Remedial Investigation/Feasibility Study Draft Work Plan

Tanner Electric Cooperative

44711 SE North Bend Way, North Bend, Washington

Prepared for

Tanner Electric Cooperative
P.O. Box 1426
North Bend, WA 98045

Prepared by

Robinson Noble, a Terraphase Company
17625 130th Avenue NE, Suite 102
Woodinville, Washington 98072

May 21, 2024

Project Number W105.001.002

This document is a draft and the information contained herein is subject to change. It should not be relied upon; consult the final document.

T:\Projects\W105 - Tanner Electric Cooperative\Draft Deliverables\Ecology Work Plan\Draft Work Plan - Tanner Electric.docx

ROBINSON NOBLE
a terraphase company

Contents

Figures

Appendices

Acronyms and Abbreviations

bgs	below ground surface
CSCSL	Confirmed and Suspected Contaminated Sites List
CUL	Cleanup Level
DCA	Disproportionate Cost Analysis
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management
EPA	Environmental Protection Agency
mg/kg	milligrams per kilogram
MSL	Mean Sea Level
MTCA	Model Toxics Control Act (Chapter 173-340 WAC; Chapter 70.105D RCW)
NFA	No Further Action
Qao	Quaternary alluvium - Older
$Qgoa_1$	Quaternary glacial outwash alluvium - Older
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
VCP	Voluntary Cleanup Program

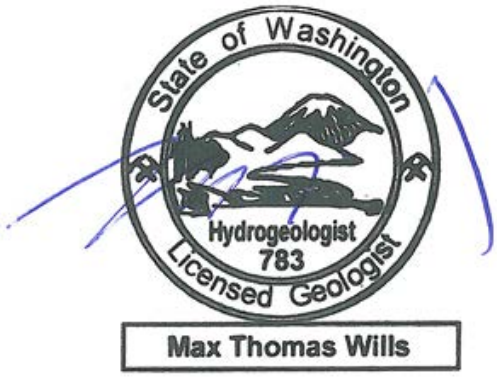
Signatures

All geologic and hydrogeologic information, conclusions, and recommendations provided in this document have been prepared under the responsible charge of a Licensed Washington Professional Hydrogeologist.

Max Wills, Principal Hydrogeologist, LHG

5/21/2024

Date



1 Introduction

This draft work plan was completed by Robinson Noble, a wholly owned subsidiary of Terraphase Engineering Inc. (Terraphase), to outline additional remedial actions planned for the Tanner Electric Cooperative storage yard located at 44711 SE North Bend Way in North Bend, Washington ("the site"). A vicinity map of the site is presented as Figure 1. An aerial showing the details of the site is presented as Figure 2.

The site is currently listed on the Washington State Department of Ecology's (Ecology) Confirmed and Suspected Contaminated Sites List (CSCSL) as having confirmed petroleum contamination (mineral oil) in the soil at concentrations above applicable Model Toxics Control Act (MTCA) cleanup levels (CULs) and suspected mineral oil contamination in groundwater. The contamination is related to a reported release of about 2,800 gallons of dielectric fluid from a 25,000 kVA electrical transformer that was vandalized while being stored at the site. The site is identified by Ecology's Facility/Site ID No. 14722754 and Cleanup Site ID No. 16947. The site is not currently enrolled in Ecology's Voluntary Cleanup Program (VCP), but an application to enroll the site in the VCP is being submitted along with this draft work plan. A copy of Ecology's Cleanup Site Details Report is provided in Appendix A. Pertinent site and contact information is presented below in Table 1.

Table 1: Site and Contact Information

Site Information				
Site Name	Tanner Electrical Cooperative Middle Fork Storage Yard			
Site Address	44711 SE North Bend Way, North Bend, WA 98045			
Parcel No.	King County 1423089032			
Facility/Site ID No.	14722754			
Cleanup Site ID No.	16947			
Contacts and Property Owner Information				
Name		**Address**	**Phone**	**Email**
Site Owner	Tanner Electric Cooperative	P.O. Box 1426 North Bend, WA 98045	-	-
Tenant Site Representative	Tanner Electric Cooperative (Andrew Burd)	44711 SE North Bend Way, North Bend, WA 98045	(425) 888-0623	andrew@tannerelectric.coop
Consultant Project Manager	Terraphase Engineering Inc. (Max Wills)	17625 130th Ave NE STE 102, Woodinville, WA 98072	(206) 550-7215	max.wills@terraphase.com

The overall objective of the cleanup actions described in this draft work plan is to satisfy the substantive requirements of MTCA, and ultimately obtain a no further action (NFA) determination from Ecology through the VCP.

