL, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF MINING, LAND & WATER
Water Resources Section

550 WEST 7TH AVENUE, SUITE 1020
ANCHORAGE, ALASKA 99501-3562
PHONE: (907) 269-8600
FAX: (907) 269-8904

October 8, 2010

Anchorage Water & Wastewater Utility
Attn: Tom Winkler, PE, Project Management Supervisor
3000 Arctic Boulevard
Anchorage, AK 99503

Re: Temporary Water Use Authorization, TWUP A2010-102

Dear Mr. Winkler:

The Water Resources Section completed the review of AWWU's Application for Temporary Use of Water to withdraw water, from two wells to be drilled, for the purpose of conducting well pump tests. Enclosed is Temporary Water Use Authorization TWUP A2010-102, expiration date of December 31, 2013.

Please note all of the conditions on the authorization, **especially conditions one (1), five (5) and thirteen (13) through seventeen (17).**

If changes to this project are proposed during its operation, please contact this office immediately to determine if further review is necessary. If you have any questions or concerns about this authorization, I may be contacted at telephone number (907) 269-8609. Thank you for your cooperation with the Water Resources Section.

Sincerely,

Michael Walton
Natural Resource Specialist

Encl. Temporary Water Use Authorization TWUP A2010-102
Administrative Service Fee Fact Sheet

Cc Sandra Hamann, MWH (via email: sandra.hamann@mwhglobal.com)

Fact Sheet

Alaska Department of NATURAL RESOURCES

Division of Mining, Land and Water – February 2006

Administrative Service Fee

Annual Administrative Service Fee.
Under 11 AAC 05.010(a)(8)(M) an annual administrative service fee for each appropriation of water for which a permit, certificate, or an authorization for temporary use of water has been issued is $50 per year. However, the following uses are exempt from the annual administrative service fee:

- a permit or certificate authorizing the use of 500 gallons or less per day for all uses;
- a permit or certificate authorizing domestic use of 1,500 gallons or less per day for one single-family residence or duplex;
- a reservation of water under AS 46.15.145.

Why an annual administrative service fee?
The administrative service fee helps pay for the following administrative services:

- Update water right records in an online database for use as a management tool and public record source. This system contains data on customers, water right status, water source (well depth or water body name), type of water use, amount of water, period of water use, water right priority date, and property description (meridian, township, range, section, quarter sections, latitude and longitude, subdivision name or survey number, tract, block, and lot). Currently, the water right database has over 24,000 records.

- Update water source locations on the state's online mapping programs for use by the department and the public.

- Respond to complaints from the public and government agencies regarding water use and misuse.

- Administratively handle complaints and appeals regarding the protection of prior water rights.

- Collect and monitor specific data, such as water use records, stream gage data, water level records, well logs, as-built plans, and specifications.

- Assist the Department of Law with appeals to the Superior Court on water resource management issues and water rights.

- Provide driller's well logs for inclusion in the online water well log database. Currently, the water well log database has over 30,000 records.

- Conduct coastal zone consistency reviews, to assure that the appropriation and use of water is consistent with the Alaska Coastal Management Program.

- Work with potential water users prior to filing water right applications to ensure that water right holders and water resources are not harmed by their proposed activity (examples: Pebble Gold and Copper Mine, Chuitna Coal Mine, Donlin Creek Mine, Blue Lake Hydroelectric, Cooper Creek Hydroelectric, Falls Creek Hydroelectric, Nikaitchuq Offshore Oil and Gas Project, The Ranch Subdivision, and Meadowbrook Subdivision).

- Participate in site-specific water resource planning and review (examples: state area and management plans, federal land management plans, wildlife refuge plans, recreation plans, and groundwater task forces).

- Conduct or assist in hydrologic and water use data collection for specific areas not related to a water right request but to an area of water management concern.

The fee has become necessary as the state legislature has directed the Department to find other sources of revenues to replace general funds. Program receipts are collected from the individual beneficiary of a program, and the funds collected are used to administer that program for the benefit of the water right holders and the general public.

Why a $50 fee for the work listed above?
The revenues generated will offset budget cuts and allow us to improve the administration and management of Alaska's water resources. It has been determined that the collection of a fee less

than $50 is not economical due to the cost of sending a bill and receipting a payment. It is also a fact that of the permits, certificates, and authorizations subject to this fee, not all of them will receive $50 worth of work each and every year. Some of the files will require only minimal work. The fee helps pay for the administrative, management, and technical assistance by which the water right system supports the economy of Alaska and its development.

Why the exemptions to the fee?
It is not in the state's best interest to impose the fee on an individual or group that has reserved water for instream flows to protect fish and wildlife and public recreation opportunities.

The exemption to the fee for appropriations of 1,500 gpd or less for one single-family residence or duplex is based on the fact that time spent on administrative work associated with this type of use is, on the average, a lot less than on permits, certificates, and authorizations issued for other types of water uses. Water use for a single-family residence or duplex is a very stable water use – the type of water use and the location of water use rarely changes, and the source of water is normally uncontroversial due to the amount of water required. The Department purposely structured this exemption for domestic water uses such as lawn and garden, domestic livestock, greenhouses, and other water-related household amenities. The water well log data obtained from the many single-family residences is a valuable source of hydrologic information that is incorporated into an online database shared by state, federal, and municipal agencies, and used by the public and private sectors. The cost of this type of data collected, if it were not collected through the water right application process, would cost much more than the monies collected through an administrative service fee.

In short, the Department of Natural Resources has structured this fee to be fair to all water right appropriators of the state and has considered the economics of collecting a fee, in providing the above exemptions to the fee.

Where can I get more information?
More information is available in the Department of Natural Resources' fact sheets on Water Rights in Alaska, Dam Safety in Alaska, Reserving Water for Instream Use, Federal Reserved Water Rights, and Alaska Hydrologic Survey. Further information and application forms may be obtained from the following offices or visit www.dnr.state.ak.us/mlw/water/index.htm.

