



"Solutions to water quality, quantity, permitting & planning issues"

January 31, 2012

Mr. Stuart Skidmore, President
Vista Vu Water Users Association
7 Munding Lane
Omak, WA 98841

Subject: Preliminary Hydrogeological and Hydraulic Continuity Interpretation
Vista Vu Water Users Association Property
Northeast of Omak, Washington

Dear Mr. Skidmore

This letter report documents Water & Natural Resource Group, Inc. (WNR Group) preliminary interpretation of the hydrogeologic conditions on the Vista View Water Users Association property located west of Omak River Road approximately two miles northeast of Omak, Washington (Figure 1). This letter report includes a summary of the interpretation of the groundwater and its hydraulic connection to surface water (Okanogan River) at the Site. This work was performed at your request in order to assist with the technical data required to support the transfer of water rights.

INTRODUCTION

The WNR Group was retained to perform a preliminary hydrogeologic assessment for the property located west of the Okanogan River at river mile 35. The subject property evaluated for this study, which is the existing service area known as the Vista Vu Water Users Association, is located approximately in the southeast $\frac{1}{4}$ of Section 19, in Township 34 North, Range 27 East (Figure 2 and 3), henceforth called the Site. The area described as the Site (existing service area) is presently utilized as residential land with rural agricultural land surrounding it (Figure 3). Water utilized within the service area is withdrawn from a well located in the $W\frac{1}{2}$ - $W\frac{1}{2}$ - $SW\frac{1}{4}$ Section 20, Township 34 North, Range 27 East (Figure 2 and 3).

PURPOSE OF STUDY/SCOPE OF SERVICES

The preliminary hydrogeologic investigation was conducted in order to provide technical data for a proposed transfer related to water right G4-25938, recorded in Book 40, Page 17, with a priority date of July 24, 1978. The certificate allows for a withdrawal amount of 180 gpm, and an annual amount not to exceed 50 acre-feet. The certificate was issued for continuous community domestic supply for 25 homes. A copy of the Certificate of

Water Right is attached to this letter report as Attachment A. This preliminary evaluation was conducted to provide recommendations if the existing point of withdrawal is hydraulically connected to the Okanogan River. This interpretation was based on readily available information, primarily published government documents. Limited field data collection was conducted including surveying elevation of well casing and measuring depth to water. No extensive field exploration program including the completion of drilling activities to determine depth to groundwater, or the collection of flow data from the Okanogan River was completed for this study.

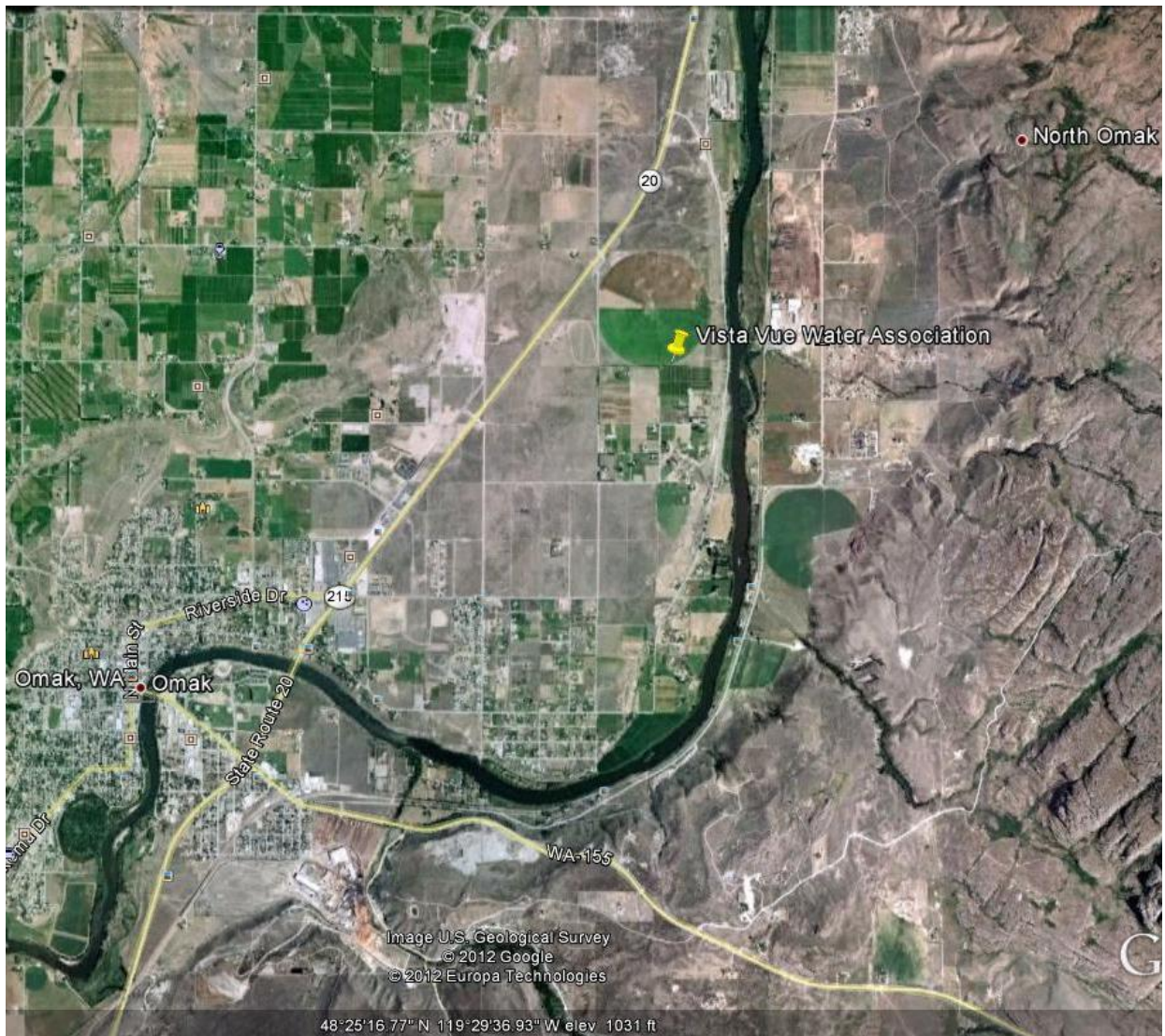


FIGURE 1: SITE LOCATION MAP SHOWING LOCATION OF VISTA VU WATER USERS ASSOCIATION NORTHEAST OF THE TOWN OF OMAK, WA (no scale)

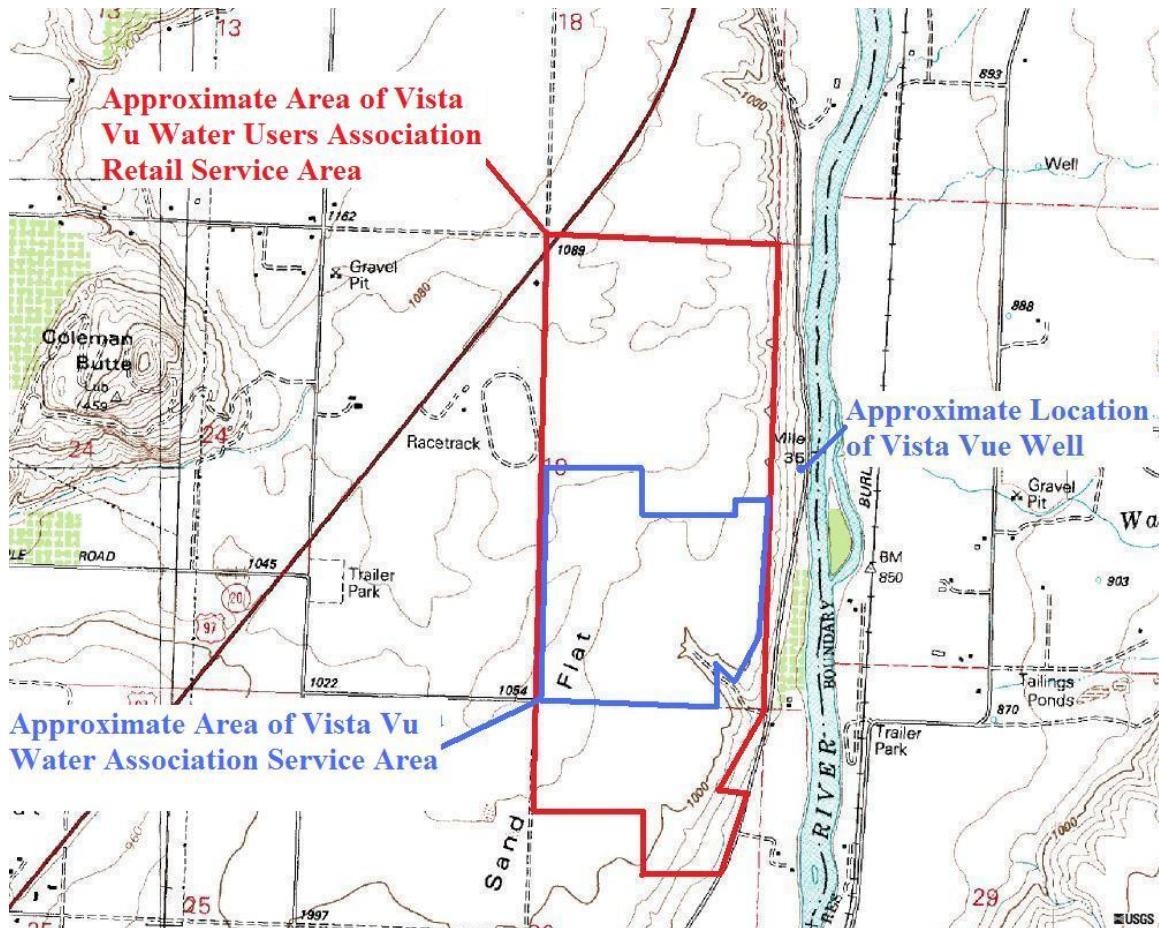


FIGURE 2: TOPOGRAPHIC MAP OF PROJECT SITE. GROUNDWATER WELL IS LOCATED APPROXIMATELY AT TERMINUS OF LINE. (not to scale)

The WNR Group performed the following tasks as part of this preliminary evaluation.

Task 1 - Site Reconnaissance – Conduct a Site visit to observe the well location and its relative location to the Okanogan River. During the site reconnaissance, an elevation survey was conducted to determine relative well casing elevation, groundwater elevation, and water level elevation in the Okanogan River.

Task 2 – Review of Readily Available Data for the Subject Site – The WNR Group researched and reviewed readily available hydrogeologic data for the Site and the general vicinity to assist with the interpretation of the hydrogeologic conditions at the Site.

Task 3 - Evaluation and Report Preparation – WNR Group prepared this letter report detailing the findings associated with each of the above-listed tasks.

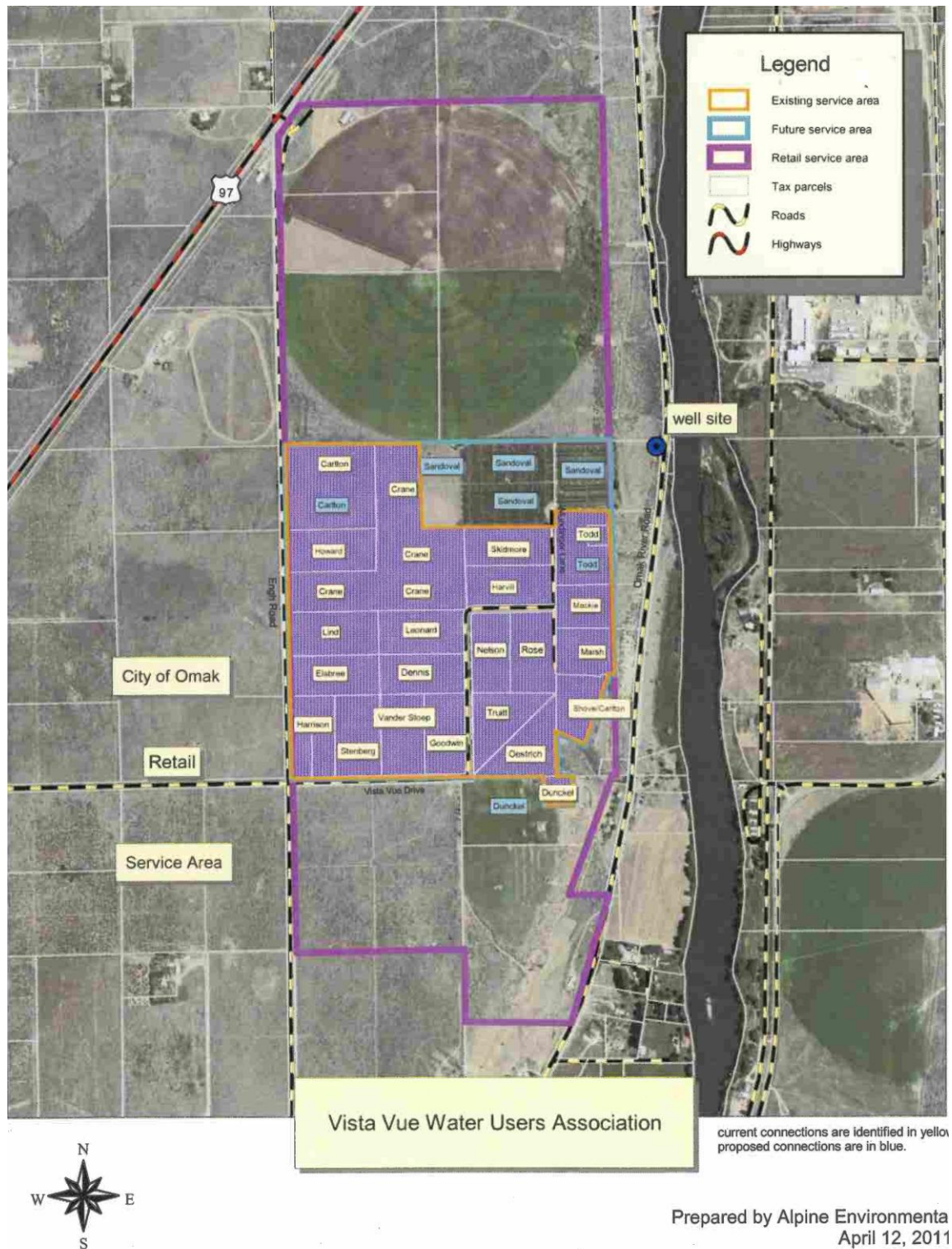


Figure 3: Map of the Vista Vu Water Users Association Service Areas.

FIELD ACTIVITIES

Drew Becker with Erlandsen (under contract to the WNR Group) performed a Site visit on January 20th, 2012 in order to visually inspect the location of the existing well, and to measure the depth of water in the Vista Vu Water Users Association well casing. In addition, an elevation survey was conducted to determine the elevation difference from the groundwater in the Vista Vu Water Users Association well to the Okanogan River. Survey equipment used during the site visit consisted of a survey grade Leica Geosystems GPS unit. The following information was documented during the Site visit.

