

Location and Extent Staff Report

DATE: SEPTEMBER 20, 2024
TO: DOUGLAS COUNTY PLANNING COMMISSION
FROM: CAROLYN WASHEE-FREELAND, AICP, SENIOR PLANNER *CWF*
JEANETTE BARE, AICP, PLANNING MANAGER *JB*
STEVEN E. KOSTER, AICP, ASSISTANT DIRECTOR OF PLANNING SERVICES *SK*
SUBJECT: **6453 SCOTT AVE, PINERY WATER & WASTEWATER DISTRICT WELL 14, LOCATION AND EXTENT**

PROJECT FILE: LE2024-022

OWNER:	REPRESENTATIVE:
PINERY WATER & WASTEWATER DISTRICT 5242 OLD SCHOOLHOUSE ROAD PARKER, CO 80134	PINERY WATER & WASTEWATER DISTRICT RICHARD KRULISH, ENGINEERING PROJECT MGR 5242 OLD SCHOOLHOUSE ROAD PARKER, CO 80134

PLANNING COMMISSION HEARING:

October 7, 2024 @ 6:00 PM

I. EXECUTIVE SUMMARY

The Pinery Water and Wastewater District (PWWD) requests approval of a Location and Extent (L & E) to construct a new alluvial well, pipeline, and site improvements referenced as "Well 14." Well 14 will be located approximately 2,000 linear feet north of Scott Avenue. PWWD indicates that Well 14 will provide a necessary source of supplemental water to serve the district's entire customer base during dry seasons.

II. REQUEST

A. **Request**

PWWD proposes to construct a new alluvial well, a pipeline, and site improvements for supplemental water supply to meet the future water supply demands during the dry seasons.

B. **Location**

The Well 14 project site will be located north of Scott Avenue, within Planning Area 2 of the Pinery Meadows Planned Development, directly east of the Cross Creek subdivision. The project site is generally located one-quarter of a mile west of the

intersection of Scott Avenue and Parker Road (SH83). Please see the vicinity, zoning, and aerial maps located within the attachments section of this staff report.

C. Project Description

PWWD will construct a new alluvial well (Well 14), pipeline, and proposed improvements to meet the water supply demands for the district's entire service area. PWWD completed the construction of Walker Reservoir located in Franktown. PWWD will exercise its water rights and store water in the Walker Reservoir during the wet seasons. Water will be released from Walker Reservoir into Cherry Creek during dry seasons, where the district will access the water directly from Cherry Creek via the Well 14 infrastructure. Well 14 will be constructed as a shallow well, and the well will not access deep groundwater or withdraw water from the Denver Basin aquifers.

The project will involve drilling Well 14 and constructing 800 feet of pipeline, an underground vault, and an access drive. The project will be constructed in two stages. The well drilling will be completed in stage one and is anticipated to start in mid-October 2024 and will be completed within a two-week timeframe. The well site activities and drilling operations will be conducted on site 24-hours per day, during the two-week timeframe. Worker shifts typically start at 7:00 a.m. and will continue over a 24-hour period each day. During construction, on-site lighting equipment will be used on the jobsite at night for the safety of drilling activities. The on-site lighting equipment will be directed to shine downward towards the ground while in use.

The next stage will be the construction of the site improvements. Stage two site improvements include construction of the pipeline, vaults, fencing, the access road, and electrical components. This stage is projected to start in January 2025, with an estimate of four months to complete.

In recent months, PWWD became aware that an active bald eagle nest is located near the Well 14 project site. The district is working with Colorado Parks and Wildlife and the U.S. Fish and Wildlife Service to ensure compliance with all environmental regulations. The applicant will modify the construction schedule as necessary for the site improvements based on the direction from these regulatory agencies.

The proposed site improvements associated with the well include electrical components, a 6-foot high white PVC fencing, an 800-foot pipeline, underground vaults, and an access driveway. All required easements for the construction of Well 14 have been obtained and recorded by separate instrument.

PWWD contracted Behrens and Associates, Inc. to conduct a noise modeling report to study the effects of potential noise pollution from well-drilling activity during construction on surrounding residential homes within the vicinity of the project area, which has been included in the submittal for reference. The nearest home is 1,290 feet to the northwest of the project area, in the Pinery West Filing 2 subdivision. The

Cross Creek subdivision is located directly to the west of the proposed well, and the subdivision site improvements are currently under construction, however, no homes have been built yet. Residential lots from the Stone Creek Ranch subdivision are located south at a distance of one-third of a mile from the project site.

The results of the noise report show that noise from construction activities will occur at 52 dBA. Section 17A of the DCZR sets maximum permissible noise levels for lots and parcels within all zone districts. The maximum permissible noise level for construction activities cannot exceed 75 dB(A) between 7:00 p.m. and the next 7:00 a.m., during the construction timeframe. The applicant has concluded that based on the results of the noise report, noise levels will fall within the noise level limits permitted by the DCZR.

PWWD staff has indicated that after construction is completed, there will be no noticeable noise from Well 14, and routine traffic to the site will generally consist of one to two PWWD pick-up trucks per day entering and leaving the site.

III. CONTEXT

A. Background

Well 14 will be located within open space in the Pinery Meadows Planned Development, Planning Area 2. Pinery Meadows was rezoned to Planned Development (PD) in 2023, from Agricultural One. Planning Area 2 consists of 15-acres of open space. Planning Area 1 has reserved 24 acres for 170 residential units within the Pinery Meadows PD. Planning Area 2 abuts the Cross Creek Filing 1 subdivision to the west, where approximately 110 residential lots will be located once constructed.

PWWD provides water and wastewater services to approximately 15,000 residents located within its service area. PWWD indicates that Well 14 will tie into the district's overall water delivery system with supplemental water. The PWWD recently completed a water storage reservoir, known as the Walker Reservoir, located in Franktown, in partnership with members of the Cherry Creek Project Water Authority (Authority). Members of the Authority, which includes PWWD, will store water in Walker Reservoir during wet seasons and use the stored water during the dry season in the summer. Water will be released from Walker Reservoir into Cherry Creek, allowing members of the Authority to withdraw water. PWWD will operate Well 14 to withdraw water from Cherry Creek to serve its customer base.

B. Adjacent Land Uses and Zoning

The following table reflects the zone districts and land uses surrounding the project area.

	Zoning	Land Use
North	The Pinery PD	Pinery Village Tract H Open Space
South	Scott Avenue PD	Vacant Land (Future Residential Development)
East	The Pinery PD	Vacant Land
West	Cross Creek PD	Vacant Land (Cross Creek Filing 1 Subdivision currently under construction)

IV. PHYSICAL SITE CHARACTERISTICS

A. Site Characteristics and Constraints

The site will be located within the 100-year Floodplain of Cherry Creek. The Creek flows south to north through the subject property. The character of the site is relatively flat, with a contour elevation of 5,960 feet in height. The site has remained in a natural state with a vegetation composition of grasses, shrubs, small groves of pine trees, and wildlife habitat which includes the bald eagle nesting site among other wildlife species in the area.

The CMP Wildlife Resources map identifies the site with a moderate habitat value due to its proximity to Cherry Creek. The subject property is not located within a wildlife habitat conservation area, overland connection, wildlife movement corridor, or wildlife crossing area.

B. Access

The subject property is located approximately ½ mile west of the intersection of State Highway 83 and Scott Avenue. There will be one access point to the well site approximately one-quarter of a mile north from Scott Avenue. The new 12-foot wide access roadway to the well site will travel north from Scott Avenue through the Scott Avenue Holdings LLC property, and into the project area in Planning Area 2 of the Pinery Meadows PD.

C. Drainage and Erosion

PWWD has been granted a waiver from the Phase III Drainage report required by Douglas County Engineering. The applicant has indicated that the proposed well and site improvements will be located within a natural vegetated area, that can slowly absorb run-off or suspended materials produced during a severe storm event. A Grading, Erosion, and Sediment Control (GESC) plan and report will be submitted to Douglas County Engineering Services for approval prior to permits being issued for construction activities.

D. Floodplain

The Well 14 site is located within the Cherry Creek floodplain zone in the area.

V. PROVISION OF SERVICES

A. Fire Protection

The South Metro Fire Rescue Protection District (SMFRPD) provides fire and emergency medical services to the site. SMFRPD provided a referral agency review response of no objection to the Well 14 Location and Extent project.

B. Sheriff Services

The Douglas County Sheriff's Office (DCSO) provides emergency services to the site. DCSO did not provide a comment to the referral agency review.

C. Water and Sanitation

PWWD staff has indicated that no additional water or sanitation service demands are generated by the proposed Well 14 project.

D. Utilities

There are no existing underground or overhead utilities within the project area. The site falls within the jurisdiction of Xcel Energy and CORE Electric Cooperative for electric and gas service. As of the writing of the staff report, CORE provided a "no comment" response to the request, and Xcel Energy has not provided a referral comment.

E. Other Required Processes and Permits

The proposed Well 14 project will require a building permit from Douglas County Building Services. Douglas County Engineering will require Construction and GESC Plans and a permanent access permit. The project will also require a separate address as required by Douglas County Addressing. No other required process or permits have been identified by other referral agencies at the writing of the staff report.

VI. PUBLIC NOTICE AND INPUT

Courtesy notices of an application in process were sent to abutting property owners. At the preparation of the staff report, there have been no public comments received from adjacent property owners or other members of the public.

Referral response requests were sent to referral agencies on September 16, 2024. Referral responses were due at the conclusion of the referral period on September 23, 2024, prior to the Planning Commission hearing. Agency responses received to date are included as an attachment to this staff report.

VII. STAFF ASSESSMENT

Staff has evaluated the application in accordance with Section 32 of the *Douglas County Zoning Resolution*. The applicant has indicated that the proposed Well 14 is necessary to meet service demand for water supply during dry seasons of the year. Should the Planning Commission approve the Location and Extent request, the applicant will be required to obtain any necessary permits for completion of the proposed facilities.