Department of Natural Resources
Water Resources Section
Anchorage Office
550 West 7th Avenue, Suite 1020
Anchorage, AK 99501-3562
Phone: (907) 269-8600
Fax: (907) 269-8947

Fairbanks Office
3700 Airport Way
Fairbanks, AK 99709-4699
Phone: (907) 451-2790
Fax: (907) 451-2703

Juneau Office
PO Box 111020
400 Willoughby Avenue
Juneau, AK 99811-1020
Phone: (907) 465-3400
Fax: (907) 586-2954

ALASKA DEPARTMENT OF NATURAL RESOURCES
Division of Mining, Land, and Water
Water Resources Section
550 West 7th Avenue, Suite 1020, Anchorage, AK 99501-3562

TEMPORARY WATER USE AUTHORIZATION
TWUP A2010-102

Pursuant to AS 46.15, as amended and the rules and regulations promulgated thereunder, permission is hereby granted to Anchorage Water & Wastewater Utility (AWWU), 3000 Arctic Boulevard, Anchorage, Alaska 99503, and its contractors, **to withdraw up to 1,000,000 gallons of water per day at a pump rate of 600 gallons per minute (subject to a maximum of 3,000,000 gallons of water) from the below-described test well, and to withdraw up to 2,900,000 gallons of water per day at a pump rate of 2,000 gallons per minute (subject to a maximum of 8,600,000 gallons of water) from the below-described production well.** The two water wells will be pump tested to evaluate aquifer conditions for the purpose of potentially increasing AWWU's water supply capabilities, particularly in the South Anchorage area. The test well pumping is planned to occur in 2010. The production well pumping is planned for the summer of 2011. To the extent that the permittee has obtained permission from the appropriate landowner(s) and/or obtained other necessary approvals, the pumped water is to be discharged in the vicinity through a diffuser to reduce erosion potential, or discharged to a nearby storm sewer drain. This project is located in the BLM Campbell Tract in Anchorage, Alaska, near the intersection of Elmore Road and BLM Road.

SOURCE(S) OF WATER (See attached Figure 1):

Test well to be drilled (adjacent to the existing AWWU Pressure Reducing Valve Facility) to a depth of approximately 500-feet, within the NW1/4SW1/4 Section 3, Township 12 North, Range 3 West, Seward Meridian.

Production well to be drilled (adjacent to the existing AWWU Pressure Reducing Valve Facility) to a depth of approximately 500-feet, within the NW1/4SW1/4 Section 3, Township 12 North, Range 3 West, Seward Meridian.

STRUCTURES TO BE CONSTRUCTED AND USED:

Two water wells to be drilled approximately 500-feet deep, pump(s), hose and/or pipe, observation wells, and a water diffuser if necessary.

Changes in the natural state of water are to be made as stated herein and for the purposes indicated.

During the effective period of this authorization, the permittee shall comply with the following conditions:

CONDITIONS:

1. **This authorization does not authorize the permittee to enter upon, or drill any wells upon, any lands until permittee has obtained proper rights-of-way, easements, or permission documents from the appropriate landowner.**

2. Comply with all applicable laws, and any rules and/or regulations issued thereunder.

3. Except for claims or losses arising from negligence of the State, defend and indemnify the State against and hold it harmless from any and all claims, demands, suits, loss, liability and expense for injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of the privileges covered by this authorization.

4. Notify the Water Resources Section upon change of address.

5. **The permittee shall obtain and comply with other permits/approvals (state, federal, or local) that may be required prior to beginning water withdrawal pursuant to this authorization.**

6. Follow acceptable engineering standards in exercising the privilege granted herein.

7. Failure to respond to a request for additional information during the term of the authorization may result in the termination of this authorization.

8. The permittee shall allow an authorized representative of the Water Resources Section to inspect, at reasonable times, any facilities, equipment, practices, or operators regulated or required under this authorization.

9. The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project, and shall ensure that workers are familiar with the requirements of this authorization. For any activity that significantly deviates from the approved project during its siting, construction, or operation, the permittee is required to contact the Water Resources Section and obtain approval before beginning the activity.

10. The Water Resources Section may modify this authorization to include different limitations, expand monitoring requirements, evaluate impacts, or require restoration at the site.

11. Pursuant to 11 AAC 93.220 (f), this authorization may be suspended by the Department of Natural Resources to protect the water rights of other persons or the public interest.

12. Any false statements or representations, in any application, record, report, plan, or other document filed or required to be maintained under this authorization, may result in the termination of this authorization.

13. **Water discharged (including runoff) shall not be discharged at a rate resulting in sedimentation, erosion, or other disruptions to the bed or banks of water bodies, causing water quality degradation.**

14. **Water trucks will not be fueled or serviced within 100 feet of a water body. Gas fueled pumps will not be fueled or serviced within 100 feet of a water body unless the pumps are situated**

within a catch basin designed to contain any spills. Equipment shall not be stored or serviced within 100 feet of any water bodies.

15. **In accordance with 11 AAC 93.140 (a), a water well log shall be filed with this office within 45 days of completion of the water well.**

16. **Permanent decommissioning of well(s) must be in compliance with requirements of 18 AAC 80.015 (e). Abandonment report shall be submitted to this office and to the Alaska Department of Environmental Conservation within 45 days.**

17. **This authorization is subject to an annual administrative service fee.**

This Temporary Water Use Authorization is issued pursuant to 11 AAC 93.220. No water right or priority is established by a temporary water use authorization issued pursuant to 11 AAC 93.220. Water so used is subject to appropriation by others (11 AAC 93.210 (b)).

Pursuant to 11 AAC 93.210 (b), authorized temporary water use is subject to amendment, modification, or revocation by the Department of Natural Resources if the Department of Natural Resources determines that amendment, modification, or revocation is necessary to supply water to lawful appropriators of record or to protect the public interest.

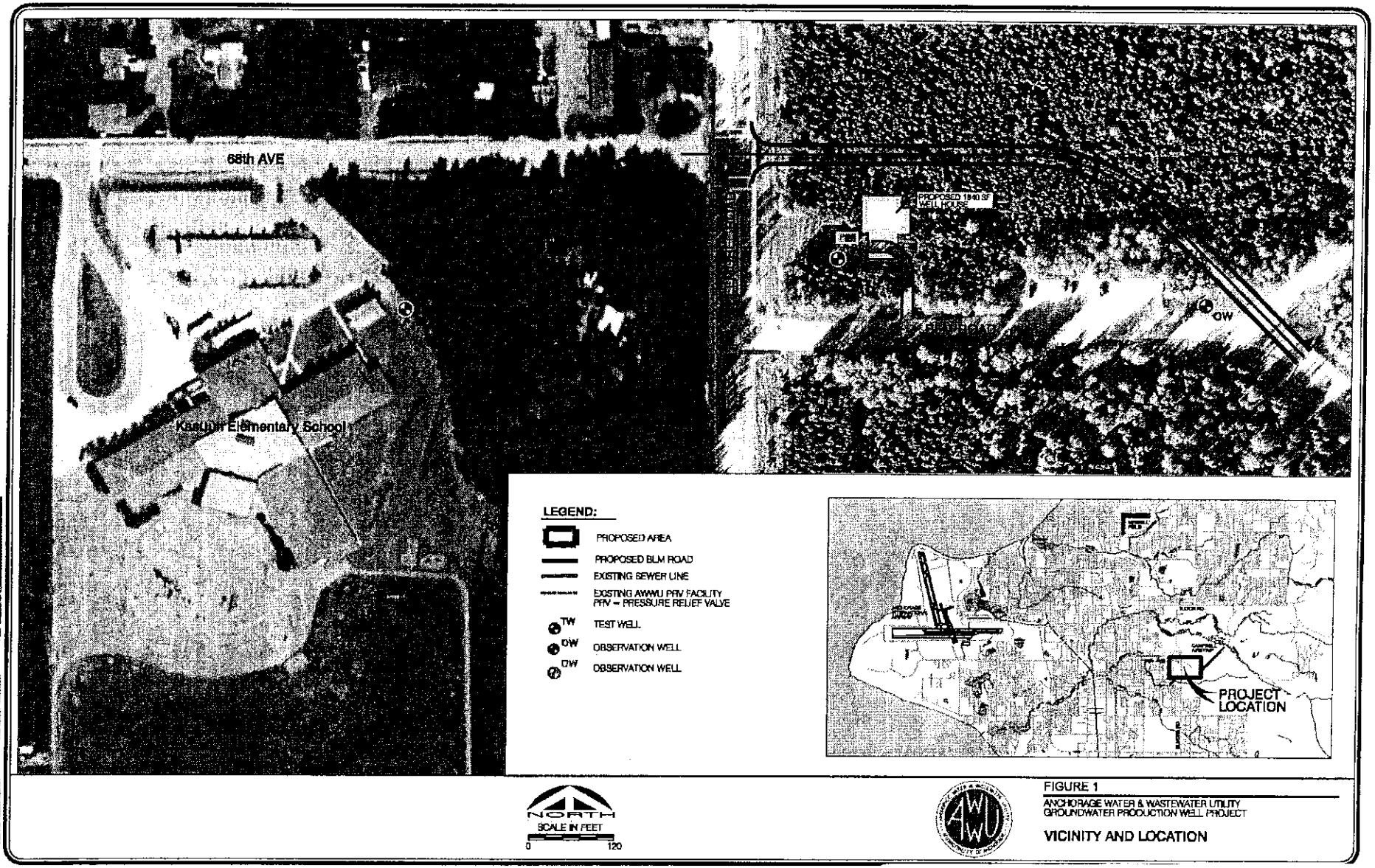
This authorization shall expire on December 31, 2013.