- The well at the site consists of an 8-inch well with Ecology Well tag ID #ABS096.
- The GPS survey recorded the top of well casing at 860.46 feet above MSL.
- The depth to water in the well at the time of the site visit on January 20th, 2012 was measured at 21.07 feet below the top of casing, or at an elevation of 839.39 feet above MSL.
- The Okanogan River is located 117.5 feet due east of the well; and the existing river elevation during the site visit was measured at 835.25 feet above MSL.
- The field elevation survey conducted during the Site visit revealed that the Okanogan River elevation due east of the well location was approximately 4.14 feet lower in elevation than the groundwater elevation at the well.
- A groundwater well is located at the approximate location shown in Figure 2 and 3. It currently is completed with a well pump and conveys water to the service area as shown in the engineering construction plans provided in Attachment B.

DOCUMENT REVIEW

The WNR Group reviewed readily available hydrogeologic reports and data in the vicinity of the subject site in an attempt to develop an understanding of the hydrogeologic conditions at the subject Site. The WNR Group attempted to identify uses of existing water withdrawals at and in the immediate vicinity of the Site as recorded in readily available government documents. These sources and findings are summarized in the sections that follow.

Water Right Certificate – A copy of the water right certificate in which the proposed transfer is requested is attached to this letter report. The current certificate allows for a withdrawal from the groundwater in the Okanogan River valley. A summary of certificate conditions is as follows:

- Certificate number is G4-25938C.
- Certificate is entered into the record in Book 40, at Page 171.
- Certificate has a priority date of July 24, 1978.
- Right to use groundwater within Okanogan County, State of Washington.
- Withdrawal of groundwater from one well located in the W½W½SW¼ Section 20, Township 34 N, Range 27 E.W.M.
- Original certificate granted to Vista Vu Water Users Association c/o Gary Munding, of Omak, Washington.

- Purpose (beneficial use) of withdrawal is for continuous supply for a community domestic supply for 25 homes.
- Right is granted to not exceed 180 gallons per minute, and 50 acre-feet per year.
- Beneficial use is to be used in the SE ¼ of Sec. 19 and Government Lots 3 and 4 in Section 20; all in Township 34 North, Range 27 East.

No documentation of the actual use of the existing certificate was provided for evaluation conducted for this report.

Ecology Water Well Logs - An Internet search of the Washington State Department of Ecology's water well database was conducted. Search criteria of Township 34 North, Range 27 East, SW quarter Section 20 was entered. Six (6) water well logs were on file within the database. However, only two of these well logs were located on the west side of the Okanogan River. One of these recorded well logs was for the existing Site well (identified under Riverview Feeders) and is presented in Figure 4. The two well logs for the SW quarter of Section 20 which are located west of the Okanogan River are presented in Attachment C.

Search criteria of Township 34 North, Range 27 East, SE quarter Section 19 was also entered (that area where the certificated place of use is located). Two (2) water well logs were on file within the database. Table 1 presents a summary of the well logs reviewed within the Ecology data base. Well logs reviewed are included in Attachment C.

Table 1: Summary of Well Log Information in T34N, R27E, Sections SW-20 and SE-19.

Well ID	Owner	Location	TD/SWL (in ft bgs)	Yield (gpm)	Source
G4-25938	Riverview Feeders	NW1/4SW1/4 Sec 20	204 / 21	200	Coarse Sand & Gravel
G4-8024	Lane	SW1/4SW1/4 Sec 20	133 / 80	200	Sand & Gravel
ALF128	McKellop	SE1/4SE1/4 Sec 19	170 / 98	3	Sand & Clay
ALF129	McKellop	SE1/4SE1/4 Sec 19	187 / 95	15	Sand, Silt & Clay

- (1) Static water level appears to be under pressure and is originated from deeper stratigraphically confined unconsolidated aquifers.
- (2) Highlighted wells are associated with Subject Site.
- (3) TD = Total Depth of Well; SWL = Static Water Level at time of drilling; bgs = below ground surface; gpm = gallons per minutes

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

ECY 050-1-30

(USE ADDITIONAL SHEETS IF NECESSARY)



WNR
GROUP

GENERAL GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Surface Topography – WNR Group reviewed available United States Geological Survey (USGS) topographic quadrangle maps for the Site and vicinity to determine the physical setting of the Site. The Site is located within The Pothole, Washington 7-1/2 minute quadrangle map dated 1990. The Site is located in the western portion of the Okanogan Valley at approximately river mile 35 of the Okanogan River. The general slope of the area is to the east, toward the Okanogan River. Groundwater beneath the site is inferred to flow to the east-southeast, as interpreted from the topographic slope of the subject property and the flow of the Okanogan River.

Regional Geology – The Site lies in the central portion of the Okanogan trench, with the highlands of the North Cascade subcontinent rising to the west, and those of the Okanogan subcontinent in the east (Alt and Hyndman, 1994). The Okanogan River valley is the major physiographic feature in the area and is filled with glacio-fluvial sediments deposited during the last ice age approximately 12,000 years ago. During the last ice age the entire Okanogan drainage was overridden by the Okanogan Lobe of the Cordilleran ice sheet. As the glacier melted it deposited sequences of silt, sand, gravel and cobbles as glaciofluvial and glacial drift deposits (WDOE, 1985). These sequences of unconsolidated materials are generally present as valley fill and along valley walls as terraces.

The WNR Group also reviewed the Washington Division of Geology and Earth Resources geologic map for northeastern Washington (1991). The geologic map revealed that the subject site is underlain by Eocene Age volcanic rocks at depth. Along the eastern area of the Okanogan River Valley near the Site, a large fault is present with pre-Tertiary gneiss located east of the fault. Pleistocene Age glacial drift is deposited over the bedrock immediately below the site and the western extent of the valley floor. Glacial drifts and tills typically have low yields in the compacted clay silts and gravels. However, glacial tills may have interbedded sand layers that can produce sufficient amounts of water. Along the eastern margin of the Vista Vu Water Users Association service area, and near the location of the production well for the Site, the glacial drift is bordered by Holocene age alluvium sands and gravels.

The main area in the Okanogan River valley floor are underlain by these Holocene age deposits which form the more porous and permeable sand and gravel aquifers. Figure 5 presents the geologic map for the area of the Site. As shown on the geologic map, the unconsolidated Holocene sands and gravels are present to the east of the property located in the main valley floor of the Okanogan River valley. Pleistocene glacial drift sediments will be encountered directly beneath the housing development and in the western valley walls of the Okanogan Valley. Figure 6 is a cross-section of the Okanogan Valley located approximately one mile north of the site. As shown on the cross section, the eastern valley wall is bordered by a normal fault with pre-tertiary bedrock on the eastern side which is faulted against Tertiary bedrock to the west. Within the valley floor, Holocene alluvium is present directly above the bedrock. In the western portion of the

valley floor, the Holocene alluvium is deposited over Pleistocene glacial drift, which is eventually exposed at surface in the western valley wall.

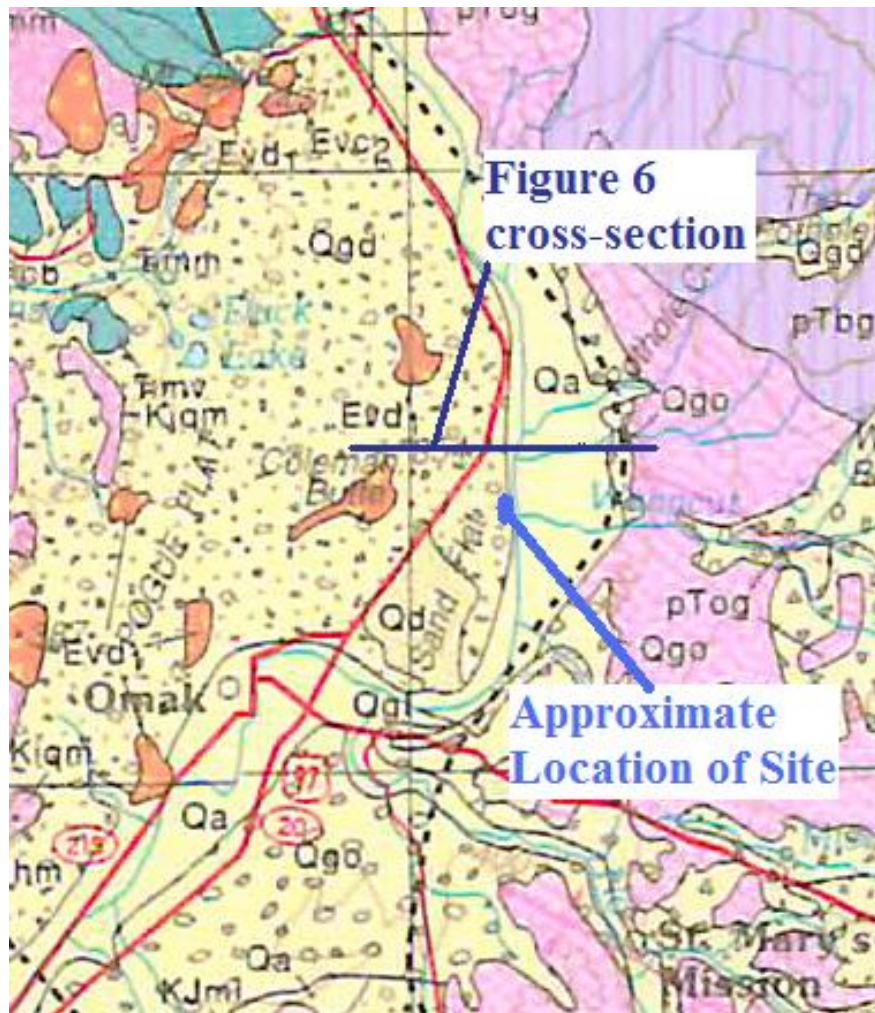


FIGURE 5: GEOLOGIC MAP OF THE OKANOGAN RIVER VALLEY NEAR OMAK, WASHINGTON. Qa = Holocene Alluvium; Qgd = Pleistocene glacial drift; Evd = Eocene dacite and andesite flows; pTog = preTertiary Orthogneiss. (1991).

Regional Groundwater Conditions – The bedrock underlying the Okanogan River Valley is effectively impermeable and does not host any major aquifer systems. Wells founded within the bedrock typically intersect bedrock fractures and produce low yields. The primary source of groundwater within the Okanogan River Valley is in the alluvial and glacio-fluvial sediments that fill the bottom of river valleys (WDOE, 1985). Walters (1974) estimates that 75 percent of the groundwater stored in the unconsolidated deposits in the Okanogan watershed is located within the Okanogan River corridor, and can produce yields as high as 5,000 gallons per minute (gpm). Within the unconsolidated sediments, scattered silt and clay lenses may exist which can form perched aquifer systems.

Due to the relatively clean sand and gravel composition of the valley fill material, groundwater flow rates are relatively high. The regional flow of the Okanogan River Valley aquifer is to the south. Typically, groundwater of the aquifer occurs at a depth of about 20 to 50 feet below ground surface in the main valley floor. Recharge to the aquifer is primarily in the form of precipitation infiltration, and interaction with surface water bodies such as the Okanogan River (WDOE 1985).

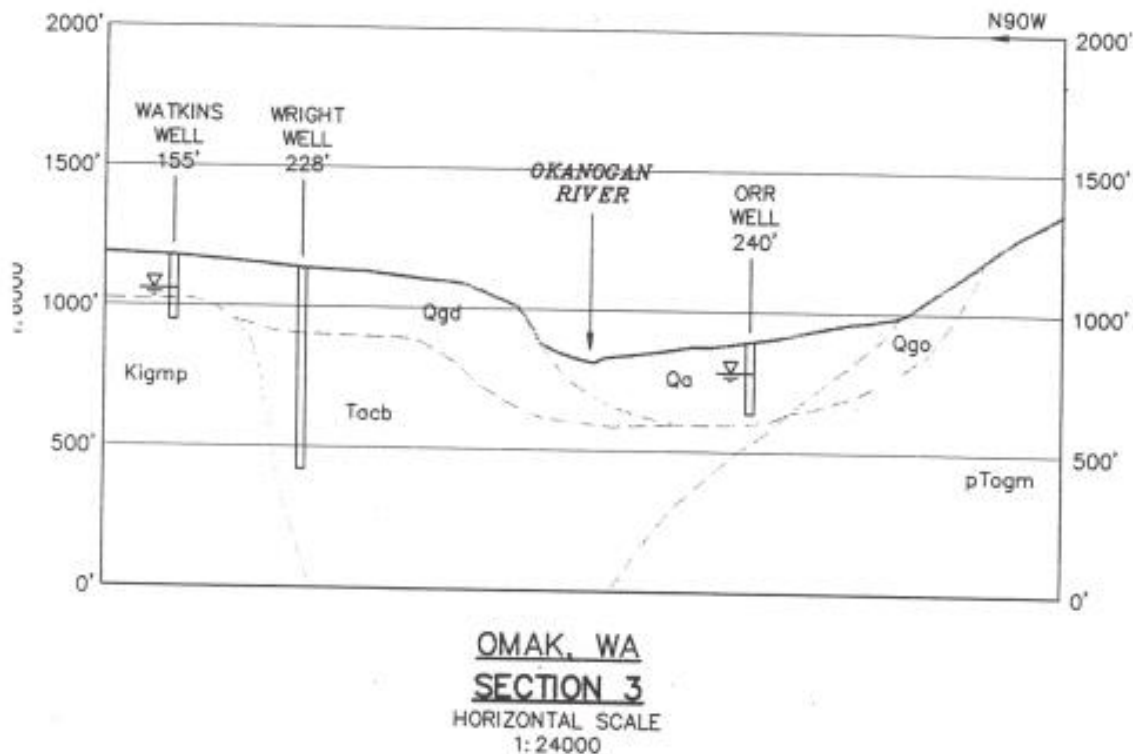


FIGURE 6: GEOLOGIC CROSS-SECTION OF OKANOGAN VALLEY AT APPROXIMATE RIVER MILE 37, NORTH OF THE SITE (WDOE, 1985).

Site Soil and Geologic Conditions – Review of well logs on and immediately adjacent to the property (McKillop wells) determined that the shallow soils at the Site consist of a sand, with varying amounts of silt and gravels interbedded with silty sand and clay, typical of glacial drift deposits found within the Okanogan River Valley area. These soils were encountered to depths of approximately 185 feet below grade. The production well for the Vista Vu Water Users Association service area intercepted a sandy brown clay to a depth of 41 feet, underlain by fine sand to a depth of 87 feet, then a clay and silt to 197 feet, and terminated in a coarse sand and gravel to a depth of 204 feet. These sediments are typical of an alluvial sequence, with flood plain and channel deposits. The lower sequence of sand and clay may be representative of a glacial drift and/or glaciolacustrine deposit. Figure 6 presents a generalized geologic cross-section (WDOE, 1985) of the Okanogan Valley located approximately one miles north of the subject site. The geologic cross-section reveals bedrock valley walls with alluvial deposits in the main valley floor. These alluvial deposits are shown to overlie a glacial drift in the western extent of the

valley, that area where the Site is located. Therefore, these sediments are inferred to be the unconsolidated sediments which lie beneath the Site.