In staff's assessment, the Location and Extent request may be approved, subject to additional information that may be presented at the Planning Commission hearing.

ATTACHMENTS	PAGE
Douglas County Land Use Application.....	7
Location and Extent Narrative and Community Impact Report.....	8
Location and Extent Plan Exhibits	10
Vicinity, Zoning, Aerial, and Floodplain Maps	19
Referral Agency Response Report.....	23
Referral Response Letters	26
Water Well 14 Noise Modeling Report	29

LAND USE APPLICATION

Please complete, sign, and date this application. Return it with the required items listed on the Submittal Checklist to planningsubmittals@douglas.co.us. Submittals may also be mailed or submitted in person to Planning Services.
NOTE: The Planning Commission or the Board of County Commissioners should not be contacted regarding an open application.

OFFICE USE ONLY**PROJECT TITLE:** **6453 SCOTT AVENUE, LOCATION AND EXTENT****PROJECT NUMBER:** **LE2024-022****PROJECT TYPE:** **LOCATION AND EXTENT****MARKETING NAME:** Shallow Well 14**PRESUBMITTAL REVIEW PROJECT NUMBER:** **PS2024-1736****PROJECT SITE:**Address: **6453 Scott Avenue, Parker, CO 80134**State Parcel Number(s): **2349-100-00-025**

Subdivision/Block#/Lot# (if platted): _____

PROPERTY OWNER(S):Name(s): **Pinery Water District - via easements**Address: **5242 Old Schoolhouse Rd., Parker, CO 80134**Phone: **720-751-2635**Email: **rkrulish@pinerywater.com****AUTHORIZED REPRESENTATIVE:** (Notarized Letter of Authorization is required from the property owner, unless the owner is acting as the representative)Name: **Same as above**

Address: _____

Phone: _____

Email: _____

To the best of my knowledge, the information contained on this application is true and correct. I have received the County's information sheet regarding the *Preble's Meadow Jumping Mouse*.

Richard KrulishDigitally signed by Richard Krulish
Date: 2024.09.11 13:11:09 -06'00'

Applicant Signature

09/11/2024

Date

100 Third Street, Castle Rock, Colorado 80104 • 303.660.7460

Revised 6/2024



Applicant

- Pinery Water District – 5242 Old Schoolhouse Road, Parker, CO 80134. Richard Krulish – 720-751-2635, rkrulish@pinerywater.com
- The Pinery Water District provides water and wastewater services to approximately 15,000 Douglas County residents. The service area of the District includes Colorado Golf to the north near Stroh Road, The Club at Pradera to the southwest and to Crowfoot Valley Road, Colorado Horse Park and Trinity Lutheran Church to the southwest at Bayou Gulch Road, and the Timers to the east near Democrat Rd where North Pinery Parkway meets South Pinery Parkway. This well will tie into the District's overall system and will supplement the water provided to the entire population of our District. This District recently completed construction of Walker Reservoir in Franktown in partnership with the other members of the Cherry Creek Project Water Authority. Walker Reservoir is a water storage facility located upstream of the Pinery, which will allow the Authority to store water during wet seasons for use during the dry summer season. During the dry season, water will be released from Walker Reservoir into Cherry Creek, and this well will be used to withdraw the water from Cherry Creek for use by the Pinery to serve its residents. The Pinery Water District can store about 600 acre-feet of water in Walker Reservoir each year. 600 acre-feet of water can support approximately 1100 homes each year. This well is a critical component of the District's water supply infrastructure.

Pinery Shallow Well 14 - Location and Extent Report (Section 3206)

- This project is for a new alluvial well and pipeline for the Pinery Water and Wastewater District.

Section 3206.01 – Community Impact

- Construction of Shallow Well 14 will have a positive impact on the community and will be used to withdraw water released upstream from the newly constructed Walker Reservoir. This well is not a deep groundwater well and will not withdraw water from the Denver Basin aquifers.
- Drilling operations will take 2-3 days and will be a 24-hour operation. Well development and installation will be completed in 2-3 weeks and will be during normal daily hours. These improvements are expected to commence in October and be complete within a few weeks.
- Site improvements including electrical components, a 6-foot high, 28 ft x 29 ft white PVC fencing, approximately 800 feet of pipeline, and underground vaults. Construction of these improvements are expected to begin in December and should be completed within 6 months.
- The District is aware that there was a bald eagle nest on a nearby property to the northwest during the last nesting season and is working with Colorado Parks and Wildlife and U.S. Fish and Wildlife to ensure compliance with all regulations. It is possible that site improvements may be delayed due to criteria related to the bald eagle nest, in this case, construction will occur between July 31 and December 1, 2025.
- The District contracted with Behrens and Associated, Inc. to conduct a noise modeling study which has been included in the submittal for reference. The Cross Creek development is located directly to the west of the proposed well and the site improvements are currently under construction, no homes have been constructed yet. The results of the model show that the noise level and the nearest home 1290 feet to the northwest in Pinery West F2 are 52 dBA and Douglas County zoning resolution allow for up to 75 dBA for activities between 7pm and 7am.



Stone Creek Ranch is located to the south with the nearest residential home approximately 1340 feet away.

Section 3206.02 – Phase III Drainage Report

- The Douglas County Engineering Department has waived the Phase III Drainage report.
- The proposed facilities covered by this Location and Extent application are located within a natural vegetation area that can slow and absorb any run-off or suspended materials produced during a severe storm event.

Section 3206.03 – Traffic Impact

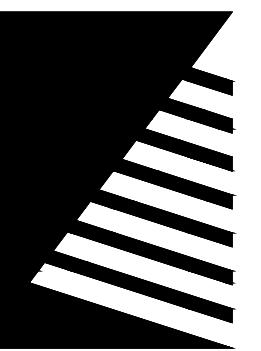
- An access road has been constructed as a part of the Cross Creek project, an extension will be constructed from the existing termination point, north to the Shallow Well 14 site and is subject to this L&E request.
- Parking of construction vehicles will be available at the Shallow Well 14 site.
- Construction traffic will be minimal during drilling operations and typically consist of a drilling rig and one or two work trucks for the duration of this phase.
- Heavy equipment will typically be brought to the site, off-loaded, and remain on site until the corresponding work is completed.
- Construction will continue with installation of the Horizontal Directionally Drilled (HDD) portion of the pipeline as well as the meter vault, air/vac manholes and interconnecting piping. Final construction activities will include backfilling, final grading, and re-establishment of vegetation. We anticipate 2-4 pieces of heavy equipment will be brought in and left, and an average of 4 workers/day will be on site for this activity.
- Upon completion of Shallow Well 14, an average of one to two District pick-up trucks will visit the site daily.

Section 3206.04 – Public Improvements

- All improvements contemplated under this submittal are being funded by the District with monies in-hand and are solely for public benefit. All easements required for the proposed improvement have been acquired.

Section 3206.05 – Additional Information

- GESC, Permanent Access, and Right-of-Way Use/Construction permits will be obtained prior to the start of any work at the site. All necessary Douglas County approvals and permits will be obtained prior to commencing construction.



Farnsworth GROUP

223 WILLOW STREET
FORT COLLINS, COLORADO 80524
(970) 484-7477 / info@f-w.com

www.f-w.com
Engineers | Architects | Surveyors | Scientists

ISSUE: # DATE: DESCRIPTION:

1. *What is the primary purpose of the study?* (e.g., to evaluate the effectiveness of a new treatment, to describe a population, to compare two groups, to predict an outcome, to explore a phenomenon)

Project Status

NOT FOR CONSTRUCTION

PROJECT:
**THE PINERY WATER &
WASTEWATER DISTRICT**

**LOCATION AND EXTENT
PLAN EXHIBIT
SHALLOW WELL 14
PINERY MEADOWS
TR IN S 1/2 10-7-66
LE2024-022**

5242 OLD SCHOOLHOUSE ROAD
PARKER CO 80134

DATE: 9/13/2024

DESIGNED: BD

DRAWN: **WIL**

BROWNS

REVIEWED.

LOCATION AND EXTENT VICINITY MAP SHALLOW WELL 14

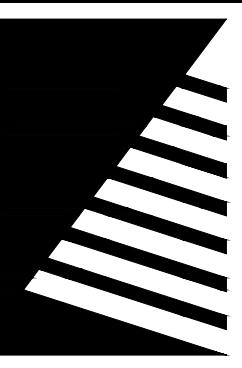
CO

VICINITY MAP

6453 Scott Avenue, Pinery Water & Wastewater District Well 14 - Location and Extent Request
Project File: LE2024-022
Planning Commission Staff Report, Page 10 of 16

6453 Scott Avenue, Pinery Water & Wastewater District
Project File: LE2024-022
Planning Commission Staff Report - Page 10 of 10

0240175.00



Farnsworth
GROUP

223 WILLOW STREET
FORT COLLINS, COLORADO 80524
(970) 484-7477 / info@f-w.com

www.f-w.com
Engineers | Architects | Surveyors | Scientists

ISSUE: # DATE: DESCRIPTION:

PROJECT:
PINERY WATER AND
WASTEWATER DISTRICT

LOCATION AND EXTENT
PLAN EXHIBIT
SHALLOW WELL 14
PINERY MEADOWS
TR IN S 1/2 10-7-66
LE2024-022

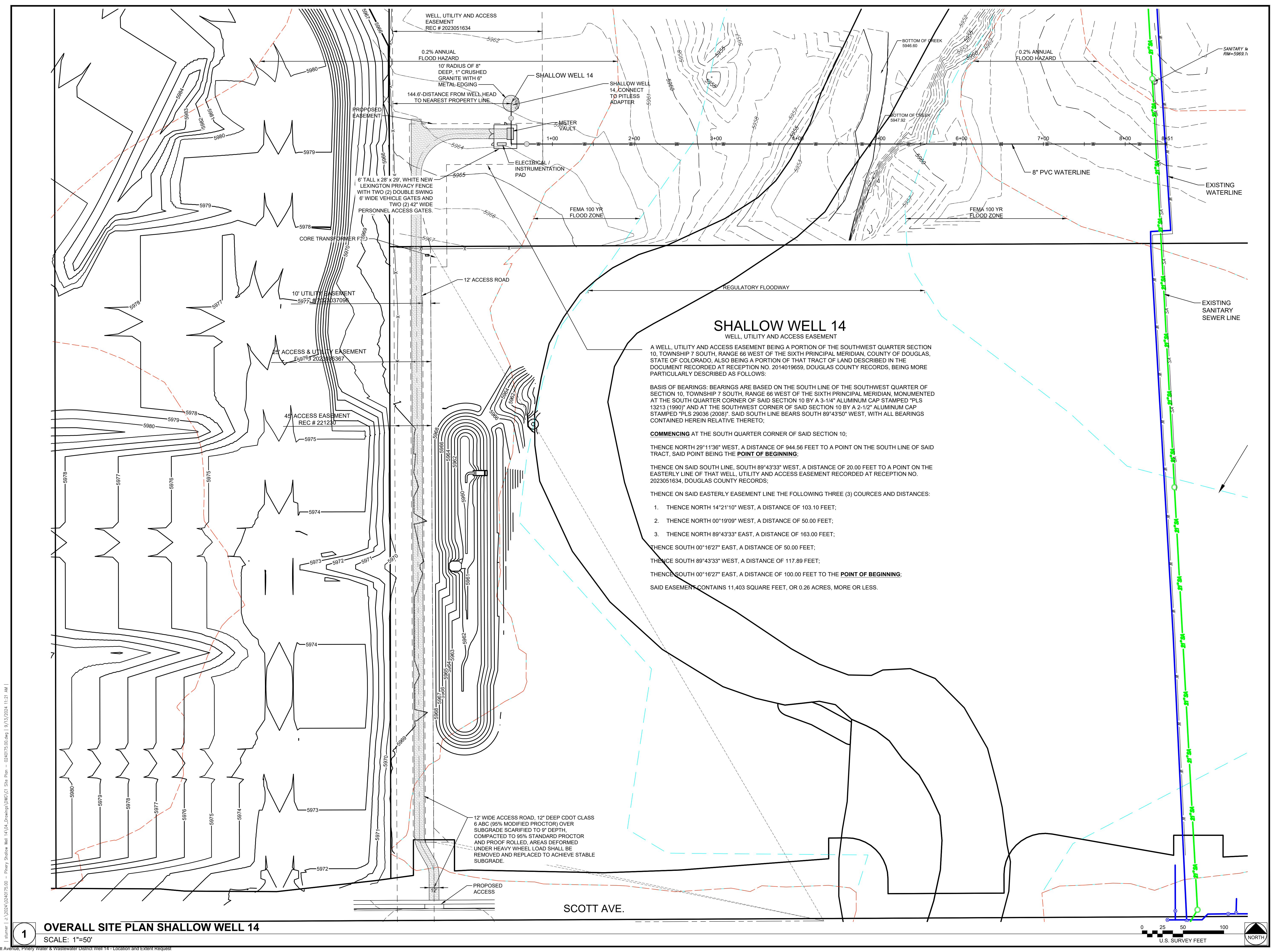
DATE: 9/13/2024
DESIGNED: BD
DRAWN: JWV
REVIEWED: BD
FIELD BOOK NO.:
SHEET TITLE:

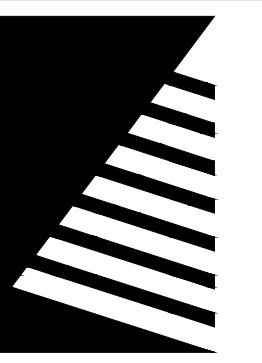
LOCATION AND
EXTENT PLAN
SHALLOW WELL 14

SHEET NUMBER:

C1

PROJECT NO.: 0240175.00





Farnsworth
GROUP

223 WILLOW STREET
FORT COLLINS, COLORADO 80524
(970) 484-7477 / info@f-w.com

www.f-w.com
Engineers | Architects | Surveyors | Scientists

ISSUE:
DATE: DESCRIPTION:

Project Status
NOT FOR CONSTRUCTION

PROJECT:
THE PINERY WATER & WASTEWATER DISTRICT

LOCATION AND EXTENT PLAN EXHIBIT
SHALLOW WELL 14
PINERY MEADOWS
TR IN S 1/2 10-7-66
LE2024-022

5242 OLD SCHOOLHOUSE ROAD
PARKER, CO. 80134

DATE: 9/13/2024

DESIGNED: BD

DRAWN: JWJ

REVIEWED: BD

FIELD BOOK NO.:

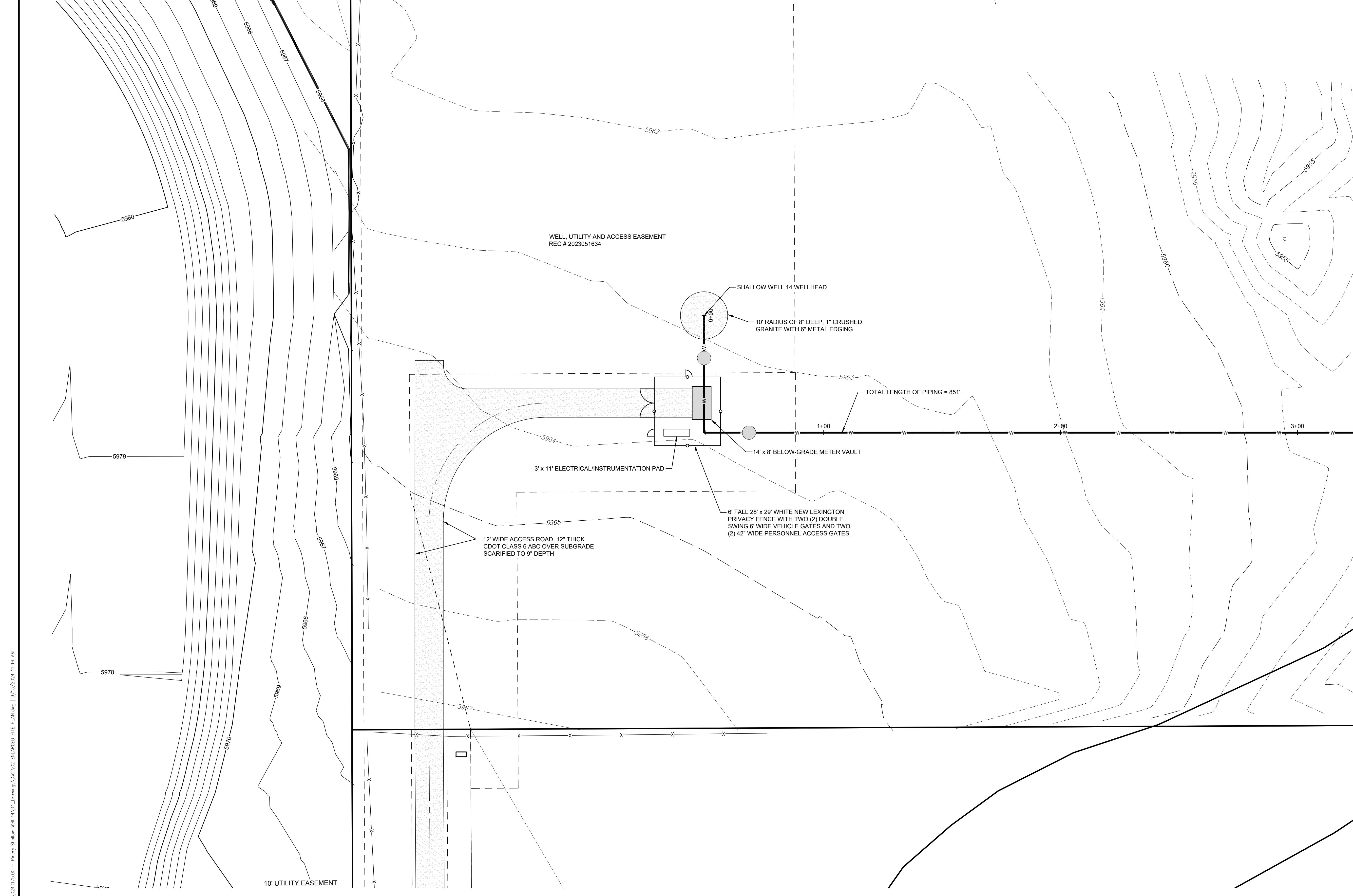
SHEET TITLE:

ENLARGED SITE PLAN SHALLOW WELL 14

SHEET NUMBER:

C2

PROJECT NO.: 0240175.00



ENLARGED SITE PLAN

SCALE: 1'=20'