Date issued: October 8, 2010

Approved: [signature]

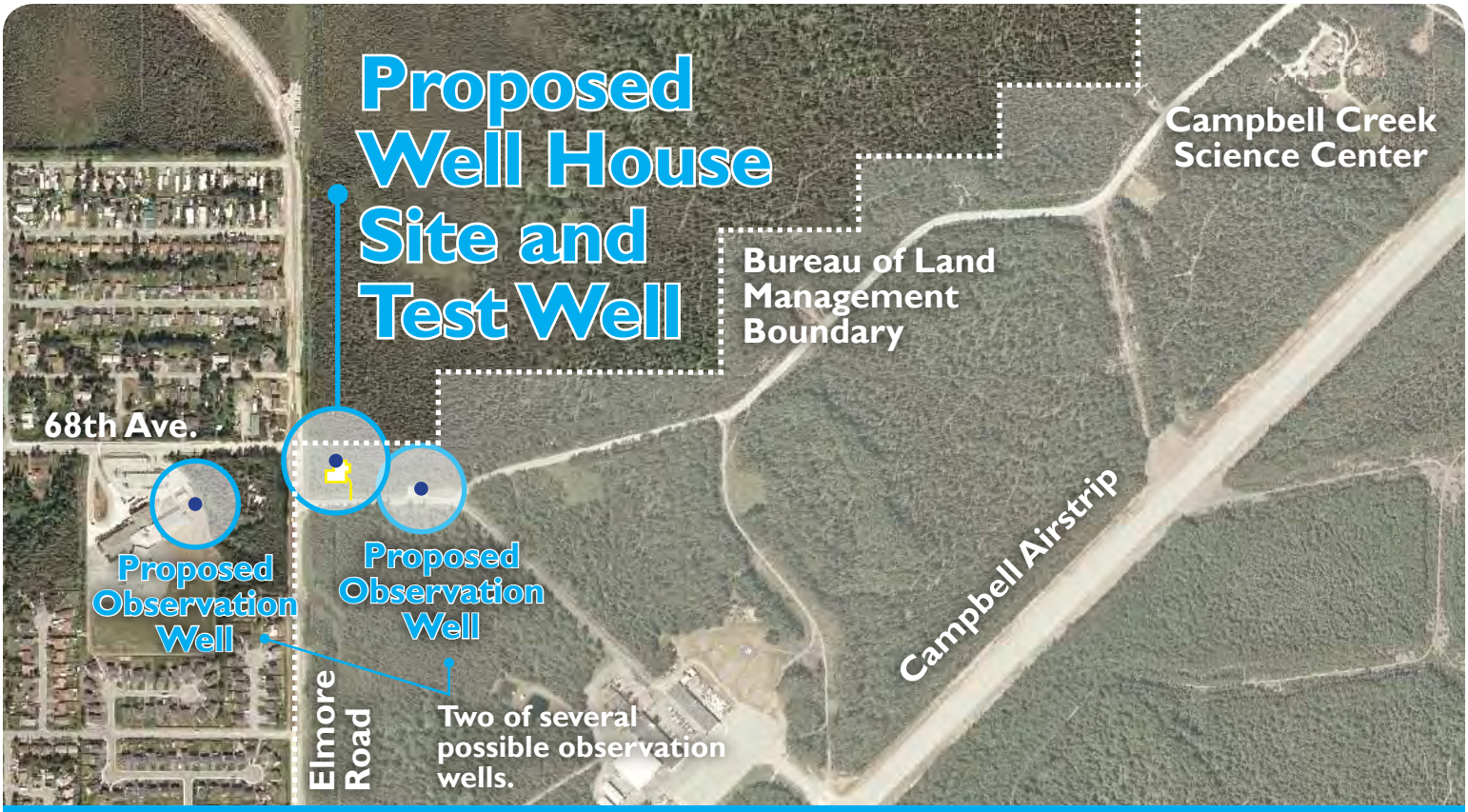
Title: Chief Water Resources Section

Figure 1 Proposed Test and Observation Wells



APPENDIX B

Project Fact Sheets



CAMPBELL TRACT AREA WATER WELL

A new **high-production water well** is needed to bring more potable water to Anchorage residents during times of increased demand or emergency events.

WHY?

More water and emergency back-up:

There's not enough city water flowing to neighborhoods and fire hydrants in South and Southwest Anchorage. The 2005 Water Master Plan shows the increased need for water here as well as an emergency alternative to Anchorage's main source, Eklutna Lake. A new well is a practical way to supply water during times of high demand and to provide emergency back-up for all Anchorage residents.

WHERE?

BLM's Campbell Tract on the east side of Elmore Road:

The Campbell Creek area is a good place for a well. Groundwater here is expected to be plentiful and the location makes it easy to connect to existing water infrastructure so that water is available to neighborhoods that need it. To ensure the adequacy of groundwater at this location, a test well (and water monitoring program) will be constructed in summer 2011.

HOW MUCH?

The well is expected to cost $5 million.

As with all Anchorage Water and Wastewater Utility (AWWU) projects, the cost is shared among all rate-payers much the same way we pay for a postage stamp.