Site Groundwater Conditions – One well log exist for the production well at the Site. This well was completed in July 1978 and encountered groundwater at a depth of 21 feet below the ground surface. This depth to water is inferred to be at the approximate elevation as that of the Okanogan River. The well was completed to a depth of 204 feet below grade and casing installed to the full depths explored. The well extracts groundwater from a coarse sand and gravel located below 197 feet. In August 1978, a pump test was completed on this well by Methow Valley Drilling. An eight hour pump test was conducted, during which the pump was operated at an average pumping rate of 250 gpm. The water table was drawn down to a depth of 195 feet below ground surface (the approximate depth of the sand and gravel interval, and the depth where the casing was installed and at which the pump was set). The water level was recorded at this depth throughout the test. No other drawdown or recovery data was provided for the test, and a recommendation to install a 200 gpm pump was made. Information collected during the pump test is provided in Attachment C.

Site groundwater conditions were also collected during our Site visit on January 20th, 2012. Groundwater levels in the Site production well were measured at an elevation of approximately 4 feet higher than the Okanogan River. This would suggest that during January, groundwater beneath the site is flowing towards the Okanogan River (river is gaining water from aquifer). In our professional opinion, this would suggest that the river and groundwater beneath the site is in hydraulic continuity.

Three other wells are located in the southwestern area of the service area. These wells were completed to depths of 133, 170, and 187 feet below grade. Groundwater was recorded at depths between 80 and 98 feet below grade. These wells are completed approximately ¼-mile west of the river and are located at higher elevations than the Site production well. These wells are also inferred to be in hydraulic continuity with the river.

Conceptual Hydrogeologic Model of Area - A generalized conceptual model was developed to illustrate the hydraulic continuity of the shallow groundwater at the existing withdrawal site and the Okanogan River. As shown on Figure 1 and 2, the Okanogan River flows in a southerly direction. The shallow groundwater in the unconsolidated aquifer is recharged directly from the Okanogan River headwaters and from precipitation that falls within the valley floor. The groundwater flow in the valley mimics the flow of the river within the Okanogan Valley. The valley near the subject Site, as found throughout the valley, is filled with sands and gravels which host the unconsolidated aquifer. The valleys are formed within generally impervious bedrock beneath the valley floor sediments and along the valley walls. Surface water and the shallow aquifer upstream and down-stream of the Site is in direct hydraulic continuity and loses and gains water from the river dependant upon precipitation, river flows, valley geomorphology, and dam operations within the lower parts of the Okanogan River valley. The shallow groundwater is inferred to follow the river flow direction.

The shallow unconfined aquifer beneath the Site is inferred to be essentially the same water as that in the Okanogan River, which gains and losses water to the gravel aquifer in the valley. The Okanogan River is derived from headwater tributaries and from groundwater. Review of well logs completed in the sand and gravel valley fill near the subject Site reveal that the groundwater is at or near the elevation of the river. During the January 2012 site visit, the groundwater was approximately four feet higher than river elevation suggesting that the river is gaining water from the valley aquifer. Several miles downstream of the Site, the Okanogan River becomes influenced from backwater of the Wells Pool and essentially becomes one water body.

It is inferred that all surface and groundwater within the valley from Oroville to the confluence with the Columbia River are contained within the incised Okanogan Valley throughout its course, and both surface and groundwater recharge the Columbia River surface water and valley aquifer. Therefore, in our professional opinion, the surface water and groundwater interchanges throughout the river valley and appears to be in hydraulic continuity throughout the valley, and as such, is interpreted to be the same body of water.

CONCLUSIONS

WNR Group has performed a preliminary hydrogeologic review of the Site located north of Omak, Washington. The following conclusions are based on review of readily available data and reports, noted in the bibliography of this letter report. The primary objective of this review was to provide a professional opinion of the hydraulic continuity from the existing Site point of withdrawal to the Okanogan River, located approximately 117 feet east of the existing Site groundwater well.

Review of data suggests that the hydrogeologic conditions at the Site are similar to those presented in Figure 6. Review of well logs in Section 19 and 20 revealed that the area surrounding the Site is underlain by unconsolidated sands, gravels, silts and clays of varying amounts. Numerous well logs also documented silt/clay layers at depths which would be indicative of floodplain deposits or glacial till (difficult to determine from the drillers well logs, but both would exist in the immediate area of the site). Lateral continuity of these clay layers could not be determined from the well logs, but are inferred to be discontinuous upstream and downstream of the site.

As shown in the well log and documented during our site visit, the groundwater beneath the subject Site was observed at a depth of approximately 21 feet in the existing Site well. An elevation survey conducted during our Site visit determined that the existing Okanogan River elevation is 4.14 feet below the current well groundwater elevation, placing the groundwater elevation near river elevation. It is reasonable to interpret that the groundwater at the withdrawal point is located within an aquifer that is hydraulically connected to the Okanogan River. Due to the relative similar elevation in groundwater elevation to surface water elevation, it is also interpreted that the well is founded within an unconsolidated aquifer. Although the groundwater appears to be hydraulically connected to the Okanogan River, little or no affect on the Okanogan River flow from

groundwater withdrawal is expected due to the relatively clean sand and gravel composition of the local aquifer, which exhibits relatively high groundwater flow rates.

In summary, the transfer of a portion of groundwater right G4-25938 from a well near the Okanogan River would be available to surface and/or groundwater withdrawal downstream in the Okanogan and Columbia River Valleys. It is interpreted that the groundwater at the existing point of withdrawal is hydraulically connected to the Okanogan River.

LIMITING CONDITIONS

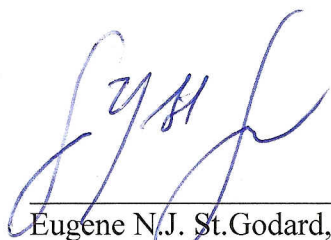
This limited hydrogeologic letter report has been prepared for the exclusive use of Vista Vu Water Users Association and their assigns, in accordance with the standards of the environmental consulting industry at the time the services were performed. This work has been performed for the sole purpose of assisting in the interpretation of the hydraulic connection of the groundwater at an existing groundwater withdrawal location and the Okanogan River, located approximately 117 feet east of the point of withdrawal. This letter report is governed by the specific scope of work authorized by WNR Group and is not intended to be relied upon by any other party unless specified by Vista Vu Water Users Association. The findings presented herein are based upon observations of Site conditions as of the date the assessment was performed and review of a limited number of readily available hydrogeologic documents for the area near the Site. Geologic and hydrologic data is limited for the subject area and interpretations were made for the conclusions presented in this report. The findings and conclusions presented herein should not be assumed to be an accurate representation of present day conditions, but only interpretations based on professional judgment

The findings of the preliminary hydrogeologic review, as represented within this letter report, must be viewed in recognition of certain limiting conditions. The scope of work commissioned for this project does not represent an exhaustive study, but rather a reasonable inquiry, consistent with good commercial practice, in general accordance with existing environmental assessment practices. For the purposes of this assessment, only a limited number of documents were reviewed. No deep borings were completed in order to verify groundwater depth, and/or aquifer characteristics. Conclusions were based on findings of others for sites near the subject property, and within the Okanogan River drainage.

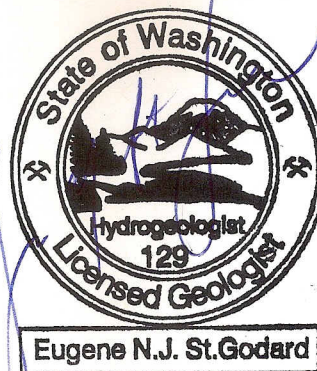
Mr. Stuart Skidmore
Vista Vu Water Association Hydraulic Continuity Analysis
January 31, 2012

We appreciate the opportunity to be of service to Vista Vu Water Users Association in providing our interpretation of groundwater conditions at the Site and the hydraulic connection to nearby surface water bodies. Should you have any questions regarding this letter report, please do not hesitate to call us at your earliest convenience.

Very truly yours,
Water & Natural Resource Group



Eugene N.J. St. Godard, R.G., L.Hg.
Principal Hydrogeologist/Owner



Enclosures: Attachment A: Certificate of Water Right
Attachment B: Water System Engineering Drawings
Attachment C: Well Logs from Ecology Database

BIBLIOGRAPHY

Alt, David D. and Hyndman, Donald W., 1994: Roadside Geology of Washington, Mountain Press Publishing, Missoula, Montana, 288 p.

Walters, Kenneth, 1974: Water in the Okanogan River Basin, Washington. Water Supply Bulletin 34, Washington State Department of Ecology, Olympia, Washington.

Washington State Department of Ecology, et. al., June 8, 1985: Initial Watershed Assessment Water Resource Inventory Area 49 Okanogan River Watershed. Open File Report 95-14, Washington State Department of Ecology, Olympia, Washington.

Washington State Department of Natural Resources-Stoffel and others, 1991: Geologic Map of Washington – Northeast Quadrant scale 1:250,000, Washington Division of Geology and Earth Resources, Geologic Map GM-39, 3 sheets.

Washington State Department of Ecology, January 2012: Internet search of groundwater well log database, <http://www.ecy.wa.gov>.

United States Geological Survey, 1990: The Pothole, Washington 7-1/2 minute Topographical Map.

ATTACHMENT A

WATER RIGHT CERTIFICATE
G4-25938

CERTIFICATE OF WATER RIGHT

- ☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- ☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

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Revised
Recorded
Page 1

PRIORITY DATE July 24, 1978	APPLICATION NUMBER G4-25938	PERMIT NUMBER G4-25938P	CERTIFICATE NUMBER G4-25938C
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NAME

VISTA VU WATER USERS ASSOCIATION c/o Gary Mundinger

ADDRESS (STREET)

P.O. Box 846

(CITY)

Omak

(STATE)

Washington

(ZIP CODE)

98841

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE

A well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND

MAXIMUM GALLONS PER MINUTE

180

MAXIMUM ACRE-FEET PER YEAR

50

QUANTITY, TYPE OF USE, PERIOD OF USE

to be used continuously for a community domestic supply for 25 homes

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL

1320 feet north and 250 feet east from the southwest corner of Section 20

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)

W 1/2 SW 1/4

SECTION

20

TOWNSHIP N.

34

RANGE, (E. OR W.) W.M.

27 E.

W.R.I.A.

49

COUNTY

Okanogan

RECORDED PLATTED PROPERTY

LOT

BLOCK

OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The SE 1/4 of Sec. 19 and Gov't Lots 3 and 4 in Sec. 20; all in T. 34 N., R. 27 E.W.M. More specifically referenced as follows:

- 2 homes, tax lot 29
- 2 homes, tax lot 38
- 1 home each in lots 1, 2, 3, and 4 Stevens Short Plat
- 1 home, tax lot 32
- 1 home each in lots 1, 2, 3, and 4 Sewell Tracts
- 2 homes, tax lot 16
- 2 homes, tax lot 24
- 2 homes, tax lot 25
- 2 homes, tax lot 26
- 2 homes, tax lot 39

2 homes, tax lot 27

Dept. of Ecology
FILED FOR RECORD

'82 MAR 12 11 19

OKANOGAN, WASH.

687047

RETAIN FOR YOUR FILE

687047

BOOK 40 PAGE 172

Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An air line and gage may be installed in addition to the access port.

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described; except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Yakima Washington, this9th.... day
ofMarch....., 19.82.....