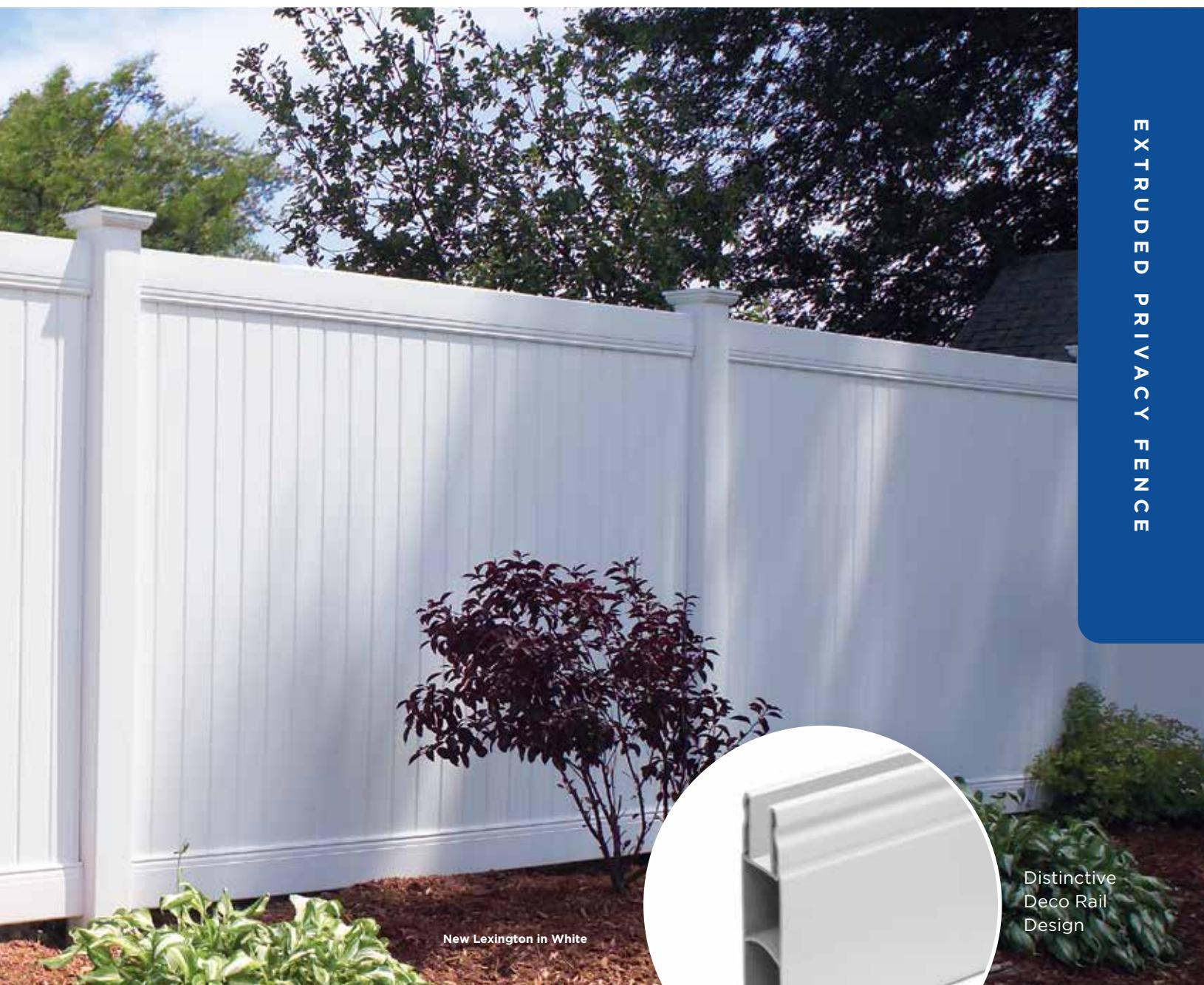
New Lexington



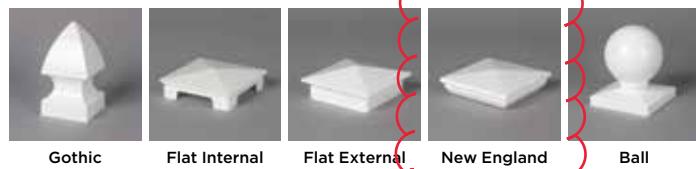
New Lexington

New Lexington offers dependable performance at an economical price with features you'd expect to find on higher-end fence products. New Lexington includes Bufftech's signature "v" groove picket and Classic Curve deco rail design.

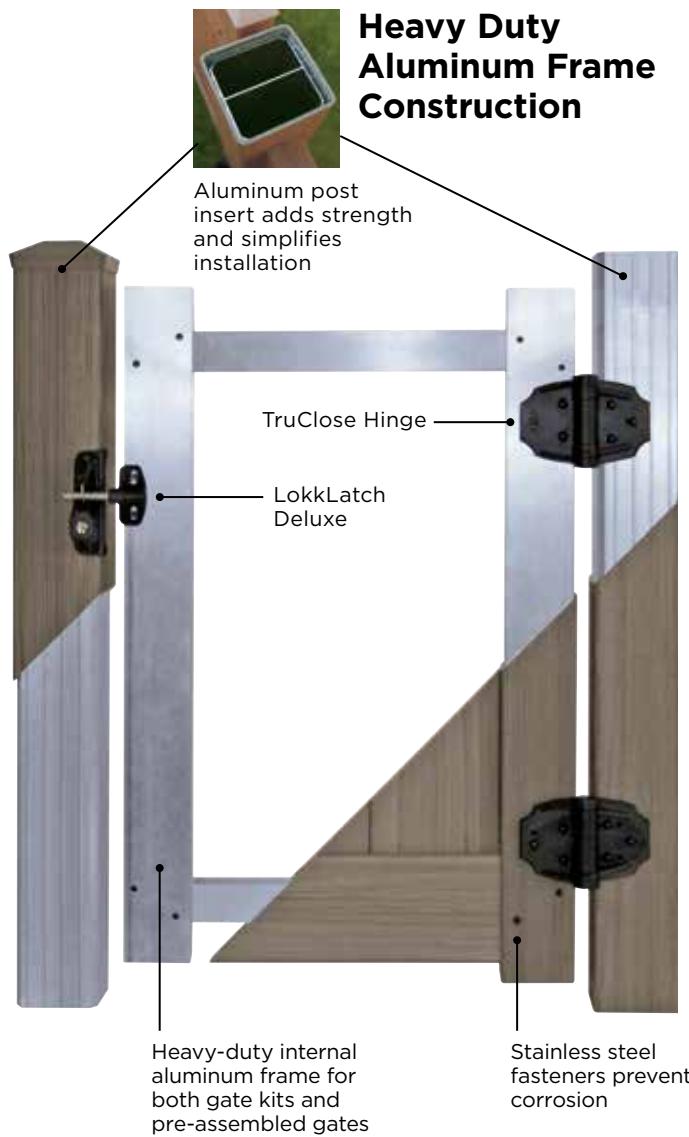
Heights: 4', 5' & 6'
Picket Style: 5/8" x 11-3/8" Tongue & Groove
Steel Reinforced Bottom Rail



Cap Styles (shown in White)



Bufftech offers a wide selection of residential gates designed to match all of our fence styles, in a choice of heights and widths. Beautiful and durable, Bufftech gates deliver easy installation and great performance. Choose from unassembled gate kits or pre-assembled gates that ship ready to install.



	Pre-Assembled Gate Widths	Unassembled Gate Kit Max Width	Extension Kit Required**
Brookline	50-1/2"	70"	Yes
Galveston	50-1/2"	50-1/2"	No
Chesterfield[†]	36-1/2" 50-1/2" 64-3/4"	70"	Yes
Chesterfield Concave Accent	50-1/2"	na	na
Chesterfield Convex Accent	50-1/2"	na	na
New Lexington	42-1/2" 50-1/2" 65-1/4"	72"	Yes
Breezewood	50"	60"	Yes
Imperial	50"	72"	Yes
Baron	50"	72"	Yes
Princeton	50"	72"	Yes
Countess	50"	72"	Yes
Manchester	50"	50"	No
Manchester Concave	na	50"	No
Danbury	50"	50"	No
Cape Cod	50"	60"	Yes
Rothbury	50"	50"	No
2-Rail*	na	72"	na
3-Rail*	na	96"	na
4-Rail*	na	96"	na
Crossbuck*	na	96"	na

[†] Not all widths available in all heights/styles

* All Gates are rackable, except Post & Rail (2-Rail, 3-Rail and 4-Rail smooth finish), and Crossbuck styles.

** For unassembled gate kits over 50" wide to achieve maximum width

EXTRUDED GATES

Stainless Steel Gate Hardware

Give your gate the old-world look of wrought iron with our rugged, rust-free stainless steel gate hardware. The hardware includes hinge, strike and latch and is available in Black Pebble.



Strike and Latch Hinge

High Performance Nylon Gate Hardware Kits

Versatile and virtually maintenance free, our premium nylon gate hardware offers key lockable latches, self-closing hinges and contoured gate handles. Available in Black.

LokkLatch[®] Key-Lockable Gate Latch, GateHandle[™], MagnaLatch[®] Magnetic Safety Gate Latch, LokkLatch Magnetic[®] and TruClose[®] Self-Closing Gate Hinges are registered trademarks of D&D Technologies.



6453 Scott Avenue, Pinney Water & Wastewater District Well 14 pre-Location and Extent Request

Project File: LE20240022

Planning Commission Staff Report Page 15 of 46

MagnaLatch[®] Magnetic Safety Gate Latch GateHandle[™]

TruClose[®] Adjustable, Self-Closing Gate Hinges



GS-M1

TALL ENCLOSURES

For Tall PVB & Large Diameter “N” Pattern Backflow Assemblies

Large backflow valves have bypass assemblies and brass gate valve stems which thieves will steal for scrap, resulting in costly repairs and water shut downs. Even simple vandalism or tampering can cause shut downs of your large domestic or fire water lines. These enclosures are cost effective protection against unnecessary downtime, or liability concerns at your facility.

Our tall enclosures feature our signature rounded design without any sharp corners providing both superior strength and safety. They come standard in 8 sizes for different applications.

M SERIES

The “M” Series is ideal for protecting tall Pressure Vacuum Breaker installations.