REVIEW PROCESS?

Environmental Assessment:

The new high-production water well is subject to an Environmental Assessment (led by the Bureau of Land Management) analyzing potential environmental impacts of the proposed project. This process will evaluate strategies to avoid or mitigate potential project impacts, such as impacts on visual resources or recreation.

WHAT WILL IT LOOK LIKE?

Low-profile and low-impact:

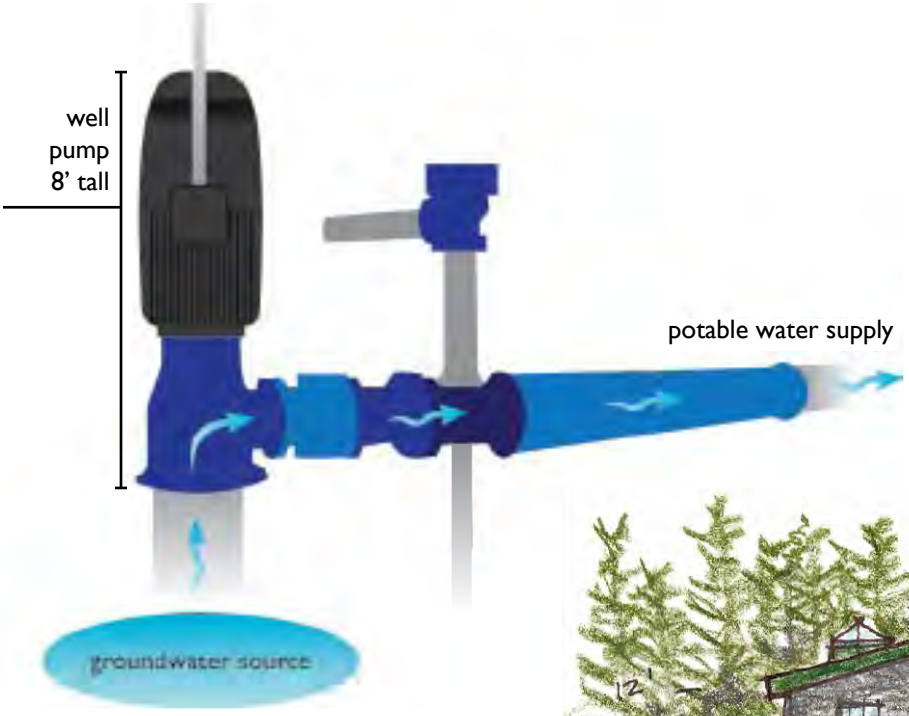
The low-profile well house would be designed to blend with the natural setting and existing utility building. The approximately 40'X40' well house would likely sit on a 50'X50' concrete pad. Native vegetation would be replanted where needed. The project would be sited off trails to avoid impacting primary uses of the area.

QUESTIONS? www.CampbellTractWell.org

Tom Winkler (907) 564-2785
tom.winkler@awwu.biz
Sandra Hamann (907) 248-8883
sandra.hamann@mwhglobal.com

WHAT HAPPENS IN THE WELL HOUSE?

High-quality groundwater is pumped through a vertical turbine pump and is then piped to the existing water transmission main running along Elmore Road. The main brings potable water to neighborhoods in South and Southwest Anchorage.



WHAT WILL IT LOOK LIKE?

Low-profile and low-impact:

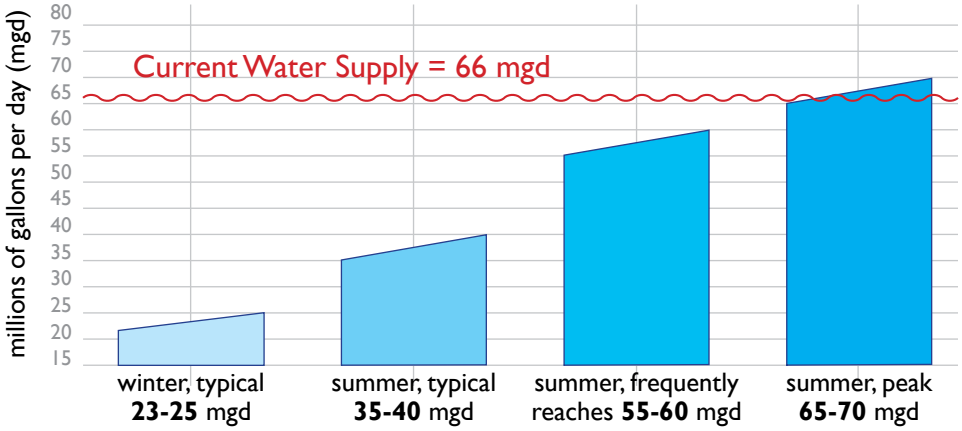
The currently proposed site is along the western boundary of Campbell Tract, adjacent to a busy roadway, and an existing, rarely noticed AWWU building that has been screened from public view. A small area of mature vegetation would be cleared and an additional building constructed. Impacts on visual quality would be minimal and mitigated by the small size and compatible design of facilities and by replanting with native vegetation where needed. Effects on recreation will also be minimal, due to project siting away from trails and recreation use areas.

WHY DO WE NEED THE HIGH-PRODUCTION WELL?

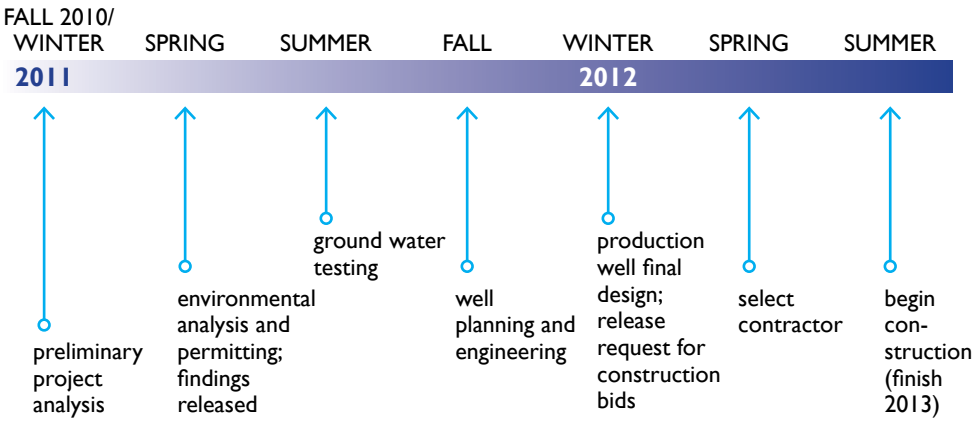
More water and emergency back-up:

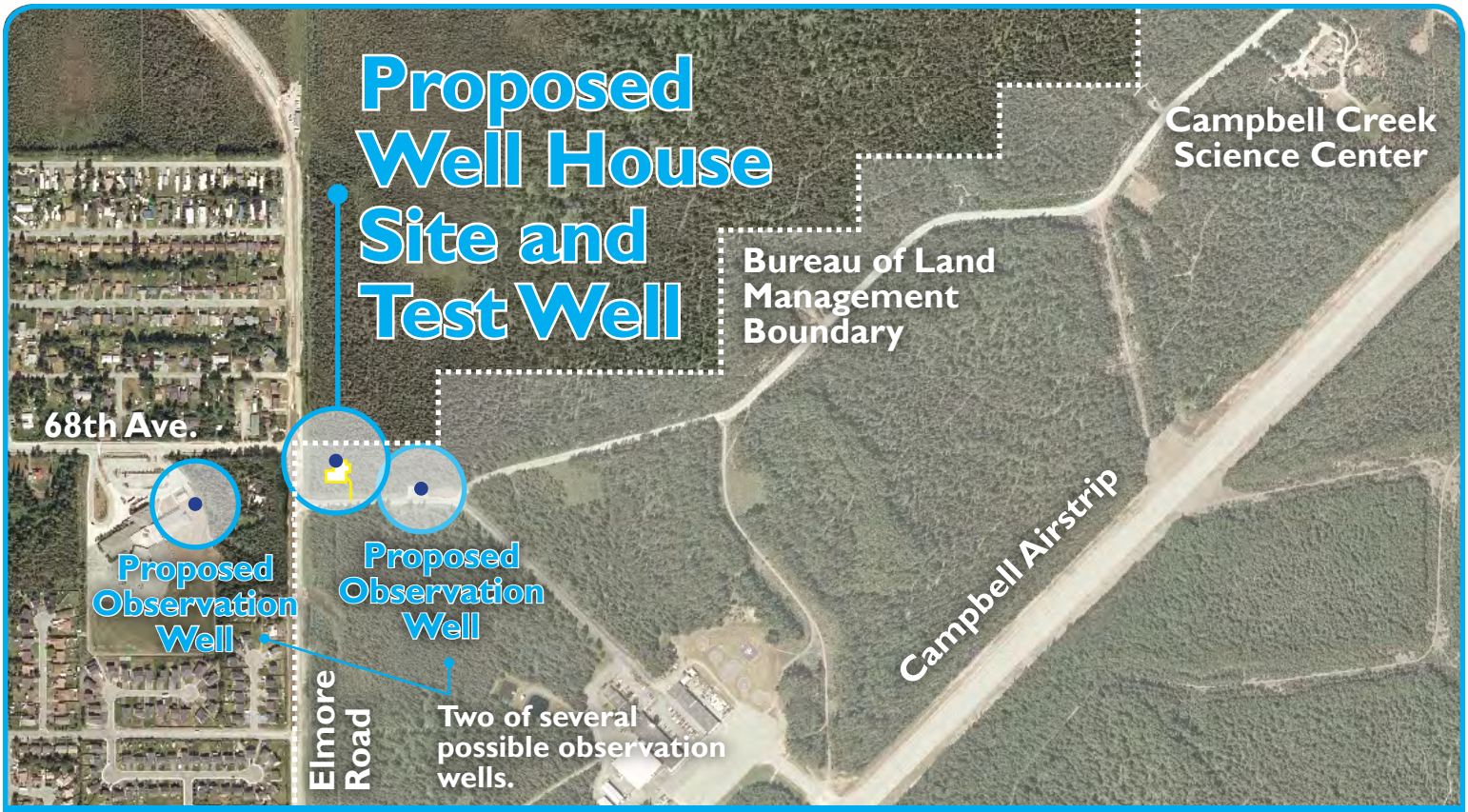
The 2005 AWWU Water Master Plan concludes that increased flexibility in the water supply system is needed. In addition, water demand projections completed for the Water Master Plan identified the need to increase water supply capabilities, particularly in the under-served demand areas of South and Southwest Anchorage.

2009 WATER DEMAND FOR THE MUNICIPALITY OF ANCHORAGE



WHEN WOULD IT BE CONSTRUCTED?





CAMPBELL TRACT AREA WATER WELL

A new **groundwater production well** is needed to bring more potable water to Anchorage residents during times of increased demand or emergency events.

WHY?

More water and emergency back-up:

There's not enough city water flowing to neighborhoods and fire hydrants in South and Southwest Anchorage. The 2005 Water Master Plan shows the increased need for water here as well as an emergency alternative to Anchorage's main source, Eklutna Lake. A new well is a practical way to supply water during times of high demand and to provide emergency back-up for all Anchorage residents.

WHERE?

BLM's Campbell Tract on the east side of Elmore Road:

The Campbell Creek area is a good place for a well Groundwater here is expected to be plentiful and the location makes it easy to connect to existing water infrastructure so that water is available to neighborhoods that need it. To ensure the adequacy of groundwater at this location, a test well (and water monitoring program) will be developed in spring/summer 2011.

HOW MUCH?

The well is expected to cost $5 million

As with all Anchorage Water and Wastewater Utility (AWWU) projects, the cost is shared among all rate-payers much the same way we pay for a postage stamp.

REVIEW PROCESS?

Environmental Assessment:

The new high-production water well is subject to an Environmental Assessment (led by the Bureau of Land Management) analyzing potential environmental impacts of the proposed project. This process will evaluate strategies to avoid or mitigate potential project impacts, such as impacts on visual surrounding wells, visual quality or recreation or recreation.

WHAT WILL IT LOOK LIKE?

Low-profile and low-impact:

The low-profile well house would be designed to blend with the natural setting and existing utility building. The approximately 40'X40' well house would likely sit on a 50'X50' concrete pad and a 13'X18' spot for a spare fuel tank. Native vegetation would be replanted where needed. It would be sited off trails to avoid impacting primary uses of the area.

QUESTIONS? www.CampbellTractWell.org

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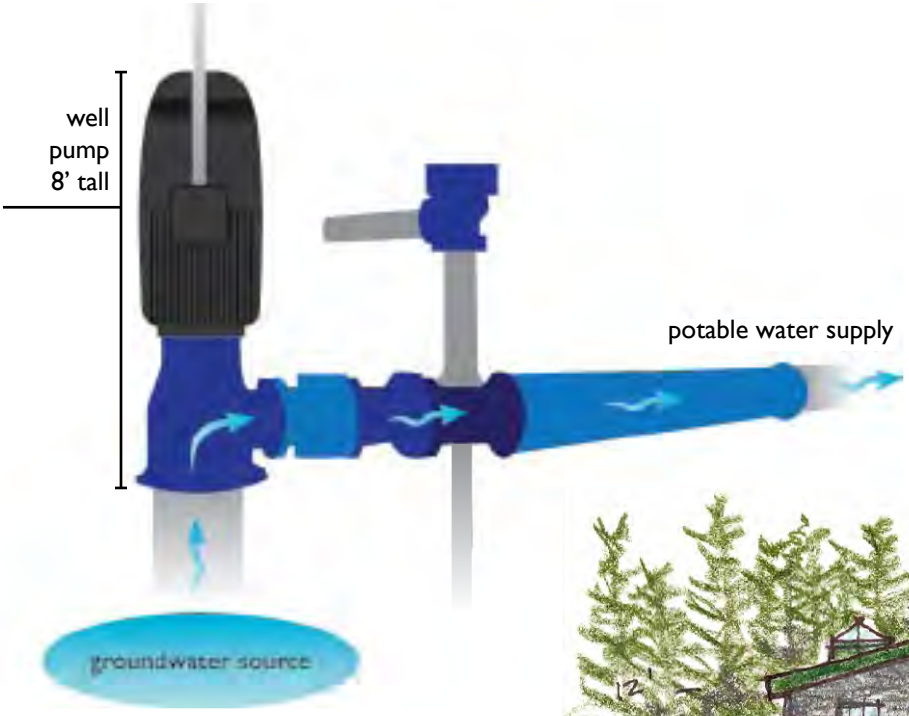
WHAT HAPPENS IN THE WELL HOUSE?