Department of Ecology

ENGINEERING DATA

OK M. L. L. L.
ske

by Russell K. Taylor
RUSSELL K. TAYLOR, REGIONAL MANAGER

FOR COUNTY USE ONLY

687047

ATTACHMENT B

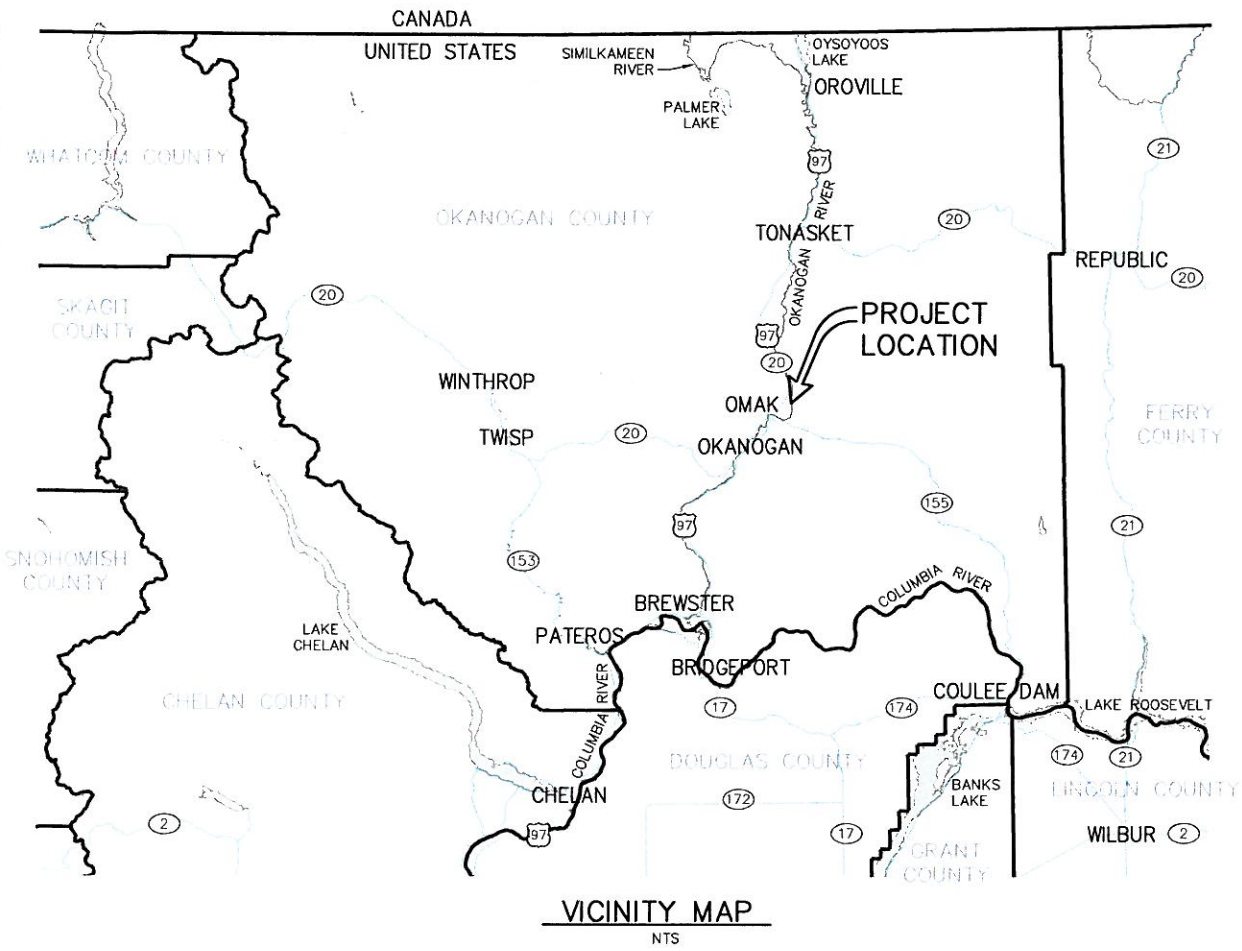
VISTA VUE WATER ASSOCIATION WATER DISTRIBUTION SYSTEM MAPS

VISTA VUE WATER USERS ASSOCIATION

ARSENIC FILTER INSTALLATION

PWS ID NO. 20226

SECTIONS 19 & 20, T 34 N, R 27 E



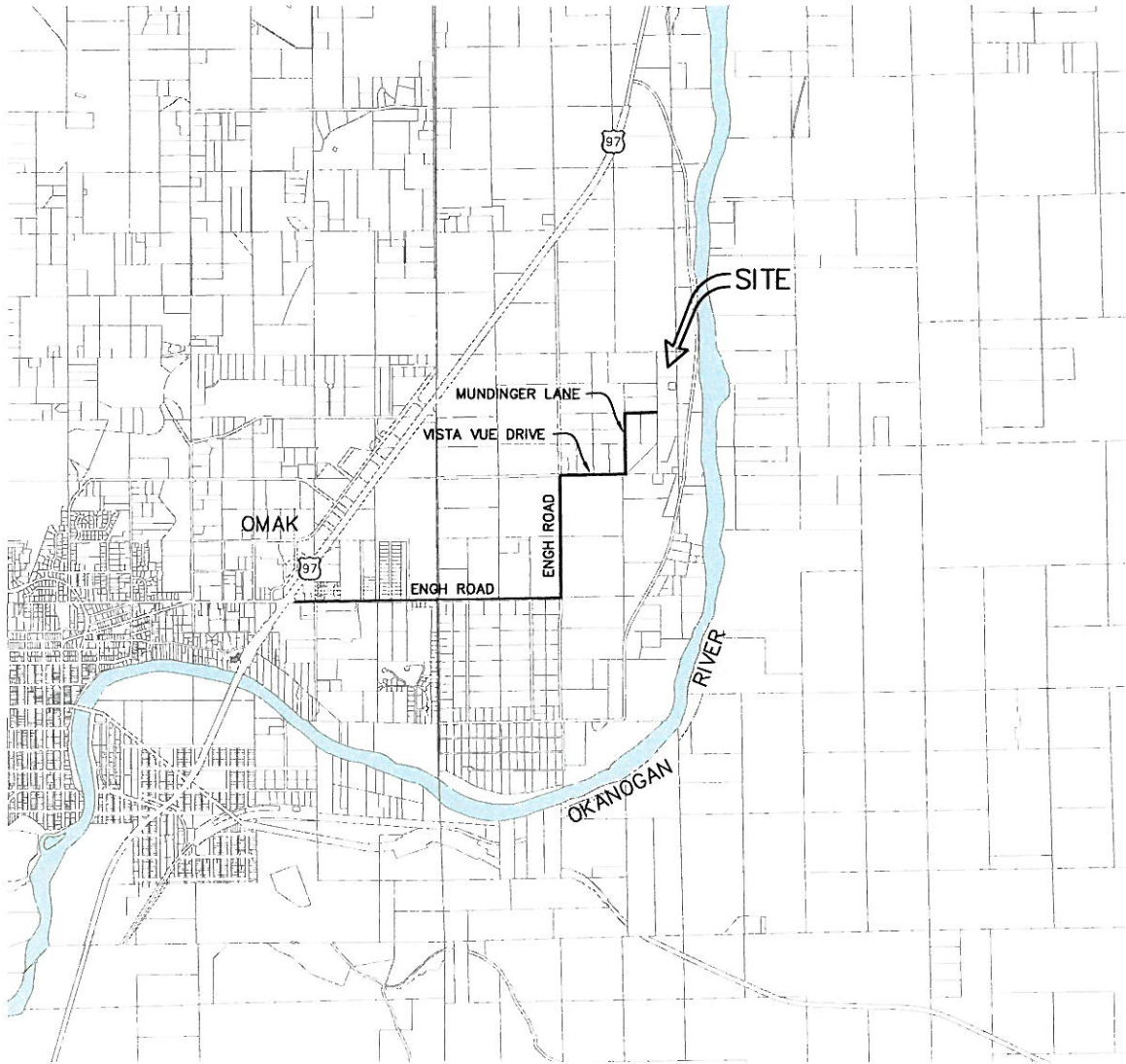
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- SHEET 8 ARSENIC FILTER PLUMBING
- SHEET 9 BOOSTER PUMP DETAILS
- SHEET 10 TANK DETAILS

CONTACT PERSONNEL

VISTA VUE WATER USERS ASSOCIATION
STU SKIDMORE (509) 826-1308
BOB GOODWIN (509) 422-1733
DOUG MARSH

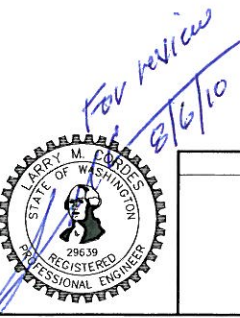
WASHINGTON STATE DEPARTMENT OF HEALTH
MIKE WILSON (509) 329-2117
SYSTEM OPERATOR
DOUG HALE (509) 422-7141



PROJECT MAP
SCALE 1"=2000'

APPROVED FOR CONSTRUCTION
VISTA VUE WATER USERS ASSOCIATION
DIRECTOR _____ DATE _____

CALL THREE BUSINESS
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VISTA VUE WATER USERS ASSOCIATION
ARSENIC FILTER INSTALLATION

COVER SHEET

JOB NO
0845001
DRAWING NO.
SHEET 1 OF 10

CONSTRUCTION NOTES

GENERAL

1. **LOCAL AGENCY REQUIREMENTS** – ALL WORK MUST BE IN COMPLIANCE WITH LOCAL AGENCY ORDINANCES, CODES, AND STANDARDS. LOCAL AGENCIES WOULD INCLUDE BUT NOT BE LIMITED TO UTILITY DISTRICTS, UTILITY PURVEYORS, BUILDING DEPARTMENTS, PLANNING DEPARTMENTS, PUBLIC TRANSPORTATION DISTRICTS, CITIES, AND COUNTIES.
2. **EXISTING UTILITIES** – EXISTING UTILITIES SHOWN ARE APPROXIMATE AND BASED ON INFORMATION PROVIDED BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE LOCAL UTILITY LOCATE SERVICE AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. ANY DAMAGE TO MARKED UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
3. **STANDARD SPECIFICATIONS** –THE CURRENT EDITION OF THE WSDOT/APWA STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, DIVISIONS 2 THROUGH 9 ARE THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. ALL WORK MUST COMPLY WITH THE STANDARD SPECIFICATIONS AND THE CONTRACT SPECIAL PROVISIONS LISTED BELOW. THE CONTRACTOR IS RESPONSIBLE FOR RETAINING A COPY OF THE STANDARD SPECIFICATIONS ON-SITE WITH THESE CONSTRUCTION PLANS.
4. **PERMITS AND FEES** – THE CONTRACTOR IS RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS AND PAYMENT OF FEES REQUIRED TO COMPLETE THE WORK.
5. **MATERIALS TESTING AND INSPECTION** – THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MATERIALS TESTING AND SPECIAL INSPECTIONS INCLUDING BUT NOT LIMITED TO SOILS, AGGREGATE, AND ASPHALT COMPACTION TESTING, AGGREGATE ANALYSIS, CONCRETE AIR CONTENT, SLUMP, AND TEST CYLINDERS.
6. **SURVEYING AND STAKING** - THE CONTRACTOR SHALL PROVIDE CONSTRUCTION STAKING AND SURVEYING.
7. **DUST CONTROL** – THE CONTRACTOR SHALL PROVIDE DUST CONTROL BY WATERING OR DUST PALLIATIVE AND BEAR THE COST FOR PROVIDING WATER TO THE SITE.
8. **AS-BUILT PLANS** – THE CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING ACTUAL INSTALLATIONS OF UTILITIES ON A SEPARATE SET OF PLANS TO BE DELIVERED TO THE OWNER UPON COMPLETION OF THE WORK.

DISINFECTION AND TESTING

1. **PIPING** – BEFORE BEING PLACED INTO SERVICE ALL PIPING SHALL BE DISINFECTED, PRESSURE TESTED, FLUSHED AND BACTERIA TESTED IN ACCORDANCE WITH SECTION 7-09 OF THE STANDARD SPECIFICATIONS. TEST PRESSURES AS FOLLOWS-

SITE PIPING - 150 PSI

ARSENIC FILTER UNIT PIPING – DO NOT TEST

INTERIOR MECHANICAL PIPING, PUMP SUCTION SIDE – 150 PSI

INTERIOR MECHANICAL PIPING, PUMP DISCHARGE SIDE – 225 PSI

THE OWNER WILL OBTAIN AND SUBMIT WATER SAMPLES FOR BACTERIA ANALYSIS. UPON ACCEPTANCE OF PASSING TEST RESULTS AND WITH ENGINEER'S APPROVAL THE PIPING MAY BE PLACED INTO SERVICE DISTRIBUTION SYSTEM

2. **TANKS** - BEFORE BEING PLACED INTO SERVICE TANK INTERIOR(S) SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C-652. THE CONTRACTOR SHALL OBTAIN AND SUBMIT WATER SAMPLES TO A WASHINGTON STATE DEPARTMENT OF HEALTH CERTIFIED LABORATORY FOR BACTERIA ANALYSIS. UPON ACCEPTANCE OF PASSING TEST RESULTS AND WITH THE ENGINEER'S APPROVAL THE TANK(S) MAY BE PLACED INTO SERVICE.

MATERIALS AND EQUIPMENT

1. **ARSENIC FILTERS** - ARSENIC FILTERS SHALL BE IRON BASED ADSORPTION MEDIA UNITS EQUIVALENT TO AN ADEGE MOD-M-2 40P SYSTEM. SEE SPECIAL PROVISIONS SECTION _____.
2. **WATER STORAGE TANKS** -CONTRACTOR TO INSTALL TWO (2) POLYETHYLENE 10,000 GALLON STORAGE TANKS AS SHOWN ON THE PLANS. OWNER PROVIDED EQUIPMENT AS FOLLOWS-

2 - 10,000 GALLON POLYETHYLENE STORAGE TANKS

2 – GRAVEL RINGS

2 – FLEX CONNECTIONS

2- FLOAT ASSEMBLIES

3. **BOOSTER PUMPS** - BOOSTER PUMPS SHALL BE PREASSEMBLED TWO PUMP SYSTEMS, SKID MOUNTED, WITH VARIABLE SPEED MOTORS AND PROGRAMMABLE CONTROLLER. EACH PUMP SHALL PROVIDE A MINIMUM 69 GPM AT 162 FT TOTAL DYNAMIC HEAD PER PUMP. SEE SPECIAL PROVISIONS SECTION _____.

4. **PIPING** - PIPING MATERIALS SHALL BE AS FOLLOWS UNLESS SHOWN OTHERWISE ON THE PLANS–

BURIED PIPING – SCHEDULE 40 PVC MEETING ASTM D1785 AND NSF 61 LISTED

EXPOSED MECHANICAL PIPING – SCHEDULE 80 PVC MEETING ASTM D1785 AND NSF 61 LISTED

5. **VALVES** - VALVES SHALL BE AS FOLLOWS UNLESS SHOWN OTHERWISE ON THE PLANS–

BELOW GROUND VALVES, 2 INCH AND SMALLER - BRONZE OR BRASS ALLOY BALL VALVES, MUELLER OR EQUAL WITH GROUND KEY AND IPS THREADED CONNECTIONS.

INTERIOR MECHANICAL VALVES – SCHEDULE 80 PVC BALL VALVES WITH TEE HANDLE AND SLIP CONNECTIONS

AC ASPHALTIC CONCRETE, ACRE
ACP ASPHALT CONCRETE PAVEMENT
APPROX APPROXIMATE(LY)
APWA AMERICAN PUBLIC WORKS ASSOCIATION
ASPH ASPHALT
ASSY ASSEMBLY
AUX AUXILIARY
AVE AVENUE
AWWA AMERICAN WATER WORKS ASSOCIATION

BLDG BUILDING
BLK BLOCK
BM BEAM, BENCHMARK
BOD BIOCHEMICAL OXYGEN DEMAND
BRK BREAK
BST BITUMINOUS SURFACE TREATMENT
BTU BRITISH THERMAL UNIT

CB CATCH BASIN
CF CUBIC FEET
CFM CUBIC FEET PER MINUTE
CFS CUBIC FEET PER SECOND
CI CAST IRON
CIP CAST IRON PIPE
CJ CONSTRUCTION JOINT
CL CENTERLINE, CLASS
CMP CORRUGATED METAL PIPE
CMU CONCRETE MASONRY UNIT
CO CLEANOUT
CO2 CARBON DIOXIDE
CONC CONCRETE, CONCENTRIC
CONT CONTINUOUS
CS COMBINED SEWER
CSBC CRUSHED SURFACING BASE COURSE
CSTC CRUSHED SURFACING TOP COURSE
CTR CENTER
CULV CULVERT
CY/DAY CUBIC YARD PER DAY

DI DUCTILE IRON
DIA DIAMETER
DIM DIMENSION
DIST DISTRICT
DNR DEPARTMENT OF NATURAL RESOURCES
DO DISSOLVED OXYGEN
DWG(S) DRAWING(S)

E EAST
EA EXHAUST AIR, EACH
EL ELEVATION (ELEV)
ELECT ELECTRICAL
EQ EQUAL
EQUIP EQUIPMENT
ESMT EASEMENT
EXIST EXISTING

FF FINISH FLOOR
FH FIRE HYDRANT
FL FLANGE, FLOW LINE
FM FORCE MAIN
FO FIBER OPTIC
FT FEET, FOOT

G GUTTER, GAS
GAL GALLON
GALV GALVANIZED
GPD GALLONS PER DAY
GPM GALLONS PER MINUTE
GV GATE VALVE

HDPE HIGH DENSITY POLYETHYLENE
HOR HORIZONTAL
HP HIGH PRESSURE, HIGH POINT, HORSEPOWER
H/V HEATING AND VENTILATING
HVAC HEATING, VENTILATING, AND AIR CONDITIONING
HWY HIGHWAY
HYD HYDRANT