These tall and thin enclosures are mostly used in golf courses or anywhere where the landscape increases in elevation and the backflow needs to be placed higher than the highest point on the property. Their bodies are hinged to mitigate the cage’s weight. They come in either a single body w/ hinged gate (GS-M1 pictured above) or a double body formation (GS-M3 pictured right). They have a primed and powder coated finish



GS-M3



NP SERIES

The NP series is for protecting large diameter "N" Pattern backflow assemblies.

Roughly square shaped in design, they come in 4 standard sizes to accommodate valves from 2.5"-10".



Each has a hinged body and gate to mitigate weight and have 2 locking points. They can be accessed from the front or by opening the entire cage. They have a primed and powder coated finish.

ADDITIONAL INFORMATION & SPECIFICATIONS

Tall Enclosures



Our tall enclosures are constructed of strong 1¼" Schedule 40 steel pipe, never tubing, and ½" #13 gauge expanded metal.

They are meticulously welded and exceeds ASSE Structural Strength Standards. These cages come standard with prime and premium powder coating.

“M” SERIES SIZES

Model	Type	Internal Dimensions W x H x L
GS-M1	Hinged w/Gate	16" x 37" x 18"
GS-M2	Hinged w/Gate	16" x 48" x 18"
GS-M3	2 PC Clamshell	16" x 37" x 39"
GS-M4	2 PC Clamshell	16" x 48" x 39"

Use the “M” series to cover tall backflows or controllers

“NP” SERIES SIZES

Model	Type	Internal Dimensions W x H x L
GS-NP-1	Hinged w/Gate	24" x 40" x 31"
GS-NP-1.5	Hinged w/Gate	24" x 40" x 38"
GS-NP-2	Hinged w/Gate	30" x 48" x 47"
GS-NP-3	Hinged w/Gate	38" x 60" x 47"

Use the “NP” series for angle pattern backflows, but also work well for covering pumps and other valuable equipment

FABRICATION & POWDER COAT SPECIFICATIONS

Materials: GuardShacks are made of 1¼" Schedule 40 pipe A.S.T.M. A-53 grade All Electric Weld steel for end frames, 1" x 1" x 1/8" steel angle iron, ½" #13 gauge diamond pattern flat rolled expanded steel with all welded construction 4" O/C expanded metal die formed for uniformity. Welds every 4" to exceed ASSE 1060-98 Structural Strength Standards.

Powdercoating: State-of-the-art aeronautics industry five step metal cleaning process and iron phosphate solution treatment. Units preheated before applying 2-4 mil thickness polyester powder to A.S.T.M. D-2794 Impact Resistant and A.T.S.M. D-3359 Adhesive Specifications

2-Year Manufacturer's Warranty

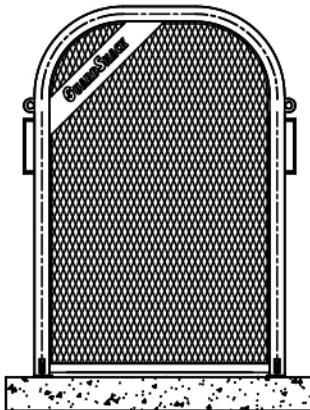
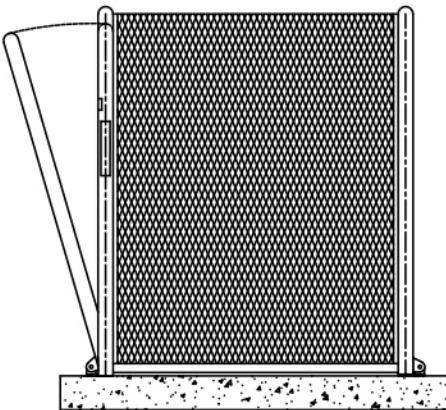
Warranty: GuardShack Products warranties this product for two (2) years from the date of purchase to be free of defects in material and workmanship. All claims must be made known to GuardShack Products in writing within 30 days of the defect becoming known to the purchaser. There are no warranties that extend beyond those described herein, either expressed or implied. GuardShack Products reserves the sole right, at its own option to repair or replace any defective product, and shall exclude any damage caused by accident, misuse or abuse of the product.

In no case shall GuardShack Products be liable for any incidental or consequential damages what-so-ever.

1-800-266-5411

6453 Scott Avenue, Pinery Water & Wastewater District Well 14 - Location and Extent Request
Project File: LE2024-022

Planning Commission Staff Report Page 17 of 46



STANDARD GUARDSHACK™ SIZES INTERNAL DIMENSIONS

GS - M1	16" W x 37" H x 18" L	HINGED W/ GATE
GS - M2	16" W x 48" H x 18" L	HINGED W/ GATE
GS - NP-1	24" W x 40" H x 31" L	HINGED W/ GATE
GS - NP-1.5	24" W x 40" H x 38" L	HINGED W/ GATE
GS - NP-2	30" W x 48" H x 47" L	HINGED W/ GATE
GS - NP-3	38" W x 60" H x 47" L	HINGED W/ GATE
GS - NP-3.5	38" W x 60" H x 58" L	HINGED W/ GATE

POWDERCOATED UNITS

Pre-powdercoat Treatment Process

Clean GuardShack™ unit with a S-44 alkaline cleaner, overflow rinse, apply an AC-8115 iron phosphate treatment, overflow rinse and finish with a #198 sealer rinse to prevent rusting and improve adhesion.

Powdercoat Treatment Process

Units shall be preheated and coated by electrostatic application of 2.0 to 3.5 mil thickness on all surfaces. Powder shall be RAL 1019 Woodlands Tan or TCI 8810-6058 Forest Green or approved equal Impact Resistance Finish 160 inch pounds direct 160 inch pounds reverse, per ASTM D-2794 specs. Gloss Finish >85, per ASTM D-523. Adhesion to be rated excellent when tested to ASTM D-3359 standards.

GUARDSHACK™ GENERAL SPECIFICATIONS

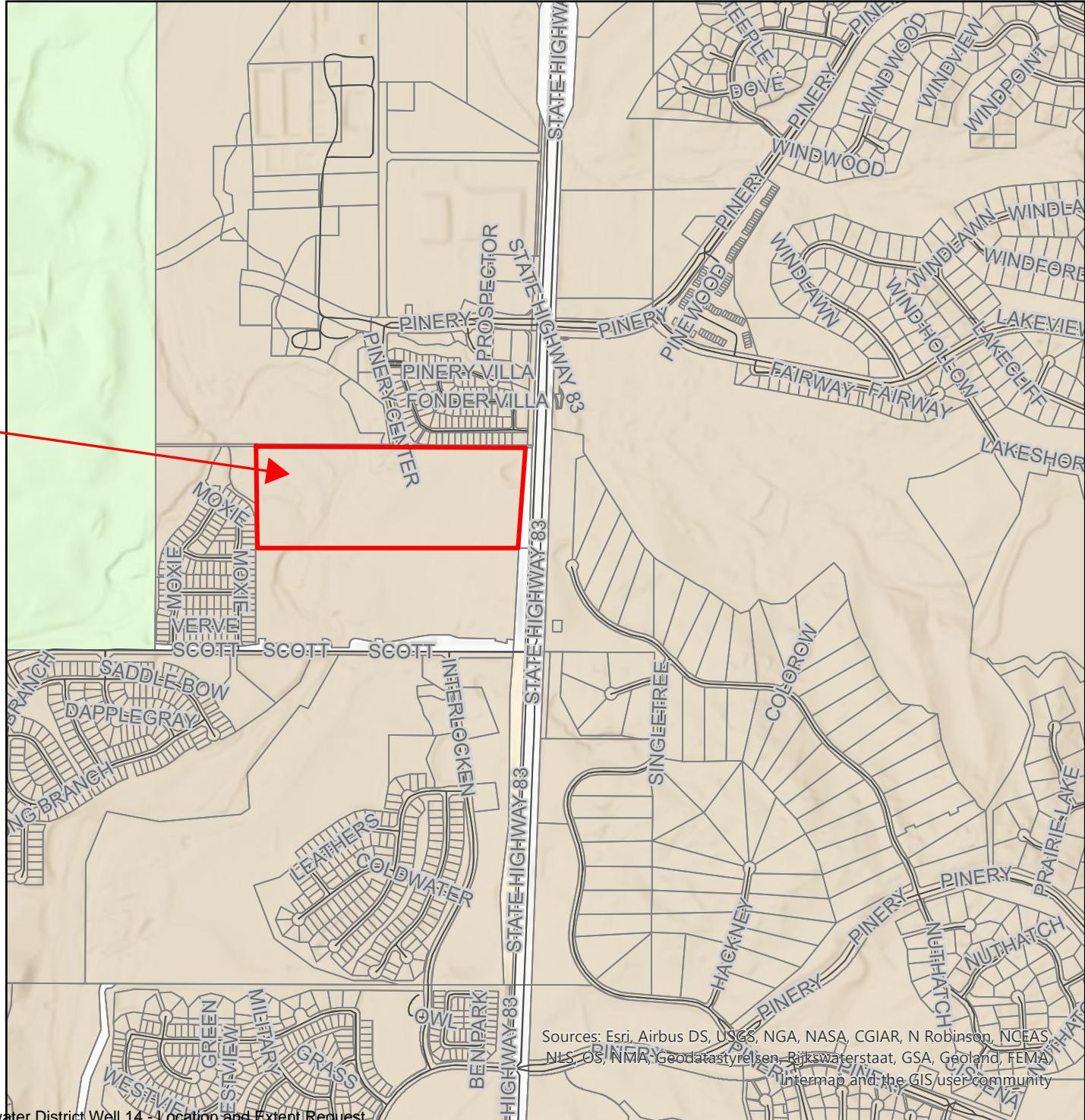
- All pipe shall be 1 ¼" schedule 40 A.S.T.M. A-53 Grade A- Electric Weld pipe.
- Angle Iron shall be 1" x 1" x 1/8" steel.
- Expanded metal shall be ½" spacing x # 13 Ga. flattened diamond pattern steel.
- All hinges shall have hidden/internal mounting points.
- All stainless steel shall be sandblasted after fabrication to remove burrs, flashing and sharp edges.
- There shall be no exposed ends of expanded metal on the outside of the enclosure.
- Welding shall be a minimum of ¼" long welds on 4" spacing.
- Hardware kits provided for mounting enclosures. See HK-300/HK-700 for hardware specifications.
- All hardware shall be securely attached to enclosures.
- All enclosures shall withstand a minimum of 200 lbs. per square foot without any permanent deflection or distortion.
- 3/8" spacing between angle iron framework of enclosure and slab to prevent rusting. Only pipe ends to touch slab.