2 Site Description and Background

The Tanner Electric site is located at 44711 SE North Bend Way in North Bend, Washington (Figure 1). The site is comprised of one parcel identified as King County tax parcel number 1423089032 (Figure 2). A Copy of the King County Assessor's tax parcel information is provided in Appendix B. The site is located within the north half of the southeast quarter of Section 14 of Township 23 North, Range 08 East (Willamette Meridian). The topography of the site is generally flat and occurs at an elevation of approximately 527 feet above mean sea level. The closest surface water body is the Middle Fork Snoqualmie River, which is approximately 250 feet north of the site at its closest point, and about 500 feet northwest of the point of release. The site is currently undeveloped and is used as a storage yard for electrical equipment (Figure 2).

2.1 Geology and Hydrogeology

The site and surrounding area are mapped as being underlain by Holocene-aged alluvium - older (Qao) associated with the nearby Snoqualmie River (Steely and others 2022). The soil due east of the site is mapped as Holocene- to late Pleistocene-age alluvium ($Qgoa_1$). The Qao deposits generally consist of loose varied mixtures of gravel, sand, silt, and clay with organic matter. The $Qgoa_1$ deposits generally consist of well to poorly sorted cobble and boulder gravel to coarse sand deposited by glacial meltwater. During remedial excavation (Section 2.2), materials consistent with Qao deposits were encountered to a depth of approximately 6 feet and materials consistent with $Qgoa_1$ were encountered to a depth of about 24 feet.

No groundwater was encountered during initial remedial excavation efforts (Robinson Noble/ Terraphase Engineering, Inc., 2023). However, given the depth of the alluvium and the proximity of the site to the Middle Fork Snoqualmie River, it was determined that groundwater below the site is in hydraulic continuity with the river and fluctuates seasonally with changes in river stage. During initial remediation efforts, the bottom of a former 6-inch diameter supply well located at the site (see Figure 2) was measured at a depth of 33 feet below ground surface (bgs) and the well was dry. The level of the nearby Middle Fork Snoqualmie River was also observed to be "low". As part of a pilot infiltration study for the construction of a new substation at the site, Tanner Electric measured water levels in this well at one-month intervals for a period of just under one year (January 25, 2017 to January 9, 2018). During this period, water levels in the well fluctuated from a low of 37 feet bgs in November 2017 to a high of 23 feet bgs in April 2017. We presume that the seasonal fluctuation of the groundwater below the site is currently similar to the fluctuation in 2017, and we estimate that the depth to groundwater was between 35- and 40-feet during our 2023 remedial actions (see Section 2.2).

2.2 Release History and Previous Work

In July 2023, personnel with Tanner Electric discovered that a substation-type transformer being stored at their North Bend storage yard had been vandalized. Tanner Electric reported that vandals had opened a valve on the transformer and drained approximately 2,800 gallons of dielectric fluid (mineral oil) from the unit to access metals inside the transformer. Placards on the subject transformer indicated that it contained non-PCB-containing dielectric fluid. The release impacted soil underlying the transformer and possibly local groundwater. Following the discovery of the release, Tanner electric subcontracted with US Ecology, Inc. (now Republic Services) to conduct remedial excavation of the impacted soil. Remedial excavation removed impacted soil to depths of 24 feet. Deeper excavation was deemed not feasible and residual impacted soil below 24 feet was left in place. Performance samples collected from the base of the excavation indicated that mineral oil concentrations above the applicable State CUL of 4,000 mg/kg were still present at the site.

Prior to backfilling the remedial excavation, 760 pounds of an oxygen release compound (Regenesis ORC-Advanced®) was applied over the base of the excavation in an effort to treat the remaining residual impacts through the enhancement of bioremediation. After the application of the ORC, the excavation was backfilled with clean granular fill and approximately 60 cubic yards of mineral oil impacted soil, within Ecology's reuse guidelines. Disposal records indicate that 2,224.65 tons of impacted soil were removed from the site and delivered the Roosevelt Regional Landfill via Roosevelt Services' Seattle transfer station.

Initial cleanup actions are documented in our September 2023 Interim Cleanup Action Report (Robinson Noble/Terraphase Engineering, Inc., 2023). The 2023 Interim Cleanup Action Report estimates that approximately half of the 2,800 gallons of mineral oil were recovered through remedial excavation. The remaining mineral oil likely resides within the pore spaces of the soil beneath the remedial excavation, below 24 feet, and potentially at the groundwater interface.

3 Proposed Additional Remedial Actions

This work plan presumes that site closure will ultimately be achieved through the auspices of Ecology's VCP. However, there is currently insufficient data available to determine a specific site closure strategy. In general, it is presumed that an NFA determination can be achieved through additional source removal, use of an environmental covenant, some form of established model remedy, or a combination of these approaches. The overall goal of this work plan is to collect sufficient additional data to determine and implement an appropriate closure strategy. This work plan proposes completion of five general tasks:

- Task 1 – Finalize draft work plan and submit a VCP application to Ecology.
- Task 2 – Install soil boring/monitoring wells to delineate and characterize soil and groundwater contamination.