ABBREVIATIONS

ID INSIDE DIAMETER
IE INVERT ELEVATION
INV INVERT
KW KILOWATT
LB POUND(S)
LF LINEAL FOOT(FEET)
LFT LEFT
LID LOCAL IMPROVEMENT DISTRICT
LS LUMP SUM
LT LEFT

MAINT MAINTENANCE
MAX MAXIMUM
MB MAILBOX
MCC MOTOR CONTROL CENTER
MCU MASTER CONTROL UNIT
MECH MECHANICAL
MFR MANUFACTURER
MGD MILLION GALLONS PER DAY
MG/L MILLIGRAMS PER LITER
MH MANHOLE
MHHW MEAN HIGH HIGH WATER
MI MILE
MIC MONUMENT IN CASE
MIN MINIMUM, MINUTE
MISC MISCELLANEOUS
MJ MECHANICAL JOINT
MON MONUMENT
MPH MILES PER HOUR

N NORTH
N/A NON APPLICABLE
NE NORTHEAST
NIC NOT IN CONTRACT
NO NUMBER
NTS NOT TO SCALE
NW NORTHWEST
OD OUTSIDE DIAMETER, OUTSIDE DIMENSION
OHP OVERHEAD POWER LINE
OHP&T OVERHEAD POWER & TELEPHONE
OZ OUNCE

P POST, PER, POWER
PC POINT OF CURVATURE
PE PLAIN END
PERF PERFORATED
PI POINT OF INTERSECTION
PL PROPERTY LINE
PP POWER POLE
PRV PRESSURE REGULATING VALVE
PT POINT, POINT OF TANGENCY
PUD PUBLIC UTILITY DISTRICT
PVC POLYVINYL CHLORIDE
PVI POINT OF VERTICAL INTERSECTION
PAVEMENT

QTY QUANTITY
R RADIUS, RANGE
RCP REINFORCED CONCRETE PIPE
RECIRC RECIRCULATION
RECP RECEPTACLE
REF REFERENCE
REINF REINFORCED, REINFORCING
REQ'D REQUIRED
RJ RESTRAINT JOINT
RP RADIUS POINT, REFERENCE POINT
RR RAILROAD
RT RIGHT
R/W RIGHT OF WAY

S SOUTH, SLOPE, SANITARY SEWER
SCH SCHEDULE
SD STORM DRAIN
SE SOUTHEAST
SEC SECOND
SECT SECTION
SF SQUARE FEET
SHT SHEET
SPEC SPECIFICATIONS
SQ SQUARE
SS STAINLESS STEEL, SANITARY SEWER
ST STREET
STA STATION
STD STANDARD
STD PLN WSDOT STANDARD PLANS
STL STEEL
SW SOUTHWEST
SY SQUARE YARD

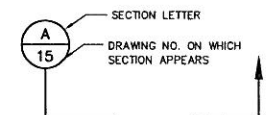
TAN TANGENT
TBM TEMPORARY BENCHMARK
TC TOP OF CURB
THRU THROUGH
TOC TOP OF CONCRETE
TYP TYPICAL
TWP TOWNSHIP
UBC UNIFORM BUILDING CODE
UG UNDERGROUND
UGP UNDERGROUND POWER LINE
ULID UTILITY LOCAL IMPROVEMENT DISTRICT
U/P UTILITY POLE
USGS UNITED STATES GEOLOGICAL SURVEY

VAR VARIES
VC VERTICAL CURVE
VF VERTICAL FOOT
VPI VERTICAL POINT OF INTERSECTION
W WEST, WATER
W/ WITH
W/O WITHOUT
WM WATER MAIN, WATER METER, WIRE MESH
WSDOT WASHINGTON STATE DEPARTMENT
OF TRANSPORTATION
WWF WELDED WIRE FABRIC
WWM WELDED WIRE MESH

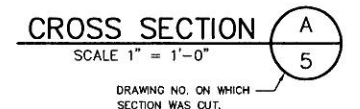
YD YARD
YR YEAR
NUMBER, POUNDS
& AND
@ AT
ø DIAMETER, PHASE

SECTION & DETAIL NUMBERING SYSTEM

- (1) SECTION CUT ON DRAWING 5



- (2) ON DRAWING 15 THIS SECTION IS SHOWN



- (3) DETAILS ARE CROSS-REFERENCED IN A SIMILAR MANNER EXCEPT THAT DETAILS ARE IDENTIFIED BY NUMBER RATHER THAN BY LETTER.

NOTE:
SECTION & DETAIL NUMBERING SYSTEM MAY OR MAY NOT BE USED.

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WATER SYMBOLS

— W —	EXISTING WATERLINE	]	EXISTING MECHANICAL JOINT
— — —	PROPOSED WATERLINE	]	PROPOSED MECHANICAL JOINT
[	EXISTING CAP/PLUG	C	EXISTING HUB OR PUSH-ON JOINT
[	PROPOSED CAP/PLUG	C	PROPOSED HUB OR PUSH-ON JOINT
#	EXISTING COUPLING	⊕	EXISTING AIR RELIEF VALVE
#	PROPOSED COUPLING	⊕	PROPOSED AIR RELIEF VALVE
▷	EXISTING REDUCER	↑	EXISTING BLOWOFF
▷	PROPOSED REDUCER	↑	PROPOSED BLOWOFF
◀	PROPOSED THRUST BLOCK	⊕	EXISTING BUTTERFLY VALVE
⊕	EXISTING WATER METER	⊕	PROPOSED BUTTERFLY VALVE
S-1	PROPOSED SINGLE WATER METER W/LOT #	⊕	PROPOSED PRESSURE REDUCING VALVE
D 3-4	PROPOSED DUAL WATER METER W/ LOT #S	N	EXISTING CHECK VALVE
		N	PROPOSED CHECK VALVE

⊕	EXISTING FIRE HYDRANT	⊕	EXISTING GATE VALVE
⊕	PROPOSED FIRE HYDRANT	⊕	PROPOSED GATE VALVE
⊕	EXISTING POST HYDRANT	⊕	EXISTING PLUG VALVE
⊕	PROPOSED POST HYDRANT	⊕	PROPOSED PLUG VALVE
⊕	EXISTING FLANGE JOINT	⊕	EXISTING BALL VALVE
⊕	PROPOSED FLANGE JOINT	⊕	PROPOSED BALL VALVE

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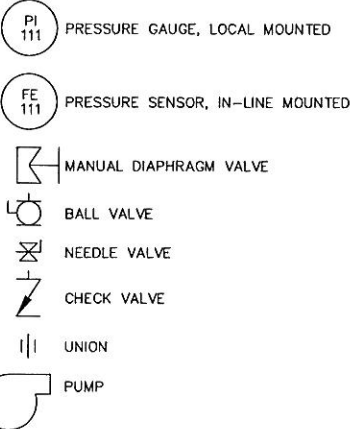


VISTA VUE WATER USERS ASSOCIATION
ARSENIC FILTER INSTALLATION

SYMBOLS & ABBREVIATIONS

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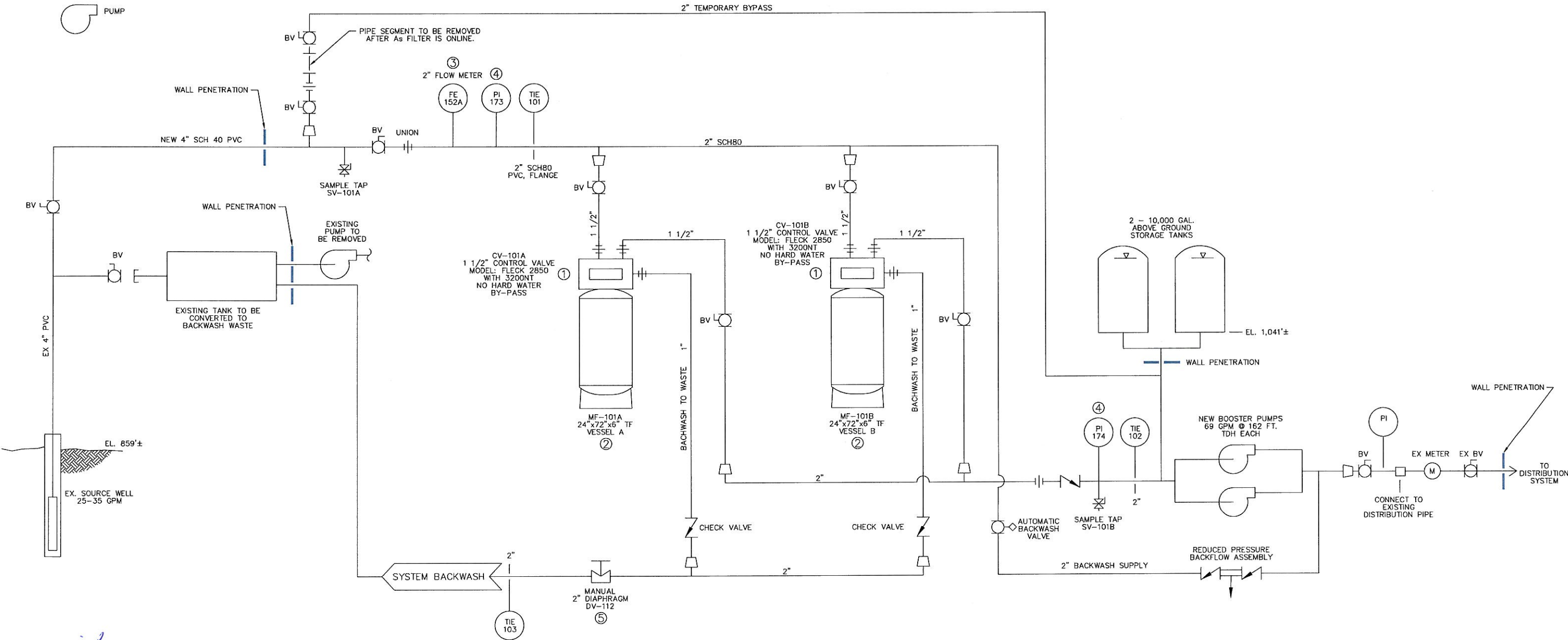
PID SYMBOLS AND LEGEND



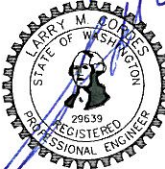
ITEM	DESCRIPTION	PART #	QTY
①	2850NT CONTROL VALVE	A7524	2
②	24"x72"x6" TF TANK	W3075	2
③	2" INLINE FLOW METER	TM200	1
④	0.100 PSI GAUGE	U1016	2
⑤	2" DIAPHRAGM VALVE	F8005	1
⑥	GRAVEL BAGS 50 LBS	PP1948	8
⑦	MEDIA (LBS)	E33P	630

NOTES:

1. CONFIGURATION BASED ON ADEGE MODEL: MOD-M-2-40P. SEE SPECIAL PROVISIONS
2. MAXIMUM DESIGN FLOW: 40 GPM SYSTEM.
3. DESIGN BACKWASH FLOW: 28 GPM PER VESSEL



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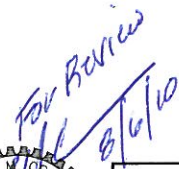


VISTA VUE WATER USERS ASSOCIATION
ARSENIC FILTER INSTALLATION

ARSENIC FILTER OPERATION SCHEMATIC

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VISTA VUE WATER USERS ASSOCIATION
ARSENIC FILTER INSTALLATION

JOB NO.	0845001
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EXISTING SITE PLAN

REVISIONS

GENERAL NOTES

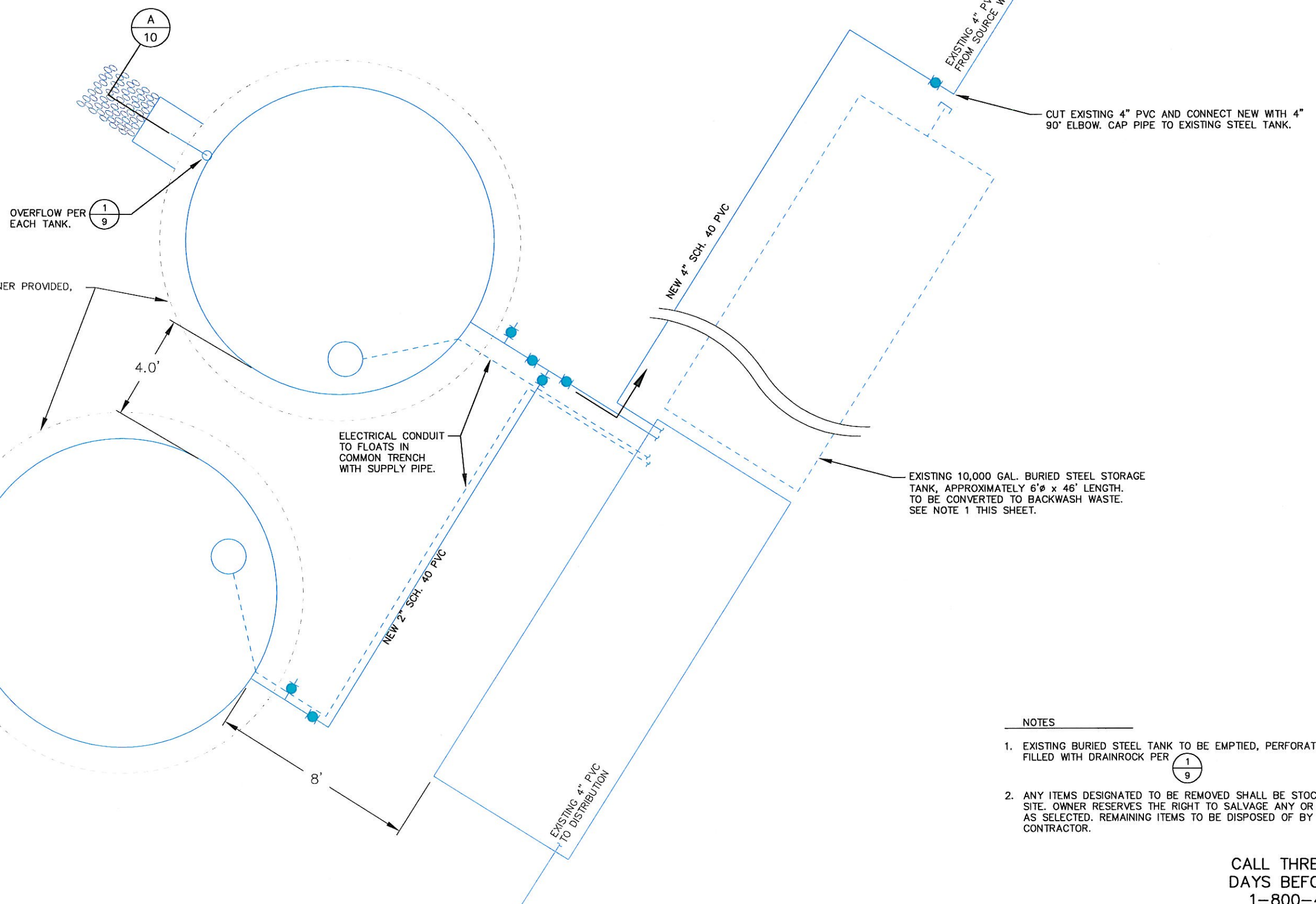
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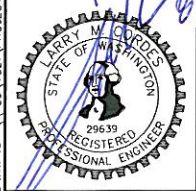


NOTES

1. EXISTING BURIED STEEL TANK TO BE EMPTIED, PERFORATED AND FILLED WITH DRAINROCK PER 1/9
2. ANY ITEMS DESIGNATED TO BE REMOVED SHALL BE STOCKPILED ON SITE. OWNER RESERVES THE RIGHT TO SALVAGE ANY OR ALL ITEMS AS SELECTED. REMAINING ITEMS TO BE DISPOSED OF BY CONTRACTOR.