6453 SCOTT AVENUE LOCATION & EXTENT

LE2024-022
ZONING MAP

LEGEND

- Roads
- Major Road
- PROJECT AREA**
- A1 - AGRICULTURAL ONE
- LRR - LARGE RURAL RESIDENTIAL
- PD - PLANNED DEVELOPMENT OS
- OPEN SPACE CONSERVATION



6453 SCOTT AVENUE LOCATION & EXTENT

LE2024-022
AERIAL MAP



LEGEND

— Roads
— Major Roads
■ Project Area



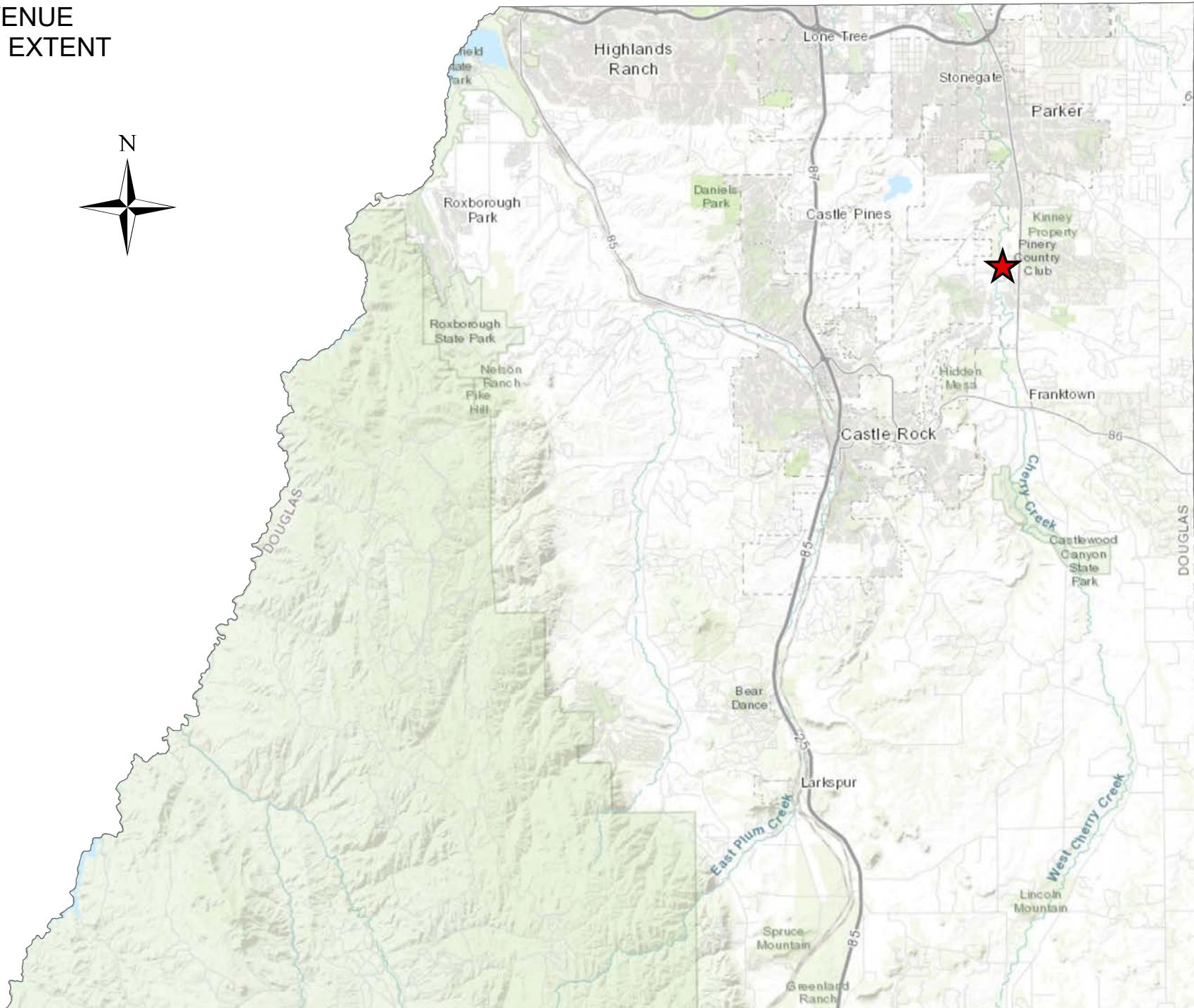
6453 SCOTT AVENUE LOCATION AND EXTENT

LE2024-022
VICINITY MAP



LEGEND

★ PROJECT SITE



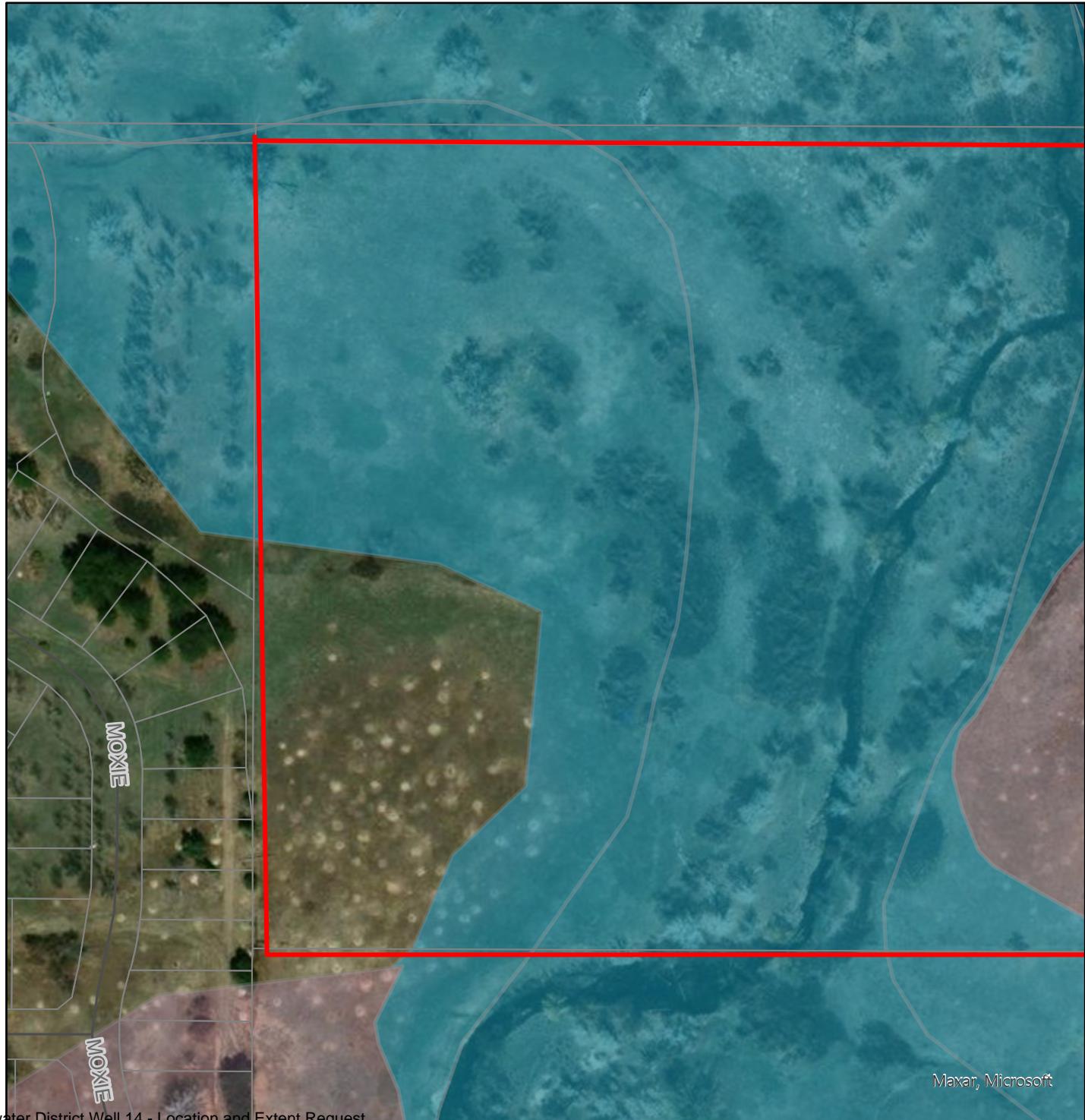
6453 SCOTT AVENUE LOCATION & EXTENT

LE2024-022
FLOODPLAIN MAP



LEGEND

- Roads
- Major Roads
- 1% annual chance of flood (100 year flood).
- 2% annual chance of flood (500 year flood).
- Parcels - PARCELS



6453 Scott Avenue, Pinery Water & Wastewater District Well 14 - Location and Extent Request

Date Saved: 9/20/2024 10:56 AM

Initial Referral Agency Response Report**Page 1 of 3****Project Name:** Pinery Water & Wastewater District, 6453 Scott Avenue, Well 14 – Location and Extent**Project File #:** LE2024-022**Initial Referral: Date Sent:** 09/16/2024 **Date Due:** 09/30/2024