High-quality groundwater is pumped through a vertical turbine pump and is then piped to the existing water transmission main running along Elmore Road. The main brings potable water to neighborhoods in South and Southwest Anchorage.



WHAT WILL IT LOOK LIKE?

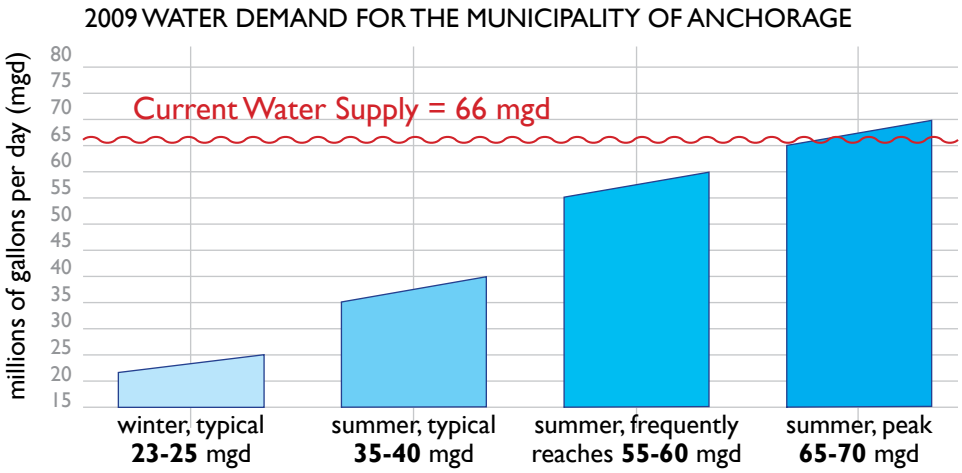
Low-profile and low-impact:

The currently proposed site is along the western boundary of Campbell Tract, adjacent to a busy roadway, and an existing AWWU building screened from public view. A small area of mature vegetation would be cleared and an additional building constructed. Impacts on visual quality would be minimal and mitigated by the small size and compatible design of facilities and by replanting with native vegetation where needed. Effects on recreation will also be minimal, due to project siting away from trails and recreation use areas.

WHY DO WE NEED THE HIGH-PRODUCTION WELL?

More water and emergency back-up:

The 2005 AWWU Water Master Plan concludes that increased flexibility in the water supply system is needed. In addition, water demand projections completed for the Water Master Plan identified the need to increase water supply capabilities, particularly in the under-served demand areas of South and Southwest Anchorage.



WHEN WOULD IT BE CONSTRUCTED?

FALL 2010/ WINTER | SPRING | SUMMER | FALL | WINTER | SPRING | SUMMER

2011 — 2012

- preliminary project analysis
- environmental analysis and permitting; findings released
- test well (spring or summer)
- well planning and engineering
- production well final design; release request for construction bids
- select contractor
- begin con-struction (finish 2013)

Factsheets: 2011

CAMPBELL TRACT AREA WATER WELL

A new **water well** is needed to bring more potable water to Anchorage residents during times of increased demand or emergency events.

WHY?

More water and emergency back-up:

There's not enough city water flowing to neighborhoods and fire hydrants in South and Southwest Anchorage and those portions of the Hillside currently served by AWWU. The 2005 Water Master Plan shows the increased need for water here as well as an emergency alternative to Anchorage's main source, Eklutna Lake. A new well is a practical way to supply water during times of high demand and to provide emergency back-up for all Anchorage residents.

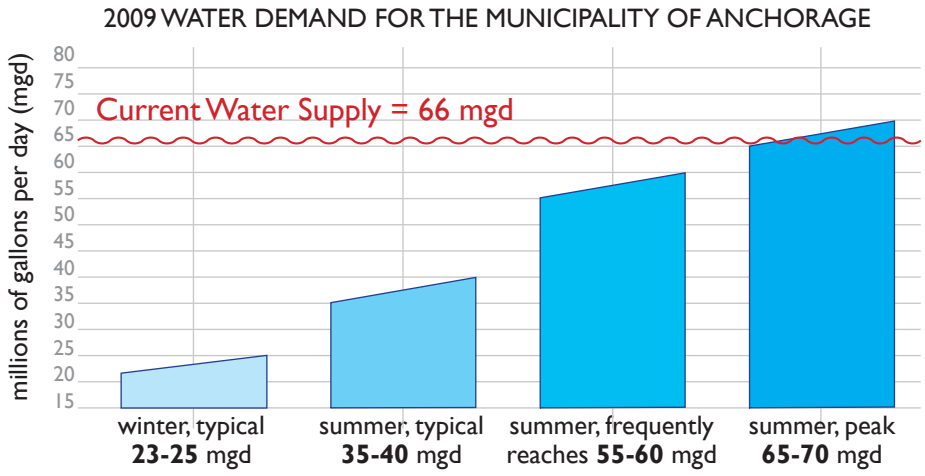
WHERE?

BLM's Campbell Tract on the east side of Elmore Road:

The Campbell Creek area is a good place for a well. Groundwater here is expected to be plentiful and the location makes it easy to connect to existing water infrastructure so that water is available to neighborhoods that need it. To ensure the adequacy of groundwater at this location, a test well (and water monitoring program) will be developed in 2011.

WHAT'S THE PURPOSE?

More water and emergency back-up: The purpose of the Campbell Creek Water Well is to provide a reliable back up supply of water during times of peak demand. The 2005 AWWU Water Master Plan concludes that increased flexibility in the water supply system is needed. In addition, water demand projections completed for the Water Master Plan identified the need to increase water supply capabilities, particularly in the under-served demand areas of South and Southwest Anchorage.



HOW DOES THIS FIT INTO PLANS FOR ANCHORAGE?