- Task 3 – Conduct four consecutive quarters of groundwater monitoring to determine compliance with State cleanup levels.
- Task 4 – Complete a remedial investigation/feasibility study (RI/FS).
- Task 5 – Submit analytical data to Ecology's Environmental Information Management (EIM) system.

3.1 Finalize Draft Work Plan and VCP Application (Task 1)

At the onset of this phase of work, Terraphase will submit this draft work plan to Ecology for final approval. Terraphase will also contemporaneously prepare a VCP application that will be submitted to Ecology along with the draft work plan. Once Ecology admits the site into the VCP and reviews the draft work plan, Terraphase will incorporate any requested changes into a final work plan, which will then be used as the formal work guide for all subsequent site investigations/cleanup efforts.

3.2 Soil Borings and Monitoring Well Construction (Task 2)

Figure 3 shows the proposed locations for the soil borings and monitoring wells, which will be used to delineate the extent of soil and groundwater impact at the site. To evaluate potential groundwater contamination, Terraphase will oversee the installation of monitoring wells in each of the soil borings. Considering the known site geology, hydrogeology, and nature of the contaminants, each of these wells will need to be drilled using sonic drilling techniques to depths of up to 60 feet. Terraphase will subcontract the actual drilling work to a licensed drilling contractor and then supervise the drilling and installation of each well. During drilling, a Terraphase geologist will field screen the penetrated soils for signs of impact and collect representative soil samples for subsequent laboratory analyses. All soil samples will be submitted to a State accredited laboratory for analysis of mineral oil using Ecology Test Method NWTPH-Dx/Dx. Upon completion of drilling, a standard 2-inch diameter PVC monitoring well will be set in each boring. The completed wells will then be developed to remove any loose formation material in preparation for sampling.

3.3 Quarterly Groundwater Monitoring (Task 3)

Following completion of the monitoring wells (Task 2), Terraphase will conduct quarterly groundwater monitoring, sampling each of the new monitoring wells. In accordance with Ecology's current groundwater monitoring policy, monitoring will be conducted for a minimum of four consecutive quarters for one year. This assumes that mineral oil concentrations measured during each monitoring event are compliant with current State CULs. If additional monitoring is required, this will be covered by an additional work order. During each of the four monitoring events, all the wells will be purged appropriately prior to sample collection, and all sampling will be conducted using Ecology-prescribed low-flow sampling protocols. All groundwater samples will be submitted to a State accredited laboratory for analysis of mineral oil using Ecology Test Method NWTPH-Dx/Dx.

3.4 Remedial Investigation/Feasibility Study (Task 4)

At the conclusion of the work described above under Task 1 through 3, Terraphase will complete an RI/FS report, which will be submitted to Ecology on behalf of Tanner Electric. The RI portion of the report will include a comprehensive description of all remedial actions completed to date at the site and a discussion of any data gaps or recommendations for additional site investigation. The FS portion of the report will include a full evaluation of possible closure options for the site. As per MTCA, this will also include a disproportionate cost analysis (DCA) to evaluate the effectiveness of each closure option weighed against the implementation cost of each option. The final RI/FS report will be submitted to Ecology with a site closure recommendation based on the results of the DCA. Following Ecology's review of the RI/FS, and presuming Ecology concurs with our recommendations, Terraphase will submit an additional work order to implement final site closure. At this time, based on our understanding of the site and the release, we anticipate that the most cost-effective closure option will likely require implementation of an environmental covenant to address residual soil contamination. In addition to report preparation, this task also includes meetings and other correspondence with Ecology.

3.5 EIM Submission (Task 5)

As is required for all final NFA determinations, all analytical data will be submitted to Ecology's Environmental Information Management (EIM) system.

4 References

Robinson Noble/Terraphase Engineering, Inc., 2023. *Interim Cleanup Action Report, Tanner Electric Cooperative, Transformer Spill Remediation, 44711 Southeast North Bend Way North Bend, Washington.*

Steely, A.N., Anderson, M.L., and Alexander, K.A. 2020. *Geologic Map of the Chester Morse Lake 7.5-minute Quadrangle, King County, Washington*. Washington Geological Survey. Map Series 2022-04.