Agency	Rec'd	Agency Response	Response Resolution
Addressing Analyst	Awaiting Response		
Assessor	Awaiting Response		
AT&T	Awaiting Response		
Black Hills Energy	Awaiting Response		
Building Services	Awaiting Response		
CenturyLink	09/17/2024	We have received your request for an Encroachment and have set up a Lumen project accordingly. Your project number is P863373 and it should be referenced in all emails sent for review. Your project owner is Stephanie Canary and they can be reached by email at stephanie.canary@lumen.com with any questions that you may have regarding this project. Lumen will endeavor to respond within 30 days. Kelley Franklin Faulk & Foster Project Coordinator Kelley.Franklin@lumen.com Direct 318.807.2619 Fax 318.807.2705	No action necessary
Cities: Town of Parker Development Review	Awaiting Response		
Cities: Town of Parker Public Works	Awaiting Response		
Comcast	Awaiting Response		
CORE Electric Cooperative	09/20/2024	No Comment	No action necessary
Colorado Department of Transportation CDOT Region 1	09/17/2024	CDOT has reviewed referral LE2024-002 and	No action necessary

Project Name: Pinery Water & Wastewater District, 6453 Scott Avenue, Well 14 – Location and Extent**Project File #:** LE2024-022**Initial Referral: Date Sent:** 09/16/2024 **Date Due:** 09/30/2024

		has no comment. This location is off the state highway system.	
Drainage: Mile High Flood District	Awaiting Response		
Engineering Services	09/17/2024	<p>Engineering has reviewed this project and have the following concerns and requirements:</p> <p>Location & Extent Comments</p> <p>Comment #1-The engineering review fee (\$1000.00) will need to be paid prior to our approval of this L&E.</p> <p>Comment #2-The following items will need to be submitted for review and approval prior to permits being issued for the project:</p> <p>GESC Plans</p> <p>GESC - Opinion of Probable Cost</p> <p>If you have any questions, please give me a call.</p> <p>Sincerely, Chuck Smith Development Review Engineer</p>	<p>Applicant to acknowledge referral comments and address accordingly.</p> <p>Coordinate directly with Engineering to resolve comments.</p> <p>Provide a written response to the Staff Planning stating how referral comments were resolved.</p>
Fire Districts: South Metro Fire Rescue	09/17/2024	South Metro Fire Rescue (SMFR) has reviewed the provided documents and has no objection to the proposed Location and Extent.	No action necessary
Historic Preservation: Douglas County Historic Preservation	Awaiting Response		
Homeowners Association: Misty Pines HOA	Awaiting Response		
Homeowners Association: Pinery 8B HOA	Awaiting Response		
Homeowners Association: Pinery West HOA	Awaiting Response		

Initial Referral Agency Response Report**Page 3 of 3****Project Name:** Pinery Water & Wastewater District, 6453 Scott Avenue, Well 14 – Location and Extent**Project File #:** LE2024-022**Initial Referral: Date Sent:** 09/16/2024 **Date Due:** 09/30/2024

Homeowners Association: Pinewood Townhome HOA	Awaiting Response		
Homeowners Association: Pradera Homeowners Association	Awaiting Response		
Metro District: Stone Creek Metropolitan District	Awaiting Response		
Office of Emergency Management	09/17/2024	OEM has no concerns with this project	No action necessary
Sheriff's Office	Awaiting Response		
Sheriff's Office E911	Awaiting Response		
Water: Cherry Creek Basin Water Quality Authority	Awaiting Response		
Wildlife: Colorado Parks and Wildlife (East DC – Dist 549)	Awaiting Response		
Xcel Energy-Right of Way & Permits	Awaiting Response		

September 17, 2024

Robert Krulish
Engineering Project Manager
Pinery Water & Wastewater District
5242 Old Schoolhouse Road
Parker, CO 80134

DV 2024-415

Subject: Pinery Meadows – Shallow Well 14 – Location & Extent

Dear Robert,

Plan Review Summary:

Submitted to Engineering	-	9/16/24
Comments Sent Out	-	9/17/24

Engineering has reviewed this project and have the following concerns and requirements:

Location & Extent Comments

Comment #1-The engineering review fee (\$1000.00) will need to be paid prior to our approval of this L&E.

Comment #2-The following items will need to be submitted for review and approval prior to permits being issued for the project:

- GESC Plans
- GESC - Opinion of Probable Cost

If you have any questions, please give me a call.

Sincerely,



Chuck Smith
Development Review Engineer

cc: Carolyn Washee – Freeland, AICP, Senior Planner

DV24415

REFERRAL RESPONSE REQUEST – LOCATION AND EXTENT

 Date sent: **September 16, 2024**

 Comments due by: **September 30, 2024**

Project Name: *Pinery Meadows, TR IN S ½ 10-7-66, Pinery Water & Wastewater District (PWWD) Shallow Well 14 - Location and Extent*

Project File #: **LE2024-022**

PWWD requests approval of a Location and Extent to construct a shallow well (Shallow Well 14) within the Pinery Meadows Planned Development. The well will tie into the district's overall system and will supplement water provided to the district's overall customer base. Using the district's storage rights, during the dry season, water will be released from Walker Reservoir into Cherry Creek, and the new well will be used to withdraw the water from Cherry Creek for use by the Pinery to serve its residents. The site is located at 6453 Scott Avenue, Parker, SPN: 2349-100-00-025 and will be accessed from Scott Avenue.

Information on the identified development proposal located in Douglas County is enclosed. Please review and comment in the space provided.

<input checked="" type="checkbox"/> No Comment	
<input type="checkbox"/> Please be advised of the following concerns: _____ _____ _____	
<input type="checkbox"/> See letter attached for detail.	
Agency: CDOT	Phone #: 720-703-5737
Your Name: Aaron Eyl <i>(please print)</i>	Your Signature: <i>aaron eyl</i>
	Date: 9.16.23

A public hearing on this request will be held before the Douglas County Planning Commission on **Monday, October 7, 2024, at 6:00 pm; located at 100 Third Street, Castle Rock, CO 80104 in the Commissioner's Hearing Room.**

Sincerely,

Carolyn Washee-Freeland

Carolyn Washee-Freeland, AICP

Senior Planner

303-660-7460

cfreeland@douglas.co.us

Enclosure

SOUTH METRO FIRE RESCUE

FIRE MARSHAL'S OFFICE



Carolyn Washee-Freeland, AICP, Senior Planner
Douglas County Department of Community Development, Planning Services
100 Third St
Castle Rock Co 80104
303.660.7460
303.660.9550 Fax

Project Name: Pinery Meadows, TR IN S ½ 10-7-66, Pinery Water & Wastewater District (PWWD)
Shallow Well 14 - Location and Extent

Project File #: **LE2024-022**
S Metro Review #: REFOTH24-00155

Review date: September 17, 2024

Plan reviewer: Aaron Miller
720.989.2246
aaron.miller@southmetro.org

Project Summary: PWWD requests approval of a Location and Extent to construct a shallow well (Shallow Well 14) within the Pinery Meadows Planned Development. The well will tie into the district's overall system and will supplement water provided to the district's overall customer base. Using the district's storage rights, during the dry season, water will be released from Walker Reservoir into Cherry Creek, and the new well will be used to withdraw the water from Cherry Creek for use by the Pinery to serve its residents. The site is located at 6453 Scott Avenue, Parker, SPN: 2349-100-00-025 and will be accessed from Scott Avenue.

Code Reference: Douglas County Fire Code, 2018 International Fire Code, and 2021 International Building Code with amendments as adopted by Douglas County.

South Metro Fire Rescue (SMFR) has reviewed the provided documents and has no objection to the proposed Location and Extent.

Water Well 14

Noise Modeling Report

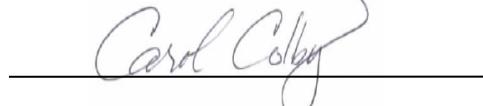
April 24, 2024

Prepared for:

Pinery Water & Wastewater District
5242 Old Schoolhouse Road
Parker, CO 80134

Prepared by:

Behrens and Associates, Inc.
2320 Alaska Avenue
El Segundo California, 90245



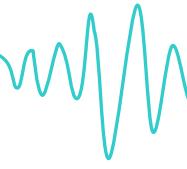
Carol Colby
Acoustical Engineer



Jason Peetz
Engineering Manager

Corporate Office: El Segundo, California
Carson, California ~ Aledo, Texas ~ Longmont, Colorado ~ Smithton, Pennsylvania ~ Red Deer, Alberta
Oakland, California ~ Johnson City, Tennessee

Phone 800-679-8633 ~ Fax 310-331-1538
6453 Scott Avenue, Pinery Water & Wastewater District Well 14 - Location and Extent Request
Project File: LE2024-022 www.environmental-noise-control.com ~ www.drillingnoisecontrol.com
Planning Commission Staff Report Page 29 of 46



1. Introduction

The following report provides a noise modeling assessment of the proposed water well drilling operations at the Water Well 14 well site to be operated by Pinery Water & Wastewater District in relation to the Douglas County noise standards. The Water Well 14 well site (39.452339° , -104.766847°) is located along Scott Road, approximately 1,250 west of S. Parker Road as shown in Figure 1-1.

To assess the operational noise levels of the proposed well site, historical noise level data previously measured by Behrens and Associates Environmental Noise Control (BAENC) typical of water well drilling equipment was used in the noise models. The noise model was developed using SoundPLAN 9.0 software.

The following is provided in this report:

- A brief introduction of the fundamentals of noise
- A discussion of the Douglas County noise standards
- A discussion of noise modeling methodology
- An assessment of the predicted operational noise levels in relation to the Douglas County noise standards noise limits.