Implementing the Anchorage 2020 Water Master Plan

The well site was chosen because it adjoins a major, southbound water main. As the map below shows, connecting to the water distribution system in this location allows AWWU to supplement current supplies in a broad area of south and southwest Anchorage. Adding this new capacity is not designed to open new areas to public water service; the intent is simply to ensure adequate supply to customers within AWWU's existing service area boundary.

The proposed well would provide supplemental water to meet peak seasonal demand in southwest Anchorage.

HOW DOES THE WELL PUMP WORK?

High-quality groundwater is pumped through a vertical turbine pump and is then piped to the existing water transmission main running along Elmore Road (Elmore Water Trunk Line). The main brings potable water mainly from Lake Eklutna to the north, down to neighborhoods in South and Southwest Anchorage and the Hillside District.

WHAT WOULD THE WELL HOUSE LOOK LIKE?

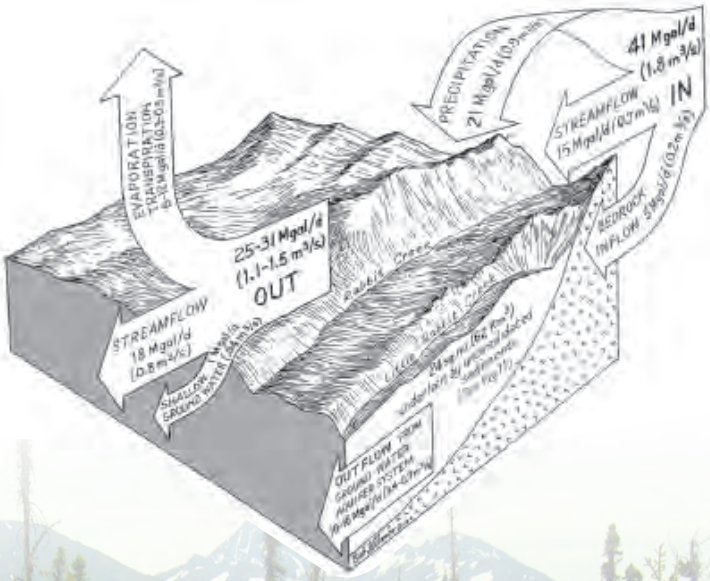
Low-profile and low-impact:

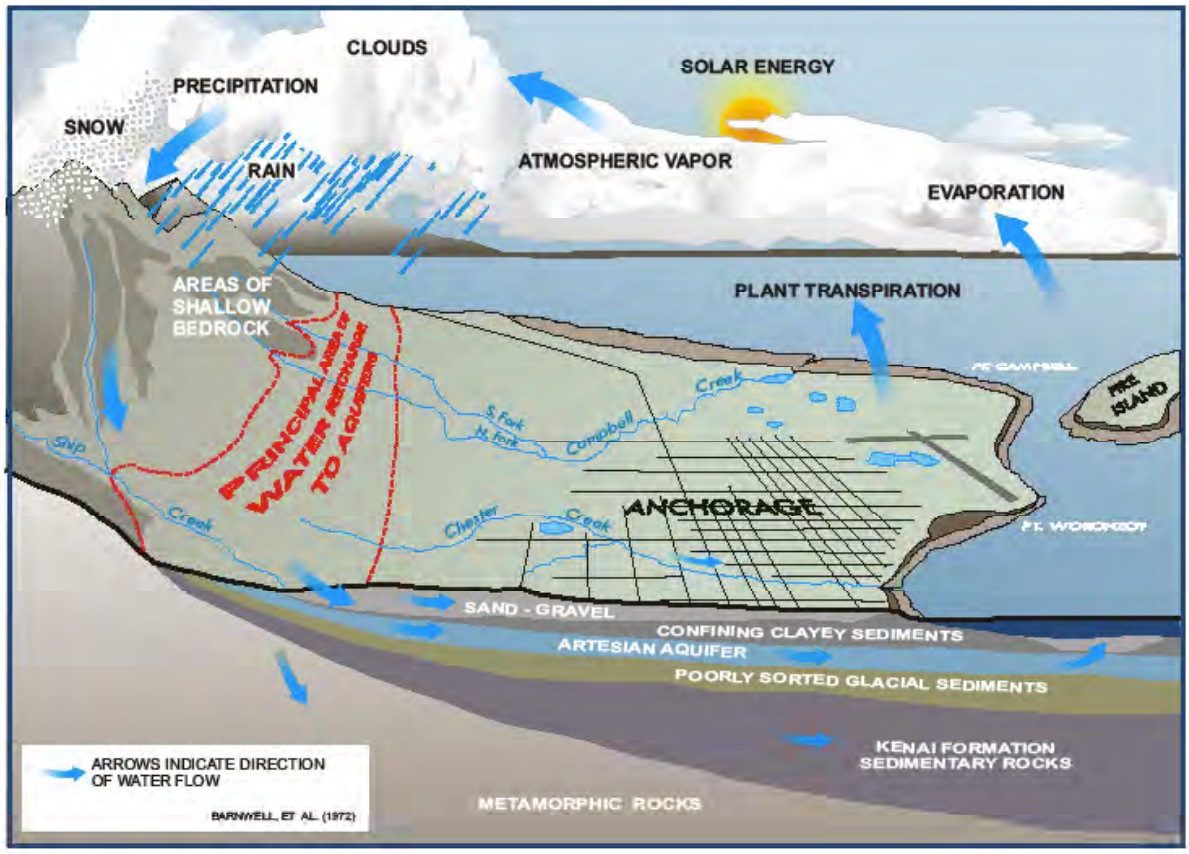
The low-profile well house would enclose the well pump and be designed to blend with the natural setting and existing AWWU utility building. The approximately 40'X53' well house would sit on a 50'X58' concrete pad and house a spare fuel tank. Native vegetation would be replanted where needed. It would be sited off trails to avoid impacting primary uses of the area.

WHERE DOES OUR WATER COME FROM? WHERE DOES IT GO?

Runoff seeps into the underground aquifer:

In 2002, AWWU delivered water to more than 52,600 customers. About 83 percent of this was surface water (mostly from Eklutna Lake – 79 percent, and from Ship Creek – 4 percent). The rest of the demand for water, another 17 percent, was met by local aquifers, mostly from private domestic wells.





HOW WILL AWWU PROCEED?

AWWU selects a few observation wells for special monitoring. Drill test well and monitor results.

- Well goes on line.
  - The well works as planned. → **GO**
  - The well needs some fine-tuning. → **WAIT**
- Some potential for impacts: Address and fix the issues. → Well goes on line.
- High potential for impacts. → **STOP**

STOP: Drop plan for the well in this location.

GO: South Anchorage receives enough additional water to cover emergency events and times of increased demand for potable water.

WAIT:
- Fine-tune.
- Reduce the amount, rate or frequency of the water drawn through the well.
- Deepen the well.
- Link impacted wells to public water.