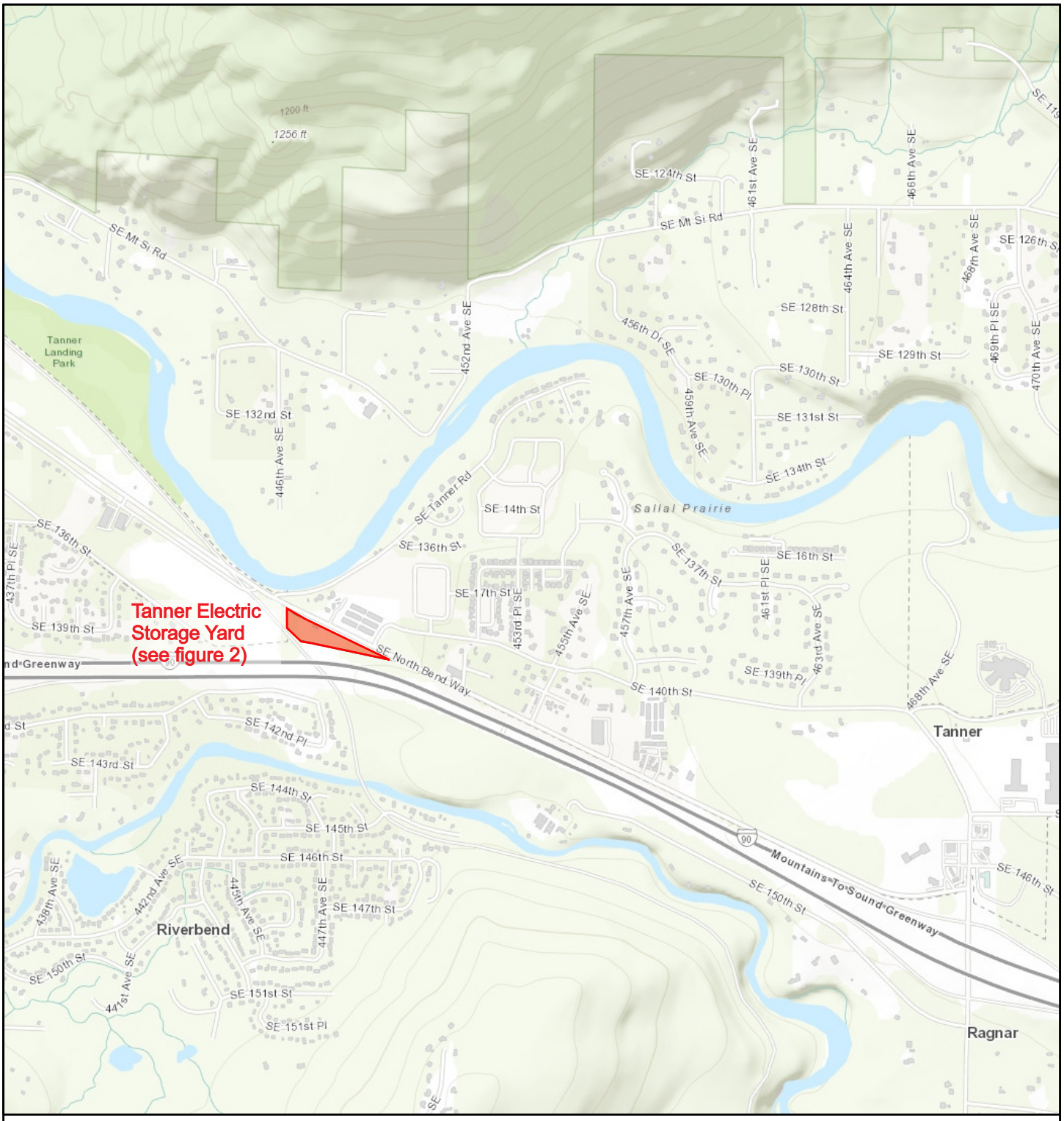
Washington State Department of Ecology, Toxics Cleanup Program and The Ecology Environmental Laboratory, Analytical Methods for Petroleum Hydrocarbons, June 1997, Publication No. ECY 97-602.

Washinton State Department of Ecology, Toxics Cleanup Program, Model Toxics Control Act Cleanup Regulation and Statute, Chapter 173-340 WAC (Chapter 70.105D RCW), amended February 2001, Publication No. 94-06.

Washington State Department of Ecology, Toxics Cleanup Program, Guidance for Remediation of Petroleum Contaminated Sites, Revised June 2016, Publication No. 10-09-057.

Washington State Department of Ecology, Toxics Cleanup Program, Cleanup Levels and Risk Calculations (CLARC II), updated July 2022, Publication No. 94-145.