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For Review
8/6/10



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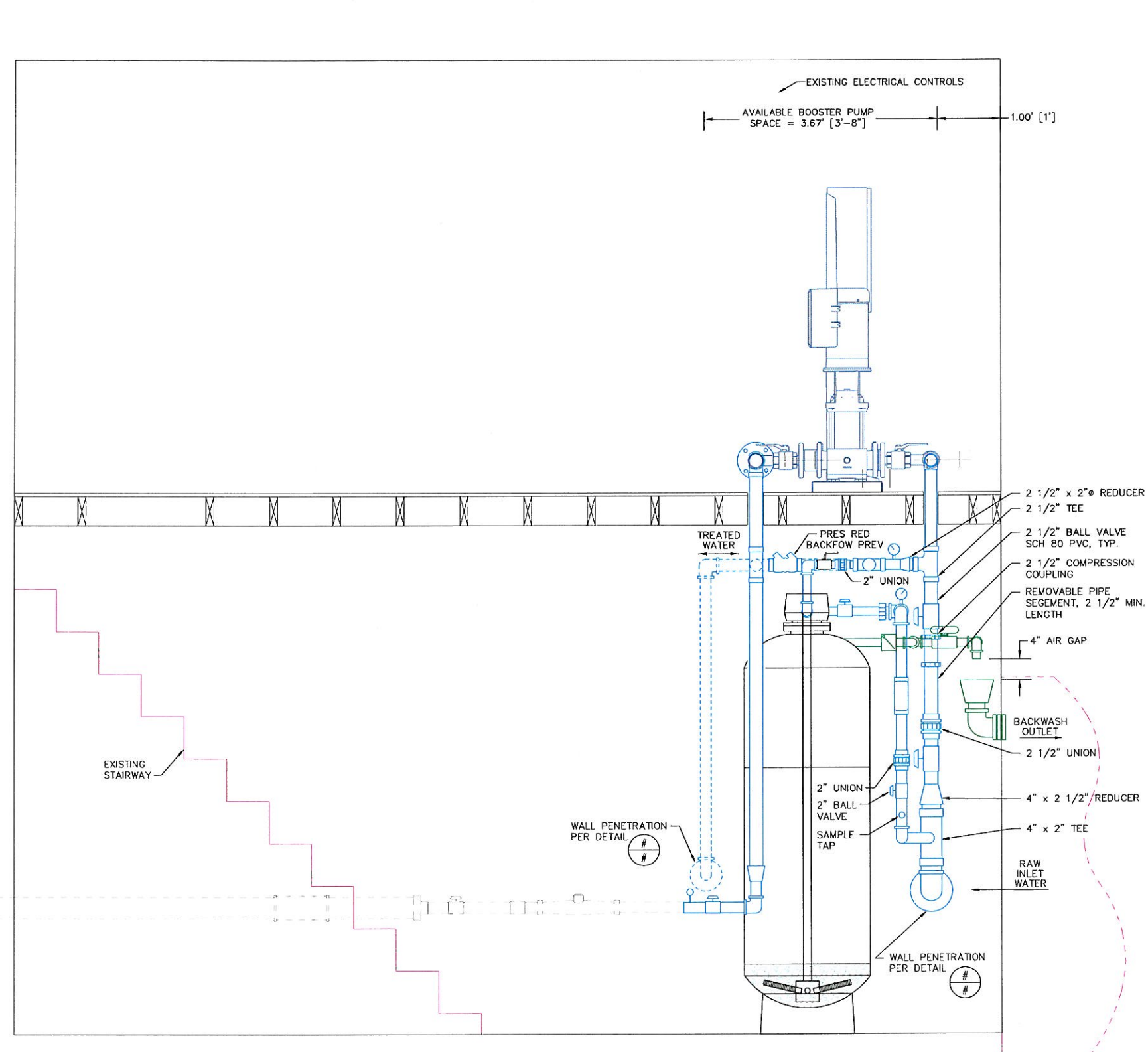
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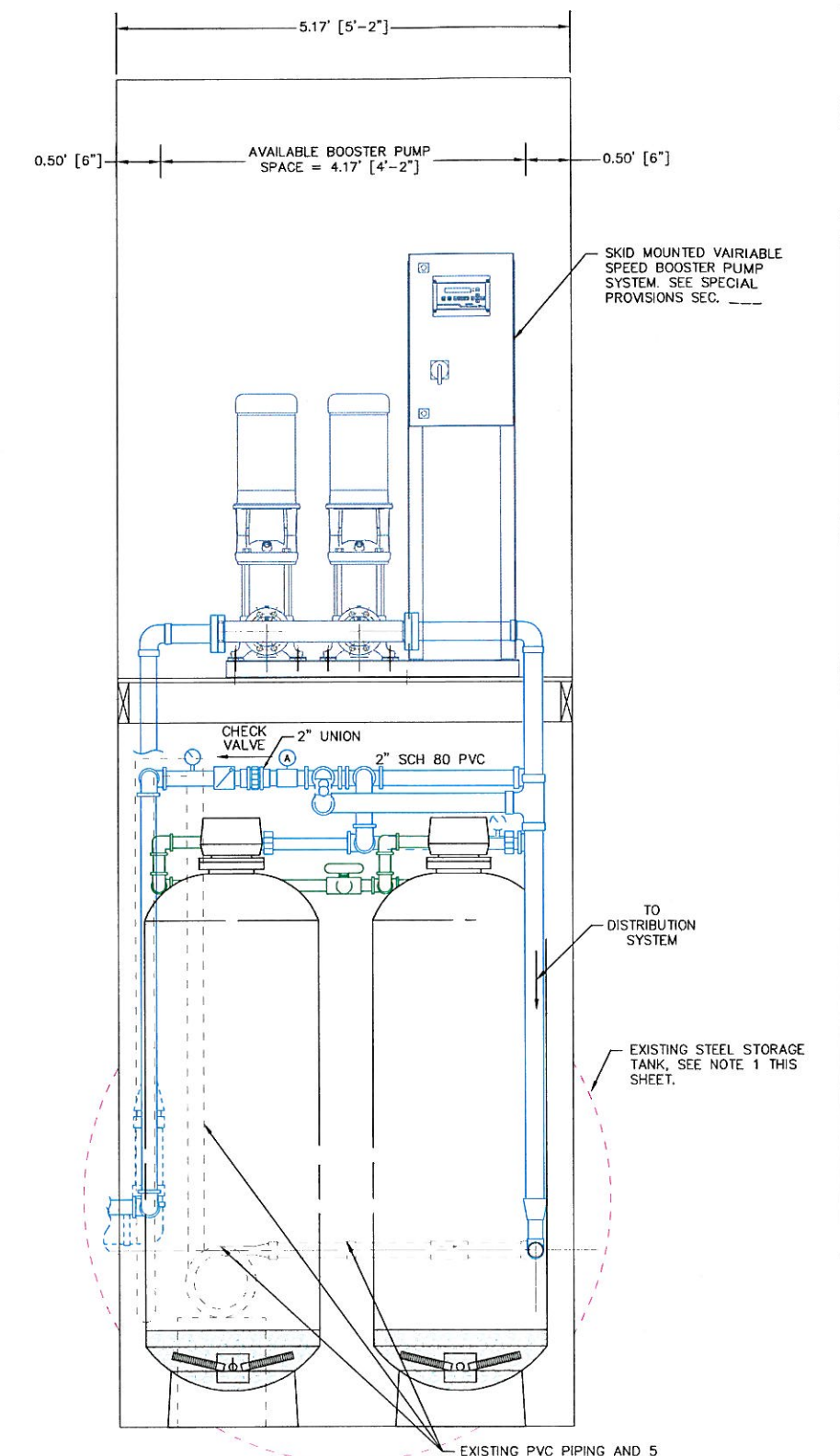
VISTA VUE WATER USERS ASSOCIATION ARSENIC FILTER INSTALLATION
EXTERNAL PIPING

JOB NO	0845001
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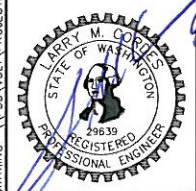
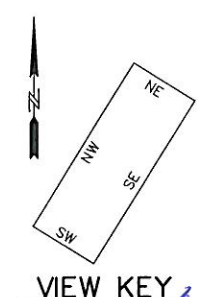
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NORTHWEST WALL - ELEVATION VIEW



NORTHEAST WALL ELEVATION VIEW



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VISTA VUE WATER USERS ASSOCIATION