This conceptual model shows hydrogeology relative to the water cycle in the Anchorage area. AWWU and its consulting team have prepared a hydrological model of groundwater in the project area. The proposed well will extend to a depth of approximately 500'. Aquifers at this depth are most likely separated from higher level aquifers used by adjoining residential wells. To verify the model, and determine the availability of water for the well, AWWU will drill a test well at the site, and monitor impacts of water use on surrounding wells.

ENVIRONMENTAL ASSESSMENT PROCESS - ISSUES AND FINDINGS

The new groundwater well site is proposed to be located in the Campbell Tract Facility, on federal lands managed by the U.S. Bureau of Land Management (BLM). This location is based primarily on subsurface hydrogeology and existing AWWU infrastructure. In May 2010, the AWWU applied to the BLM for Right-of-Way (ROW) Grants to use those public lands for:

- Short-term use for a test well to confirm that the site can produce the volume of water needed to supplement the municipal water supply and an observation well to evaluate potential impacts on the groundwater resource.

- Construction of the groundwater production well with ancillary facilities adjacent to the existing AWWU PRV facility.

The BLM is considering the application in accordance with federal regulations, and will make a decision on issuing the ROW Grants to the AWWU.

When an activity or action is proposed on BLM-administered lands, the BLM must analyze the proposed action to assess how it may affect the quality of the human environment. In compliance with this requirement, an Environmental Assessment (EA) is being prepared to analyze the potential environmental effects of the proposed groundwater production well.

The BLM maintains a register of environmental documents, which is available for public review at:

- The BLM Anchorage Field Office (AFO) website http://www.blm.gov/ak/st/en/info/nepa/afo_nepa/afo_nepa_fy2011.html

- At the AFO Reading Room, located in the Campbell Tract Administration Building, 4700 BLM Road.

Once completed, the EA will be made available for a 30-day public review. It is currently expected that the Groundwater Production Well Facility ROW EA (DOI-BLM-AK-A010-2010-0044-EA) will be available on the website and in the AFO Reading Room in May. A public notice will be made about the availability of the EA and the process for submitting comments to the BLM.

Potential impact to the environment would be minimized due to site location, existing facilities, and planned site controls and mitigation. Key issues evaluated in the EA include:

- **Water Resources.** The development of a groundwater well could supplement existing surface water supplies in the MOA, alleviating shortfalls in meeting peak demand and providing an emergency water supply. The AWWU would monitor observation wells during testing to ensure impacts to the groundwater resource are minimized. Some potential impacts could be further mitigated by design or operation (e.g., deepen production well or reduce draw). After design and operation measures have been factored in, if appreciable impacts are still expected, the AWWU would not proceed directly with development of the production well.

- **Vegetation and Wetlands.** Constructing the new facility pad would involve a new pad, approximately 0.11 acres; 0.06 acres would be wetlands fill. Approximately 100 live trees and approximately 40 dead or dying spruce trees would need to be removed. BLM is currently considering an option which would make the removed trees available to the public.

- **Visual Resources.** The facilities have been sited and designed to minimize visual impact on the public – from both the existing Campbell Tract access road and the proposed new access road to the north, along the BLM property line.

- **Recreation.** The project site is adjacent to the existing small AWWU Pressure Reducing Valve (PRV) facility, and west of existing Smoke Jumper trailhead parking lot. The PRV facility takes high-pressure water from the transmission main and provides low pressure water to the distribution main. The proposed location by the PRV facility would avoid trails and areas of common recreational use. There would be some disturbance to recreational users due to noise generated during drilling and construction, but this is expected to be short term and temporary.

WHAT CAN I EXPECT DURING THE CONSTRUCTION PHASE?

Current plans call for a test to be drilled in 2011, and the final permanent well in 2012. During construction there may be some short term disruption in the area. This might include daytime noise from the drilling process, and the need to temporarily stage material at the PRV site or adjacent to the Smokejumper Trailhead parking lot. The clean groundwater discharged from the well during the testing phase (approximately 3 days for the test well and production well) will be drained onto adjoining land, which may temporarily cause an increase in soil moisture. Recreation use is not expected to be affected.

WHAT'S THE PROJECT TIMELINE?

FALL 2010/ WINTER | SPRING | SUMMER | FALL | WINTER | SPRING | SUMMER

2011 — 2012

WELL PLANNING AND ENGINEERING

BEGIN CONSTRUCTION (FINISH 2013)

TEST WELL

Begin groundwater testing. Monitor water quality and quantity at the test well and other existing nearby observation wells.

SHARE TEST RESULTS

Abbott Loop Community Council Meetings: Present results of monitoring as well as any final conclusions about any proposed progress. Based on results, planning and engineering of the well could progress through the year.

EXISTING COMMUNITY MEETINGS

AWWU present project plans at existing community meetings and share plans for groundwater testing. Subsequent updates presented during regular Abbott Loop Community Council meetings.

ENVIRONMENTAL ANALYSIS + PERMITTING, FINDINGS RELEASED

Environmental Assessment should be released followed by an open, 30-day comment period.

PRELIMINARY PROJECT ANALYSIS

Met with community councils and Far North Bicentennial Park advisory group to announce Campbell Tract Well project.

WHAT DOES AWWU DO?

Anchorage Water and Wastewater Utility (AWWU) provides public water and wastewater service to more than 80 percent of the Municipality of Anchorage. The utility also provides infrastructure that responds to anticipated growth, as specified in approved municipal plans. It is operated and owned by the Municipality of Anchorage and governed by the AWWU Authority Board of Directors, the Anchorage Assembly and regulated by the Regulatory Commission of Alaska. Public water service that AWWU provides includes the treatment, transmission and distribution of potable water from two treatment facilities to the residents and the commercial establishments in the municipality. The treatment facilities are supplied with water from Eklutna Lake, Ship Creek and 16 wells. Public wastewater service includes the collection and treatment of wastewater at three treatment facilities located in Girdwood, Eagle River and Anchorage. The utility also treats wastewater from Elmendorf Air Force Base, Ft. Richardson and septage collected from on-site systems in Anchorage and the Matanuska-Susitna Borough. In accord with municipal land use decisions, AWWU supports the public health, safety and economic interests of the community by providing quality water and wastewater services in a responsible, efficient and sustainable manner.

HOW CAN I BE INVOLVED?

This information package is intended to help the general public understand the purpose and consequences of the planned well. If you have comments or questions please check the project website, or contact Tom Winkler or Sandy Hamann (see contact info below). Thanks for your interest!

May 2, Monday, 6:20 p.m.
Friends of Far North Bicentennial Park
Anchorage BLM Field Office, 6881 Abbott Loop Rd.

May 5, Thursday, 7 p.m. HALO Hillside
at Holy Spirit Retreat Center, 10980 Hillside Dr.

May 19, Thursday, 7 p.m.
Abbott Loop Community Council
Abbott Loop Elementary School, 8427 Lake Otis Pkwy.

QUESTIONS? www.CampbellTractWell.org

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