Figures



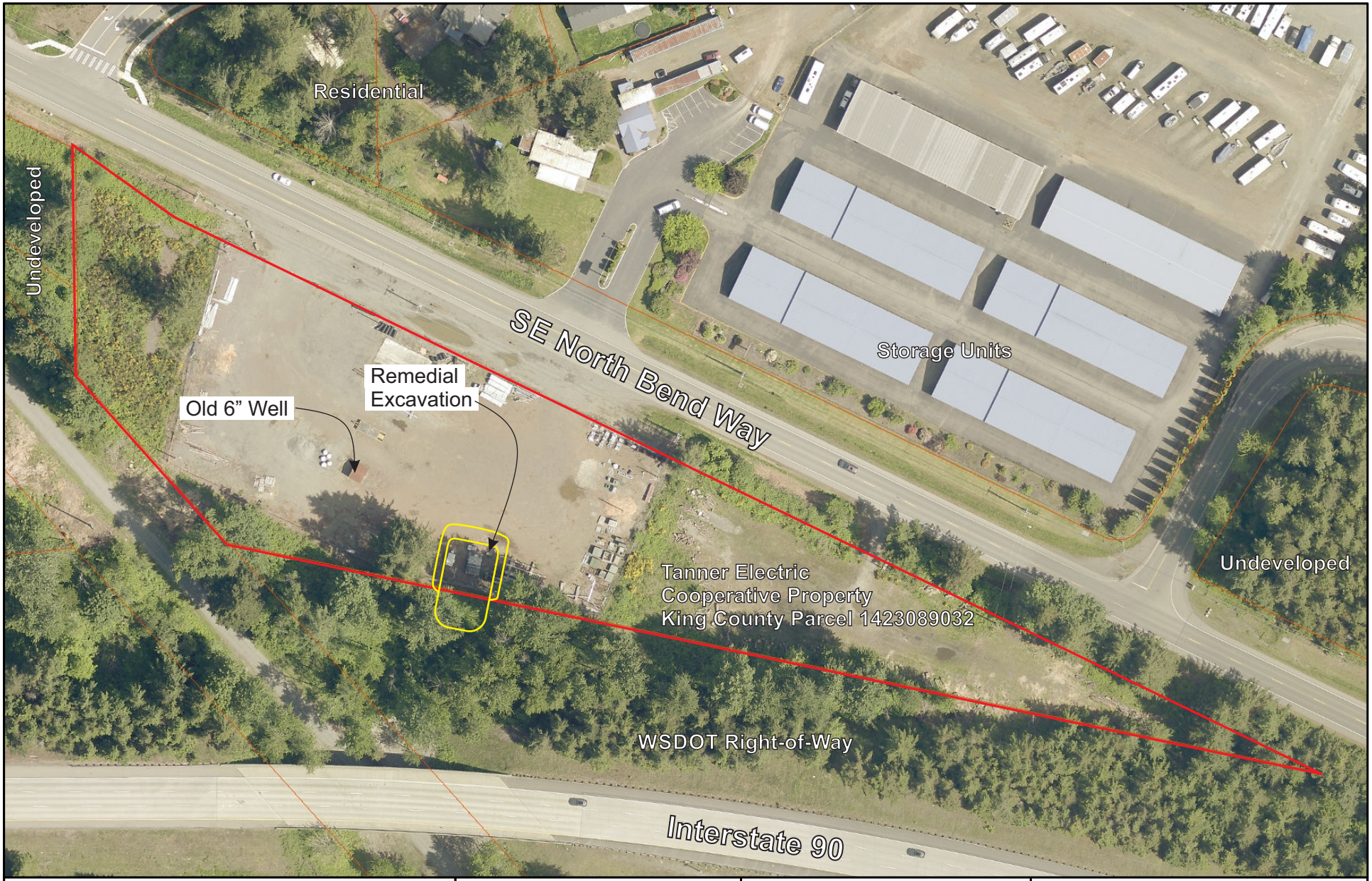
0 750 1,500 3,000 Feet

1 inch = 1,500 feet

N

Basemap Source: King County iMap. August 23, 2023

SAFETY FIRST	CLIENT: Tanner Electric Cooperative	**Vicinity Map**
ROBINSON NOBLE a terraphase company	PROJECT: North Bend Transformer Spill 44711 SE North Bend Way	
	PROJECT NUMBER: W105.001.002	**FIGURE 1**