ARSENIC FILTER INSTALLATION

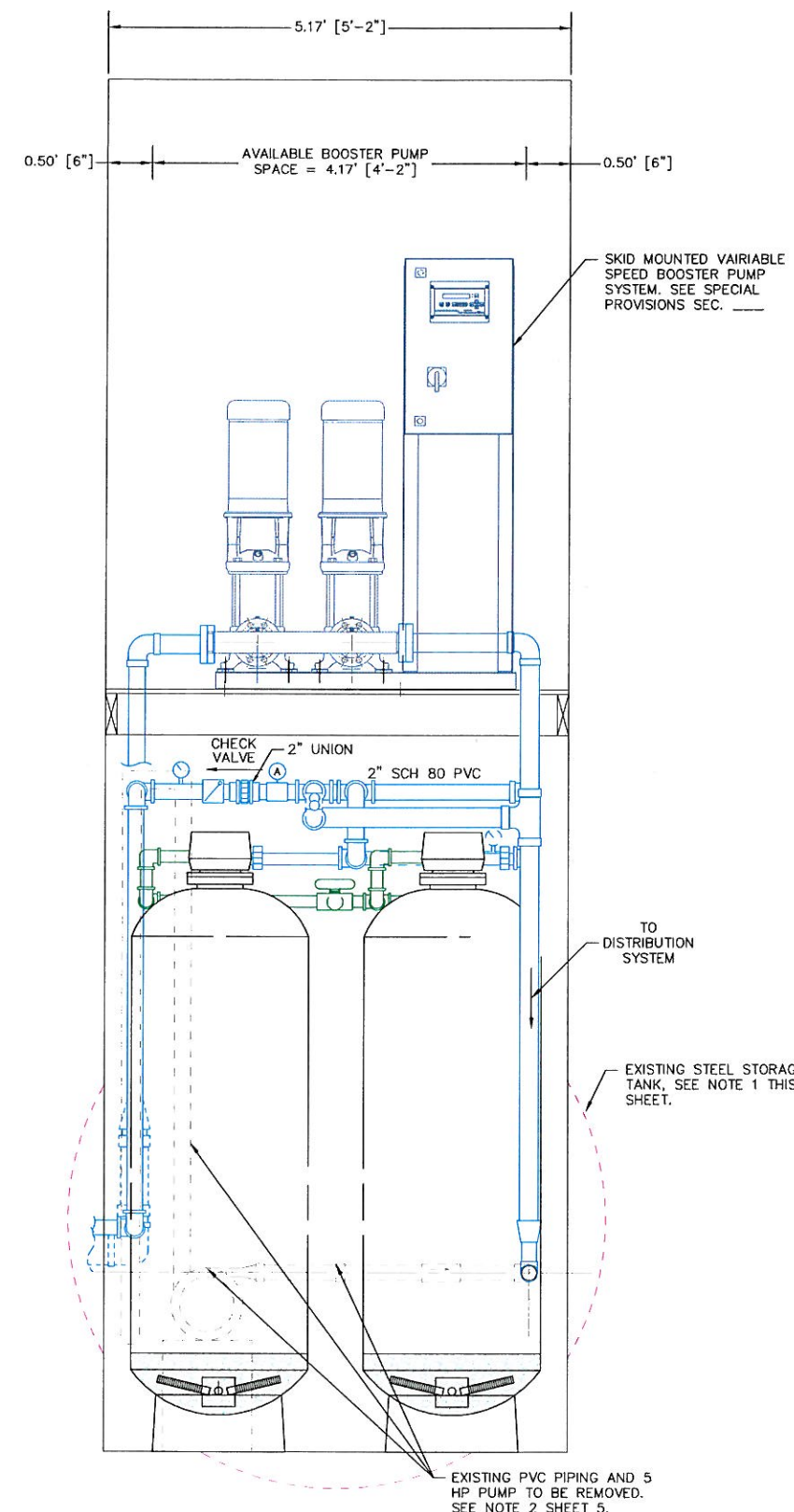
PUMPHOUSE ELEVATIONS & PLUMBING

JOB NO. 0845001

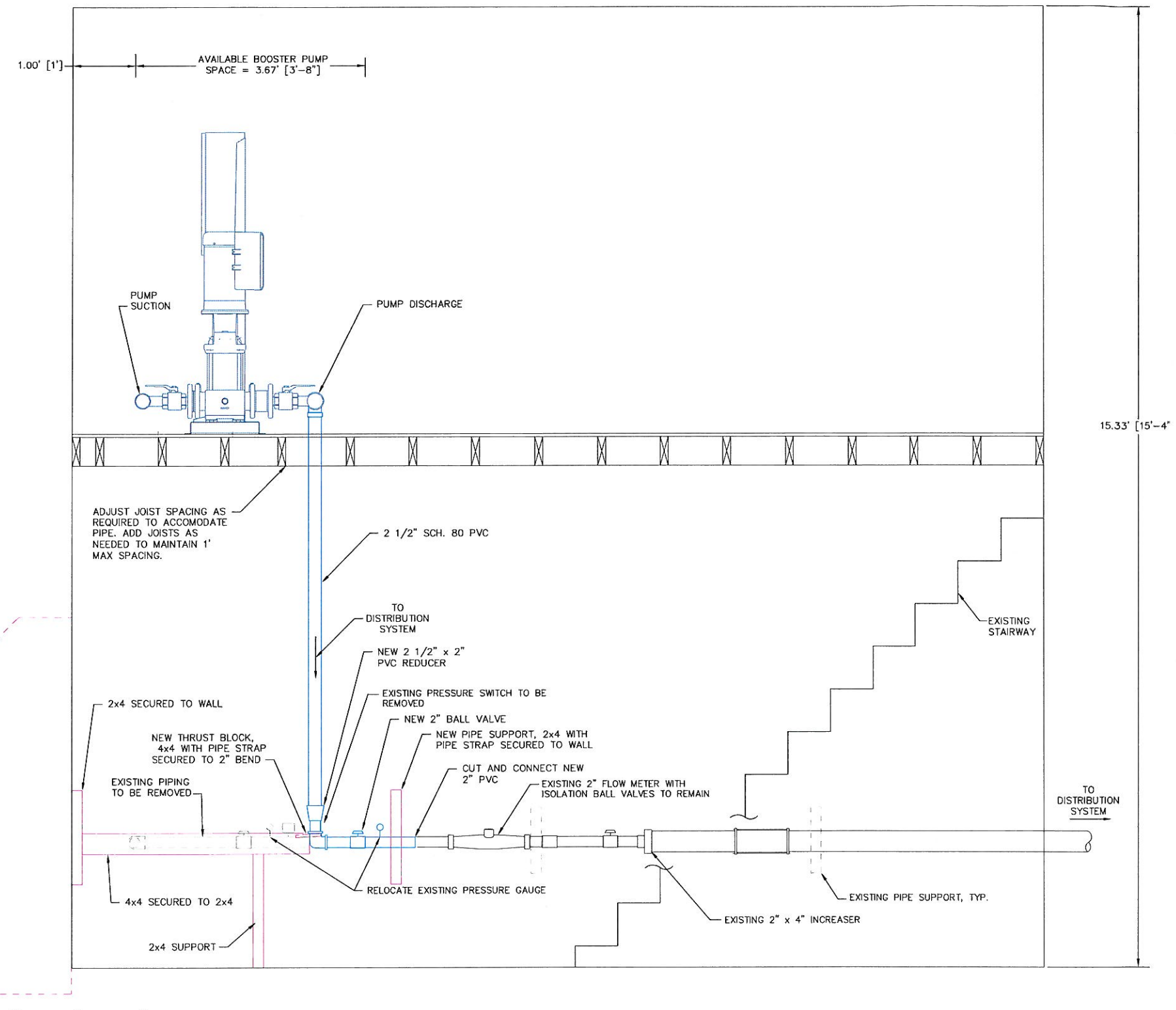
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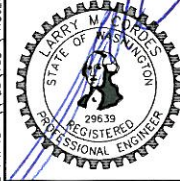
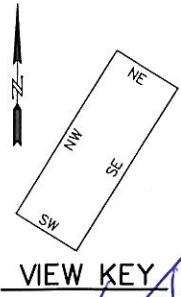


NORTHEAST WALL
ELEVATION VIEW



SOUTHEAST WALL
ELEVATION VIEW

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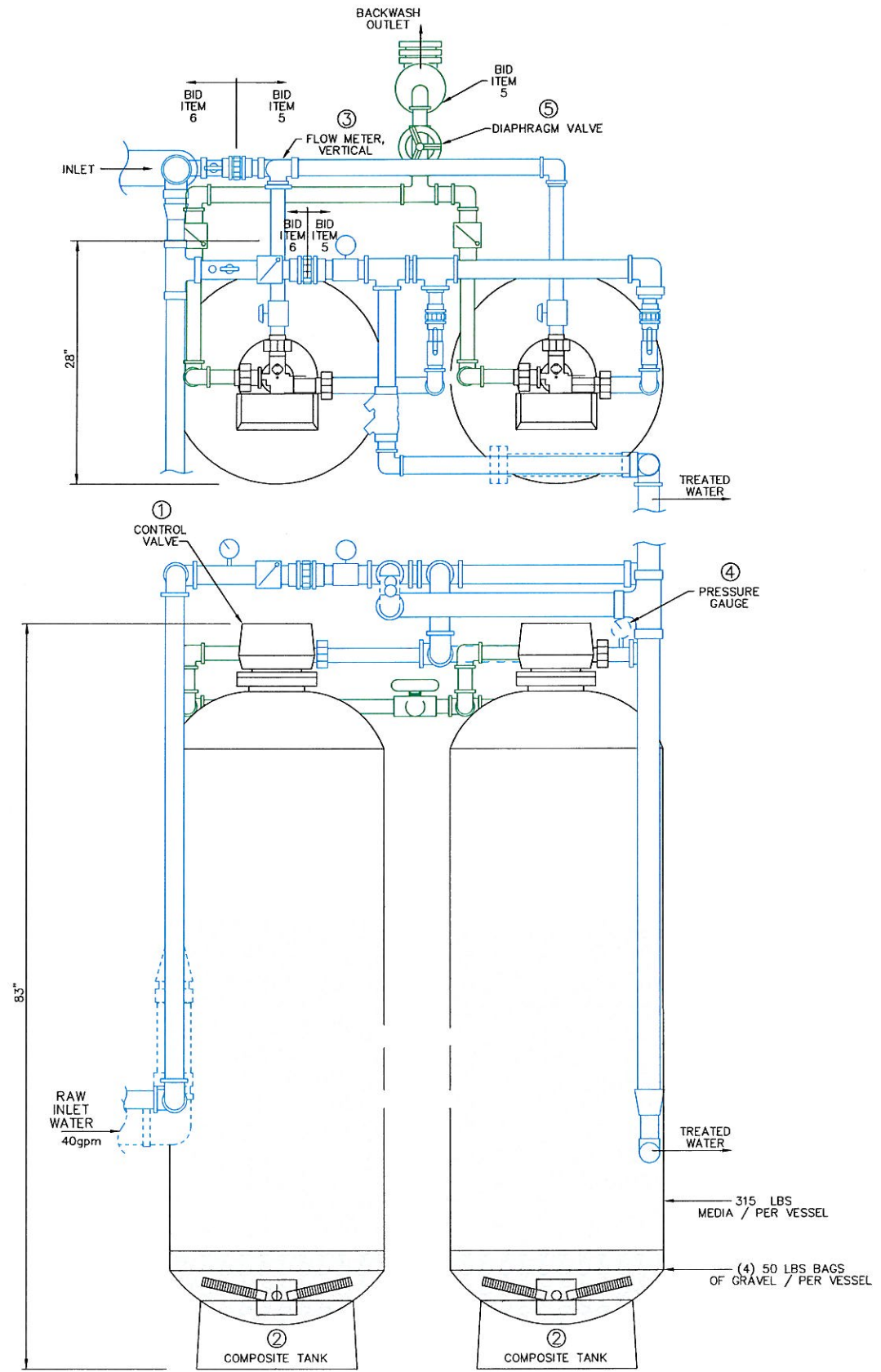
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VISTA VUE WATER USERS ASSOCIATION
ARSENIC FILTER INSTALLATION

PUMPHOUSE ELEVATIONS & PLUMBING

JOB NO. 0845001
DRAWING NO.
SHEET 7 OF 10



ITEM	DESCRIPTION	PART #	QTY
①	2850NT CONTROL VALVE	A7524	2
②	24"x72"x6" TF TANK	W3075	2
③	2" INLINE FLOW METER	TM200	1
④	0.100 PSI GAUGE	U1016	2
⑤	2" DIAPHRAGM VALVE	F8005	1
⑥	GRAVEL BAGS 50 LBS	PP1948	8
⑦	MEDIA (LBS)	E33P	630

NOTES:

1. FILTER CONFIGURATION SYSTEM SHOWN REPRESENTS ADEGE MOD M-7-40P SYSTEM. ADEGE REPRESENTATIVE: VALARIE RHOADS, ADEGE TECHNOLOGIES, 678-699-5721.
2. ALTERNATIVE FILTER SYSTEMS WILL BE CONSIDERED IF APPROVED AS EQUAL BY ENGINEER. SEE SPECIAL PROVISIONS SECTION _____.

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HAMMOND COLLIER
WADE LIVINGSTONE

SEATTLE (206) 632-2664
WENATCHEE (509) 662-1762
OMAK (509) 826-5861
LAKEWOOD (253) 472-1992

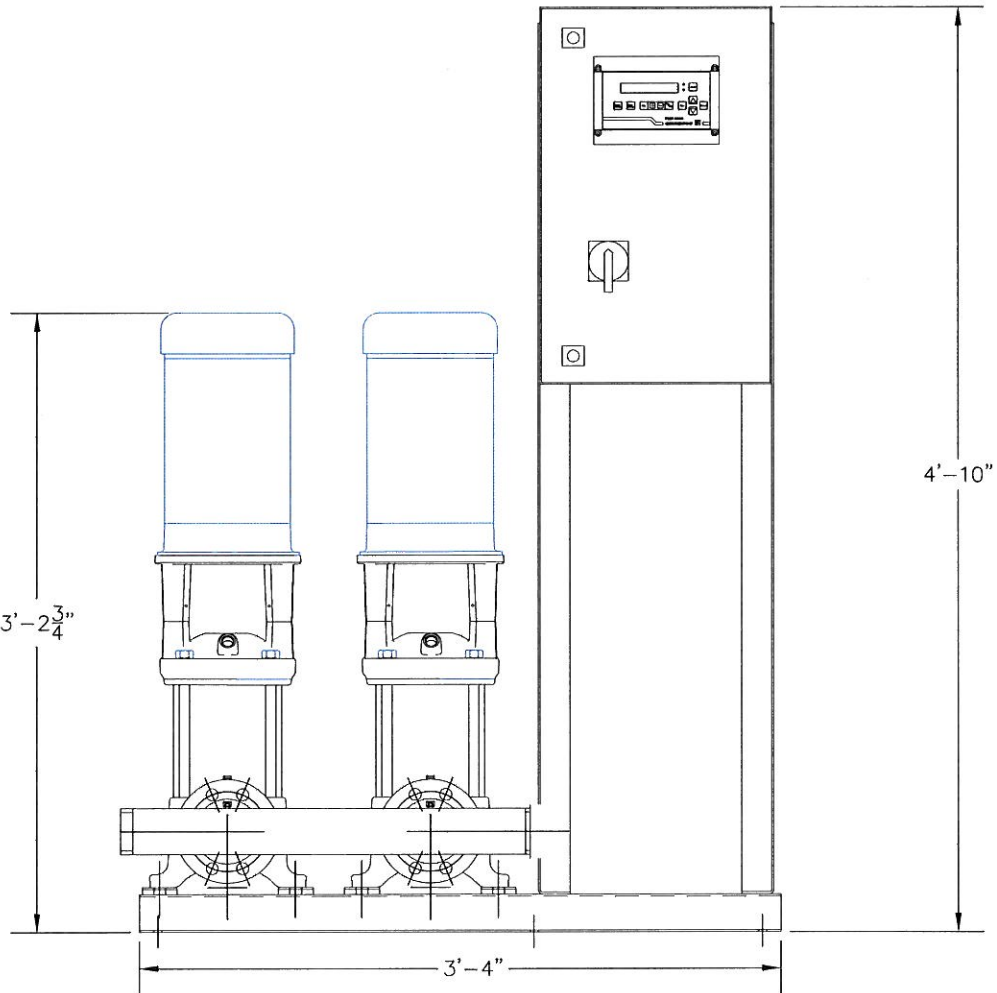
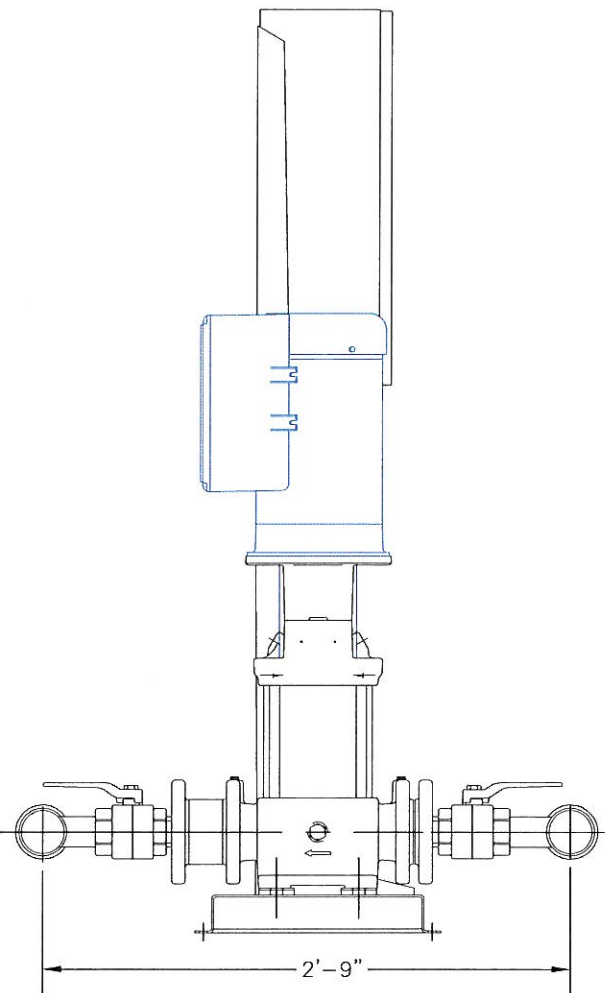
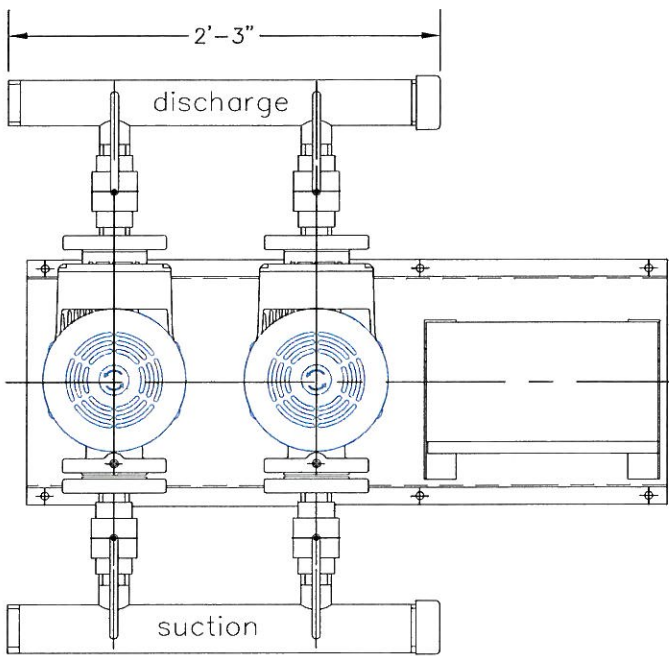
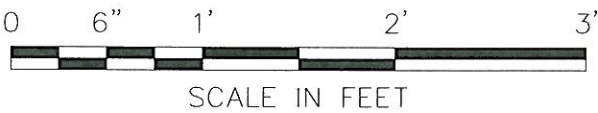


VISTA VUE WATER USERS ASSOCIATION
ARSENIC FILTER INSTALLATION

ARSENIC FILTER PLUMBING

JOB NO 0845001
DRAWING NO
SHEET 8 OF 10

- 1. Manifolds 2.5" NPT AISI 316SS Schedule 10s ASTM A312 or $\varnothing 76.1\text{mm} \times 2\text{mm}$
 - 2. Base/Frame AISI 304SS
 - 3. Standard system layout : panel right facing suction.
 - 4. Full port ball valve ASTM
 - 5. NEMA 4 rated electrical panel
- Note: panel size will vary with options



BOOSTER PUMP DETAIL
N.T.S.