N

0 60 120 240 Feet

1 inch = 120 feet

Source: Imagery taken from King County iMap
https://gismaps.kingcounty.gov/iMap/

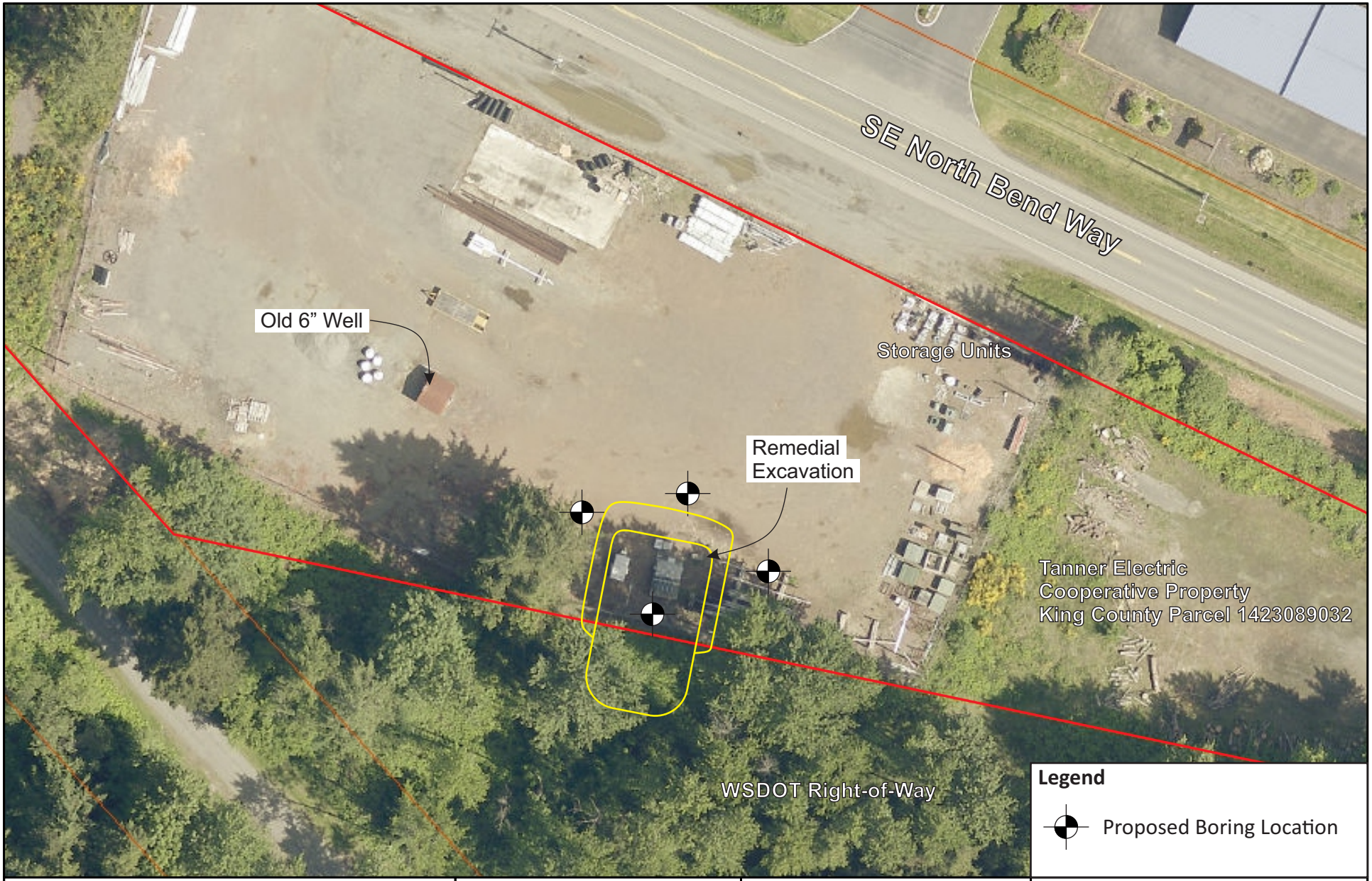
SAFETY FIRST

ROBINSON NOBLE
a terraphase company

CLIENT:	Tanner Electric Cooperative
PROJECT:	North Bend Transformer Spill 44711 SE North Bend Way
PROJECT NUMBER:	W105.001.002

Site Map

FIGURE 2



N

0 30 60 120 Feet

1 inch = 60 feet

Source: Imagery taken from King County iMap
https://gismaps.kingcounty.gov/iMap/

SAFETY FIRST

ROBINSON NOBLE
a terraphase company

CLIENT:	Tanner Electric Cooperative
PROJECT:	North Bend Transformer Spill 44711 SE North Bend Way
PROJECT NUMBER:	W105.001.002

Proposed Boring Location Map

FIGURE 3

Appendix A

Key Documents

Cleanup Site Details

Cleanup Site ID: 16947

Cleanup Site ID: 16947 **Facility/Site ID:** 14722754 **UST ID:** 10533 Site Page | Site Documents | View Map

Cleanup Site Name: Tanner Electrical Cooperative Middle Fork Storage Yard Glossary

Alternate Names: MC ANDERSON TRUCKING, Tanner Electrical Cooperative Middle Fork Storage Yard

LOCATION

Address: 44711 SE North Bend Way **City:** North Bend **Zip Code:** 98045 **County:** King

Latitude: 47.47458 **Longitude:** -121.74380 **WRIA:** 7 **Legislative District:** 5 **Congressional District:** 8 **TRS:** 23N 8E 14