CALL THREE BUSINESS
DAYS BEFORE YOU DIG
1-800-424-5555

XREFS: DRAWING: \\FS3\VOL\PROJECTS\08\0845001\0845001.VUE\DWG\SITE.DWG LAYOUT TAB 9 DATE: 08/06/2010 TIME: 12:19:00 PM PLOTTED BY: DIONES LAST UPDATED: Fri, 6 Aug 2010

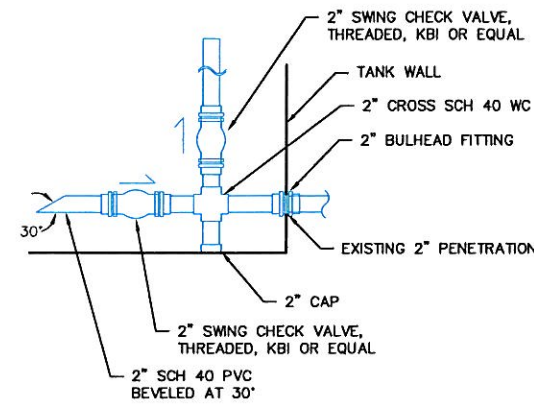


For Review
Stefano

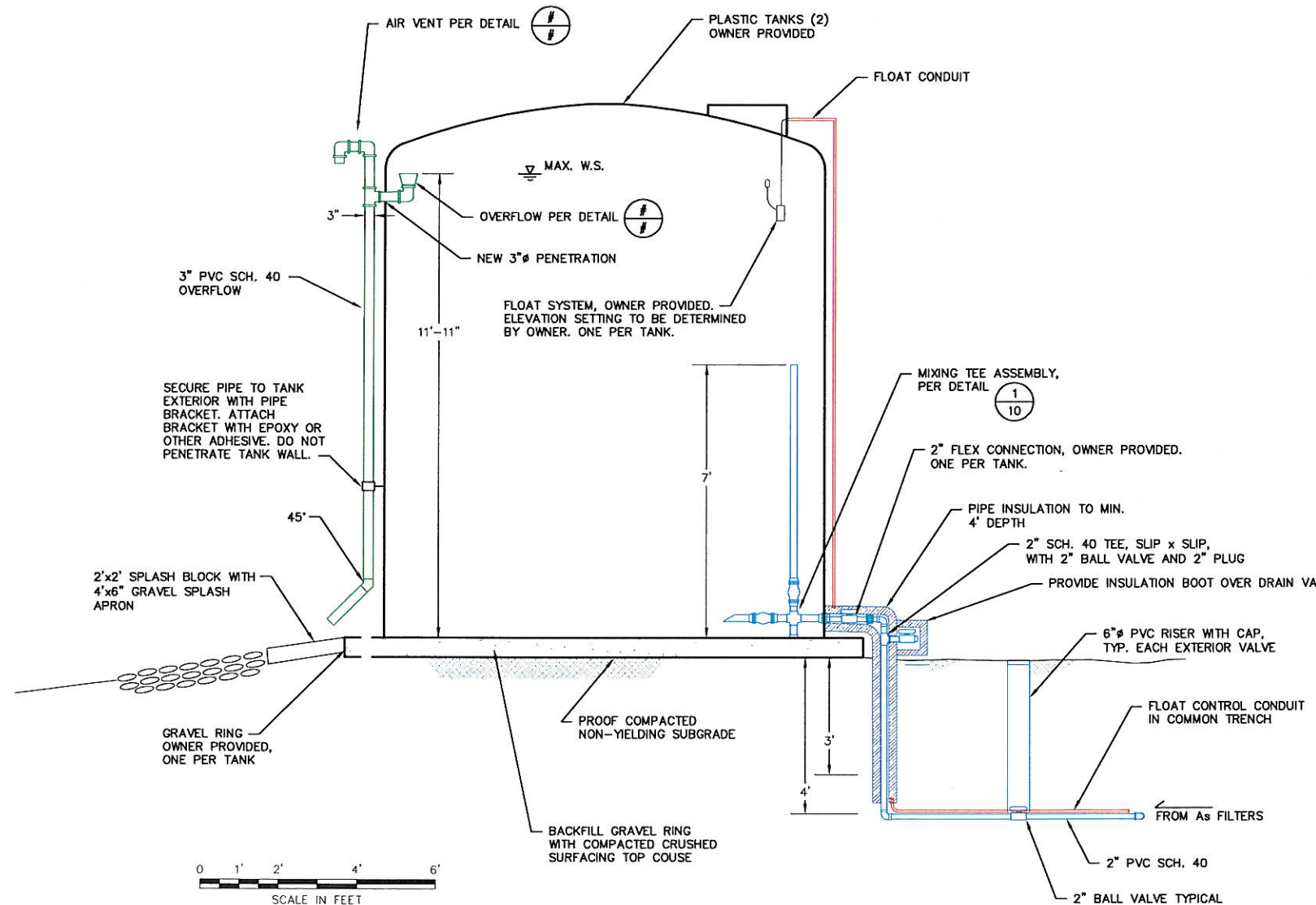
REVISIONS		GENERAL NOTES		DESIGNED BY LMC		DRAWN BY DLJ		CHECKED BY GCF		APPROVED BY LMC		DATE PRINTED 7/27/2010		SCALE NTS		FB NO		THIS DOCUMENT WAS INTENDED FOR THE CLIENT'S USE ONLY AND ANY ATTEMPT TO COPY, RE-USE, AND/OR RE-DISTRIBUTE THIS DOCUMENT IN PART OR IN WHOLE IS PROHIBITED.	
PRELIMINARY																			

HAMMOND COLLIER		WADE LIVINGSTONE				VISTA VUE WATER USERS ASSOCIATION ARSENIC FILTER INSTALLATION		BOOSTER PUMP DETAILS	
SEATTLE (206) 632-2664	WENATCHEE (509) 662-1762	OMAK (509) 826-5861	LAKEWOOD (253) 472-1992						

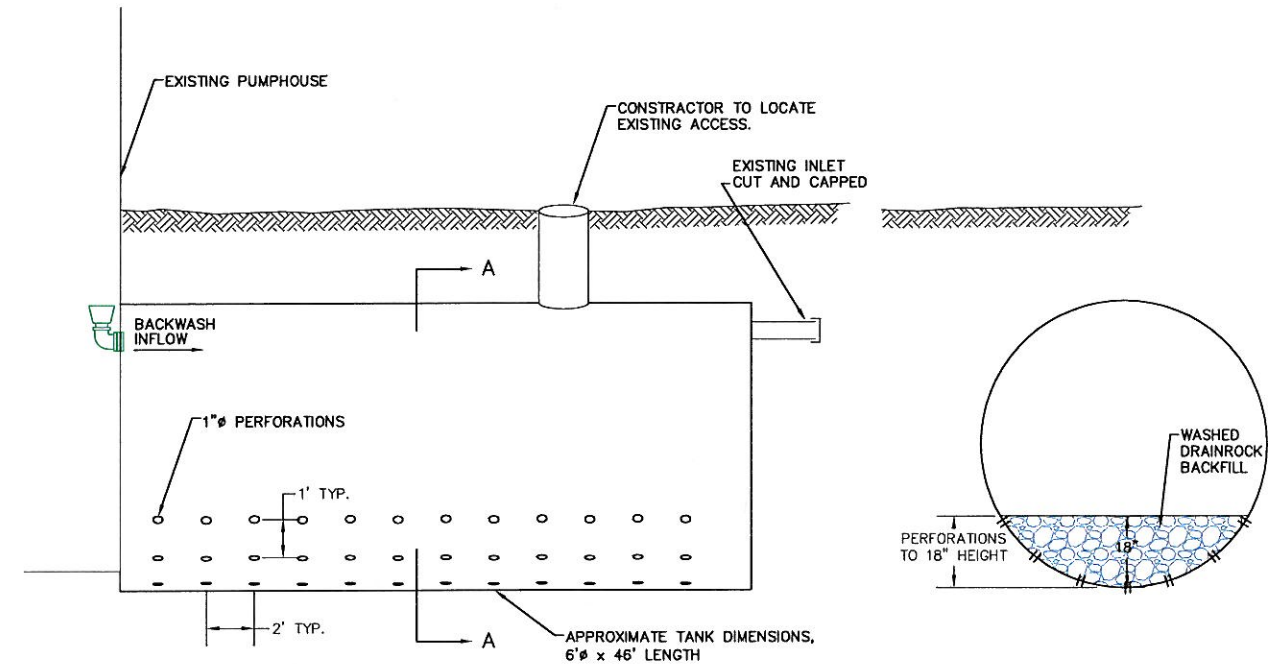
JOB NO 0845001	DRAWING NO.	SHEET 9	OF 10
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MIXING TEE ASSEMBLY 1/10



TANK SECTION 1/10



EXISTING STORAGE TANK CONVERSION NOT TO SCALE

CALL THREE BUSINESS DAYS BEFORE YOU DIG
1-800-424-5555

For Review 8/6/10 STATE OF WASHINGTON LARRY M. CURTIS REGISTERED PROFESSIONAL ENGINEER 29639	REVISIONS PRELIMINARY	GENERAL NOTES THIS DOCUMENT WAS INTENDED FOR THE CLIENT'S USE ONLY AND ANY ATTEMPT TO COPY, RE-USE, AND/OR RE-DISTRIBUTE THIS DOCUMENT IN PART OR IN WHOLE IS PROHIBITED.	DESIGNED BY LMC DRAWN BY DLJ CHECKED BY GCF APPROVED BY LMC DATE PRINTED 7/27/2010 SCALE NTS F.B. NO	HAMMOND COLLIER WADE LIVINGSTONE SEATTLE (206) 632-2664 WENATCHEE (509) 662-1762 OMAK (509) 826-5861 LAKEWOOD (253) 472-1992	VISTA VUE WATER USERS ASSOCIATION ARSENIC FILTER INSTALLATION TANK DETAILS	JOB NO 0845001 DRAWING NO SHEET 10 OF 10
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ATTACHMENT C

ECOLOGY WATER WELL LOGS

STATE OF WASHINGTON
 DEPARTMENT OF CONSERVATION
 AND DEVELOPMENT

Appli.: 8658

Permit: 8024

WELL LOG

No. /

Date October 3, 1967

Record by Driller

Source Driller's record

Location State of WASHINGTON

County Okanogan

Area

Map

NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec 20 T 34 N, R 27 E

E
W.

Diagram of Section

Drilling Co. Ralph R. Charlton

Address Route 1, Box 269, (Omak?), Wash.

Method of Drilling Cable Date July 31, 1967

Owner Ernest T. Lane

Address Route 1, Box 73C, Omak, Wash.

Land surface, datum

SWL: 80' 7-15-67 ft. above below Dims: 10" x 133'

CORRE- LATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
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(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings perforations screens, etc.)

	Domestic and Irrigation		
	Hardpan	0	53
	Sand, dry	53	63
	Gravel	63	72
	Sand, fine	72	74
	Sand, coarse, and gravel	74	86
	Gravel, and sand	86	95
	Gravel, and water	95	133
	Casing: 10" from 0' to 133'		
	Yield: 200 gpm with 50' DD after 35 hrs.		
	Date of Test 7-15-67		

Turn up

Sheet

of

sheets



Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle)

Xr Construction

○ Decommission *ORIGINAL INSTALLATION* Notice
of Intent Number

CURRENT

Notice of Intent No. *W 30/450*

Unique Ecology Well ID Tag No. ALF129

Water Right Permit No.

Property Owner Name CLIFE McKillop

Well Street Address

City _____ County Okanagan

Location SE 1/4-1/4 SE 1/4 Sec 19 Twn 34 R 27 ^{EWM}
or circle

Lat/Long (s, t, r) Lat.Deg _____ Lat Min/Sec _____

Still **REQUIRED**) Long Deg Long Min/Sec

Tax Parcel No. 3427190044

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) John Hubbard

Driller/Engineer/Trainee Signature John Hubbard

Driller or trainee License No. 3063

IF TRAINEE.

Driller's Licensed No.

Driller's Signature

Drilling Company Hubbard Well Drilling

Address P.O. Box 204

City, State, Zip Riverside, Wash. 98549

Contractor's

Registration No. H4BBAWD901MR Date 8/25/11

Ecology is an Equal Opportunity Employer.

WELLS & WADE HARDWARE

BOX 1161

WENATCHEE, WASHINGTON

TELEPHONE (509) 662-7173

WELL TEST

DATE TESTED August 15, 1978

NAME Horace Smith - John Munding

ADDRESS Brewster - Omak

LOCATION OF WELL 3 miles north on Riverview Road

DUG OR DRILLED Drilled PIT OR SURFACE Surface

CASED 8" I.D. OF CASING 8" LENGTH OF CASING 205'

NEW OR OLD WELL AND HOW OLD New

DRILLER'S NAME Methow Valley Drilling - Daryl Routten

DEPTH AND STRATA DRILLED THROUGH Sand

STATIC WATER LEVEL 24' Perforated

GALLONS	DRAW DOWN BELOW GROUND LEVEL	TIME	REMARKS
200+	195'	8:30 am	Borderline @ 200 GPM
225	"	8:45	Still Borderline
225	"	9:00	Slight improvement
250	"	9:30	
250	"	10:30	Shut down - adjusted meter
250	"		
250	"		
250	"	4:00 pm	Static pulls down

TEST PUMP USED HC 7 Stage 6"

SETTING OF PUMP 195'

TOTAL TIME PUMPED 8 Hours

TIME TO CLEAR UP 4 Surges

CONDITION OF WATER AT START OF TEST Good

CUSTOMER'S PLANS AS TO USE OF WELL Domestic

TESTED BY Johnson and McClure

PLEASE SEE PAGE TWO TO DRAW SKETCH IF FURTHER EXPLANATION IS NEEDED OR IF ADDITIONAL INFORMATION IS AVAILABLE

WELL TEST

HORACE SMITH - JOHN MUNDINGER

PAGE TWO

AUGUST 15, 1978

Started surging 7:45 am - 8:15 - rocks.

Test started 8:30 am - 300 GPM - stabilized.

200 GPM @ 8:32 static 195' coming up.

Well pulled down @ 300 GPM.

Owners are going to install 200 GPM pump.