DETAIL

Status: Cleanup Started **NFA Received?** No **Is PSI site?** No

Statute: MTCA **NFA Date:** N/A **Current VCP?** No **Past VCP?** No

Site Rank: N/A **NFA Reason:** N/A **Brownfield?** No

Site Manager: Northwest Region **Responsible Unit:** Northwest **Active Institutional Control?** No

CLEANUP UNITS

Cleanup Unit Name	Unit Type	Unit Status	Resp Unit	Unit Manager	Current Process
Tanner Electrical Cooperative Middle Fork Storage Yard	Upland	Cleanup Started	NW	Northwest Region	Independent Action

ACTIVE INSTITUTIONAL CONTROLS

Instrument Type	Restriction Media	Restrictions/Requirements	Date	Recording Number	Recording County	Tax Parcel
There are no current Institutional Controls in effect for this site.						

AFFECTED MEDIA & CONTAMINANTS

	MEDIA					
Contaminant	**Soil**	**Groundwater**	**Surface Water**	**Sediment**	**Air**	**Bedrock**
Petroleum-Other	C	S				

Key:
B - Below Cleanup Level
C - Confirmed Above Cleanup Level
RA - Remediated-Above
S - Suspected
R - Remediated
RB - Remediated-Below

SITE ACTIVITIES

Activity	Status	Start Date	End Date/ Completion Date
Site Discovery/Release Report Received	Completed		7/26/2023
Initial Investigation / Federal Preliminary Assessment	Completed		8/22/2023
Early Notice Letter(s)	Completed		1/8/2024

Appendix B

King County Assessor Information

New Search | Property Tax Bill | Map This Property | Glossary of Terms | Area Report | Print Property Detail

PARCEL DATA

Parcel	142308-9032	Jurisdiction	NORTH BEND
Name	TANNER ELECTRIC COOP	Levy Code	1925
Site Address	44711 SE NORTH BEND WAY	Property Type	C
Geo Area	95-40	Plat Block / Building Number	
Spec Area		Plat Lot / Unit Number	
Property Name	PLEM Co	Quarter-Section-Township-Range	SE-14-23-8

Legal Description

BEG SW COR OF SE 1/4 TH N 00-21-38 E 1343.38 FT TO SW COR OF NW 1/4 OF SE 1/4 TH S 86-27-49 E 751.15 FT TO E LN OF W 750 FT OF SD SUBD TH N 00-21-38 E 437.47 FT TO NELY MGN OF 100 FT WIDE CHICAGO, MILWAUKEE & ST PAUL RR R/W & TPOB TH CONTG N 00-21-38 E 175.64 FT TO SLY MGN OF 100 FT WIDE ST OF WASH R/W FOR PRIMARY ST HWY NO 2 TH S 63-38-03 E 1201.17 FT TO NLY R/W MGN FOR STATE OF WASH HWY SR 90, ECHO LAKE INTERCHANGE TO TANNER, TH N 77-04-10 W ALG NLY MGN 980.65 FT TO NELY MGN OF CHICAGO, MILWAUKEE & ST PAUL R/W TH N 41-17-42 W ALG SD R/W 184.16 FT TO TPOB
PLat Block:
Plat Lot:

LAND DATA

Click the camera to see more pictures.

Highest & Best Use As If Vacant	COMMERCIAL SERVICE	Percentage Unusable	
Highest & Best Use As Improved	(unknown)	Restrictive Size Shape	YES
Present Use	Vacant(Commercial)	Zoning	EP-1
Land SqFt	148,975	Water	WATER DISTRICT
Acres	3.42	Sewer/Septic	PUBLIC RESTRICTED
		Road Access	PUBLIC
		Parking	ADEQUATE
		Street Surface	PAVED

Views

Rainier	
Territorial	
Olympics	
Cascades	
Seattle Skyline	
Puget Sound	
Lake Washington	
Lake Sammamish	
Lake/River/Creek	
Other View	

Waterfront

Waterfront Location	
Waterfront Footage	0
Lot Depth Factor	0
Waterfront Bank	
Tide/Shore	
Waterfront Restricted Access	
Waterfront Access Rights	NO
Poor Quality	NO
Proximity Influence	NO

Designations

Historic Site	
Current Use	(none)
Nbr Bldg Sites	
Adjacent to Golf Fairway	NO
Adjacent to Greenbelt	NO

Nuisances

Topography	
Traffic Noise	
Airport Noise	
Power Lines	NO
Other Nuisances	NO

Other Designation	NO
Deed Restrictions	NO
Development Rights Purchased	NO
Easements	NO
Native Growth Protection Easement	NO
DNR Lease	NO

Problems

Water Problems	NO
Transportation Concurrency	NO
Other Problems	NO

Environmental

Environmental	NO

BUILDING

TAX ROLL HISTORY

Account	Valued Year	Tax Year	Omit Year	Levy Code	Appraised Land Value ($)	Appraised Imps Value ($)	Appraised Total Value ($)	New Dollars ($)	Taxable Land Value ($)	Taxable Imps Value ($)	Taxable Total Value ($)	Tax Value Reason
142308903202	2023	2024		1925	1,787,700	0	1,787,700	0	1,787,700	0	1,787,700	
142308903202	2022	2023		1925	1,340,700	0	1,340,700	0	1,340,700	0	1,340,700	
142308903202	2021	2022		1925	446,900	0	446,900	0	446,900	0	446,900	
142308903202	2020	2021		1925	446,900	0	446,900	0	446,900	0	446,900	
142308903202	2019	2020		1925	446,900	0	446,900	0	446,900	0	446,900	
142308903202	2018	2019		1925	335,100	1,000	336,100	0	335,100	1,000	336,100	
142308903202	2017	2018		1925	335,100	1,000	336,100	0	335,100	1,000	336,100	
142308903202	2016	2017		1925	372,400	1,000	373,400	0	372,400	1,000	373,400	
142308903202	2015	2016		1925	372,400	1,000	373,400	0	372,400	1,000	373,400	
142308903202	2014	2015		1925	521,400	1,000	522,400	0	521,400	1,000	522,400	
142308903202	2013	2014		1925	521,400	1,000	522,400	0	521,400	1,000	522,400	
142308903202	2012	2013		1925	670,300	1,000	671,300	0	670,300	1,000	671,300	
142308903202	2011	2012		1925	670,300	1,000	671,300	0	670,300	1,000	671,300	
142308903202	2010	2011		1925	670,300	1,000	671,300	0	670,300	1,000	671,300	
142308903202	2009	2010		6675	670,300	1,000	671,300	0	670,300	1,000	671,300	
142308903202	2008	2009		6675	558,600	21,000	579,600	0	558,600	21,000	579,600	
142308903202	2007	2008		6675	521,400	1,000	522,400	0	521,400	1,000	522,400	
142308903202	2006	2007		6675	281,500	18,500	300,000	0	281,500	18,500	300,000	
142308903202	2005	2006		6675	297,900	26,700	324,600	0	297,900	26,700	324,600	
142308903202	2004	2005		6675	297,900	1,000	298,900	0	297,900	1,000	298,900	
142308903202	2003	2004		6675	297,900	1,000	298,900	0	297,900	1,000	298,900	
142308903202	2002	2003		6675	186,200	1,000	187,200	0	186,200	1,000	187,200	
142308903202	2001	2002		6675	148,900	1,000	149,900	0	148,900	1,000	149,900	
142308903202	2000	2001		6675	111,700	5,000	116,700	0	111,700	5,000	116,700	
142308903202	1999	2000		6675	111,700	5,000	116,700	0	111,700	5,000	116,700	
142308903202	1998	1999		6675	111,700	5,000	116,700	0	111,700	5,000	116,700	
142308903202	1997	1998		6675	0	0	0	0	100,000	5,000	105,000	
142308903202	1996	1997		6675	0	0	0	0	100,000	5,000	105,000	
142308903202	1994	1995		6675	0	0	0	0	100,000	5,000	105,000	
142308903202	1992	1993		6675	0	0	0	0	68,400	14,000	82,400	
142308903202	1990	1991		6675	0	0	0	0	51,300	14,000	65,300	
142308903202	1988	1989		6675	0	0	0	0	51,300	14,000	65,300	
142308903202	1986	1987		6675	0	0	0	0	44,400	14,000	58,400	
142308903202	1985	1986		6675	0	0	0	0	24,600	14,000	38,600	
142308903202	1984	1985		6675	0	0	0	0	15,600	14,000	29,600	
142308903202	1982	1983		6675	0	0	0	0	8,200	15,000	23,200	

SALES HISTORY

Excise Number	Recording Number	Document Date	Sale Price	Seller Name	Buyer Name	Instrument	Sale Reason
2709150	20150108001612	1/6/2015	$350,000.00	ANDERSON KATHLEEN R MOON+ANDERSON VICTOR ALLEN+RUSSELL DEAN	TANNER ELECTRIC COOPERATIVE	Statutory Warranty Deed	Estate Settlement

1671116	199903051700	2/11/1999	$0.00	ANDERSON RUTH V	ANDERSON VICTOR A ET AL	Quit Claim Deed	Partial Interest (love and affection, gift)

REVIEW HISTORY

PERMIT HISTORY

HOME IMPROVEMENT EXEMPTION

New Search | Property Tax Bill | Map This Property | Glossary of Terms | Area Report | Print Property Detail