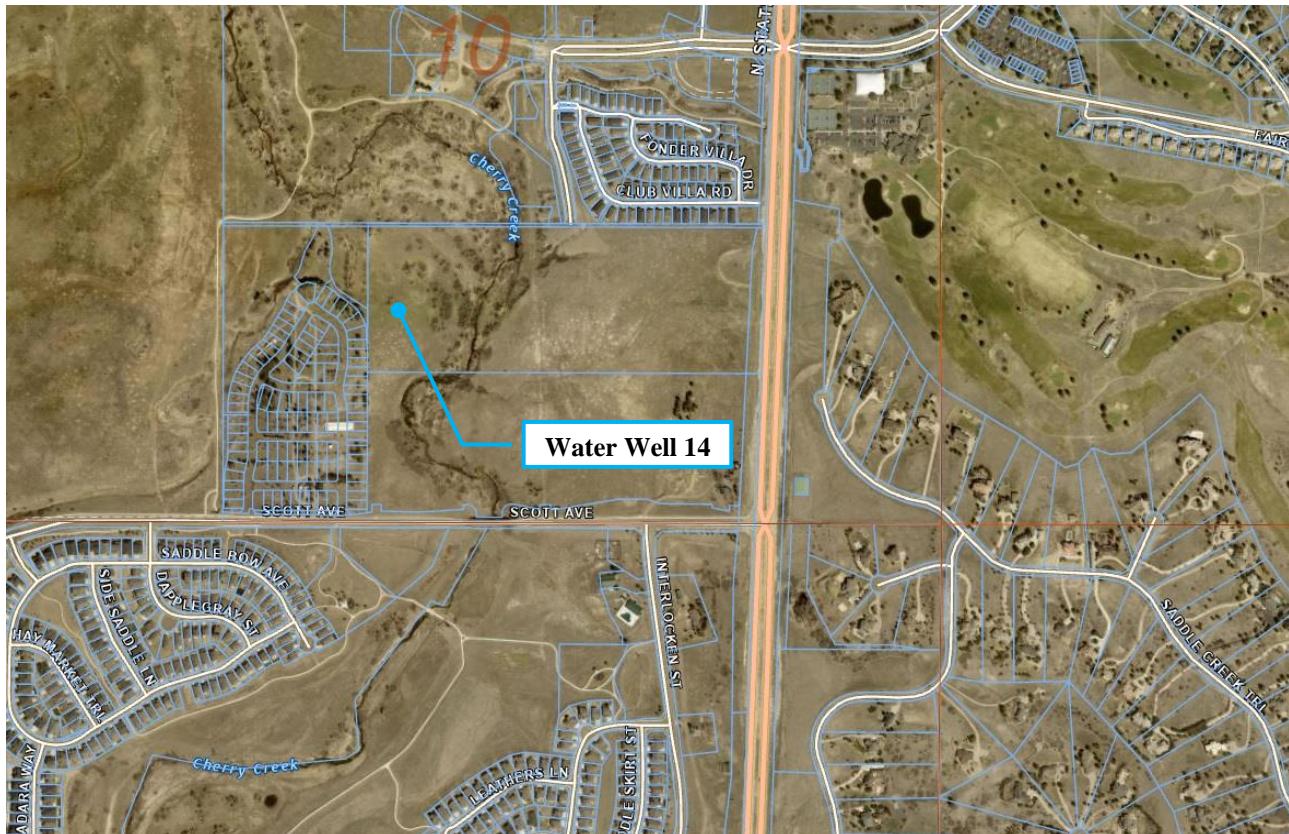
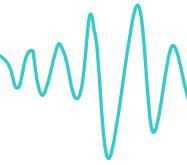


Figure 1-1 Water Well 14 Drill Site Location



2. Noise Fundamentals

Sound is most commonly experienced by people as pressure waves passing through air. These rapid fluctuations in air pressure are processed by the human auditory system to produce the sensation of sound. The rate at which sound pressure changes occur is called the frequency. Frequency is usually measured as the number of oscillations per second or Hertz (Hz). Frequencies that can be heard by a healthy human ear range from approximately 20 Hz to 20,000 Hz. Toward the lower end of this range are low-pitched sounds, including those that might be described as a "rumble" or "boom". At the higher end of the range are high-pitched sounds that might be described as a "screech" or "hiss".

2.1 Environmental Noise

Environmental noise generally derives, in part, from a combination of distant noise sources. Such sources may include common experiences such as distant traffic, wind in trees, and distant industrial or farming activities. These distant sources create a low-level "background noise" in which no particular individual source is identifiable. Background noise is often relatively constant from moment to moment but varies slowly from hour to hour as natural forces change or as human activity follows its daily cycle.

Superimposed on this low-level, slowly varying background noise is a succession of identifiable noisy events of relatively brief duration. These events may include the passing of single-vehicles, aircraft flyovers, screeching of brakes, and other short-term events. The presence of these short-term events causes the noise level to fluctuate. Typical indoor and outdoor A-weighted sound levels are shown in Figure 2-1.

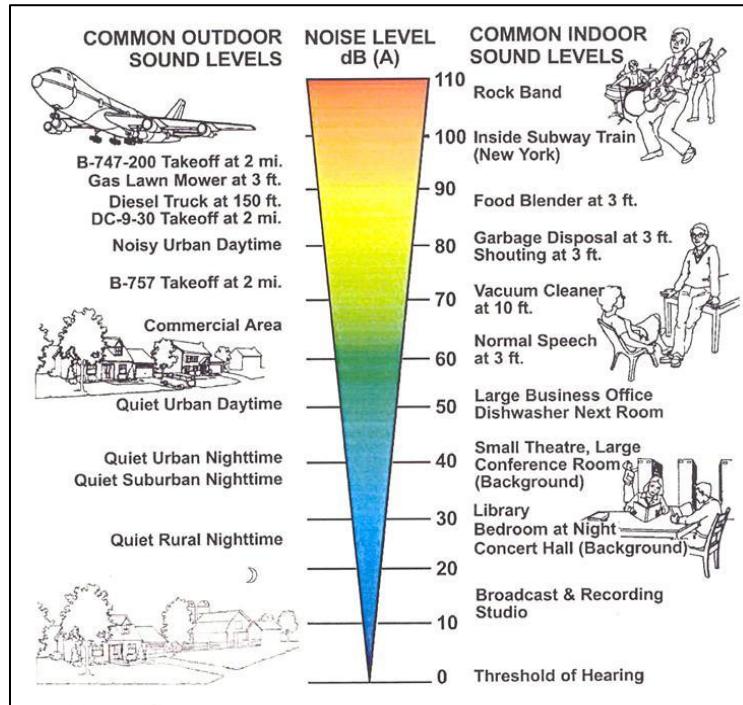


Figure 2-1 Typical Indoor and Outdoor A-Weighted Sound Levels



2.2 Relative Loudness of Environmental Noise

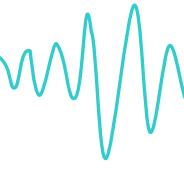
Published data exists describing how humans generally respond to changes in relative loudness. Table 2-1, adapted from the Highway Traffic Noise: Analysis and Abatement Guidance (revised December 2011) published by the Federal Highway Administration, shows typical responses to changes in relative loudness.

Table 2-1 Decibel Changes, Loudness, and Relative Loudness¹

Sound Level Change	Relative Loudness
0 dB(A)	Reference
-3 dB(A)	Barely Perceptible Change
-5 dB(A)	Readily Perceptible Change
-10 dB(A)	Half as Loud
-20 dB(A)	1/4 as Loud
-30 dB(A)	1/8 as Loud

The table describes reductions in noise levels, but the opposite holds true for increases in noise level.

¹ Table adapted from FHWA Highway Traffic Noise: Analysis and Abatement Guidance, revised December 2011

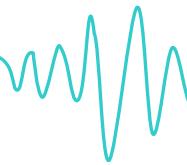


3. Douglas County Noise Standards

Per the Douglas County code, the modeling analysis was developed to predict operational noise levels at code compliance points and verify compliance points and verify compliance of operations with the Colorado Revised (CRS) 25-12-103 noise standards. The CRS code establishes permissible sound levels by type of property and hours of the day. The measurement location is defined in Section 25-12-103(1) as “Sound levels of noise radiating from a property line at a distance of twenty-five feet or more therefrom in excess of the dB(A) established for the following time periods and zones shall constitute *prima facie* evidence that such noise is a public nuisance”.

Douglas County Zoning Resolution, Section 17A, 1703A.03 states that “In all zone districts, the maximum permissible noise level for construction activities shall not exceed 80 dB(A) between 7:00 a.m. and the next 7:00 p.m., and 75 dB(A) between 7:00 p.m. and the next 7:00 a.m., for the period within which construction is to be completed pursuant to any applicable construction permit issued, or if no time limitation is imposed, for a reasonable period of time for completion of project, as determined by the Director. [§25-12-103(5), C.R.S.]”.

The proposed water well drilling operations will occur for 24 hours per day over multiple days and therefore the stricter nighttime construction noise limit of 75 dBA will be the design target for this study.



4. Water Well 14 Drill Site Noise Modeling

4.1 Noise Modeling Methodology

The noise modeling was completed with the use of three-dimensional computer noise modeling software. All models in this report were developed with SoundPLAN 9.0 software using the ISO 9613-2 standard. Noise levels are predicted based on the locations, noise levels and frequency spectra of the noise sources, and the geometry and reflective properties of the local terrain, buildings and barriers. To ensure a conservative assessment and compliance with ISO 9613-2 standards, light to moderate winds are assumed to be blowing from the source to receptor. The predicted noise levels represent only the contribution of the proposed operations and do not include ambient noise or noise from other facilities. Actual field sound level measurements may vary from the modeled noise levels due to other noise sources such as traffic, other facilities, other human activity, or environmental factors.

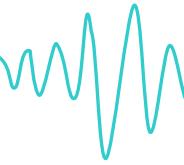
Sound level data utilized in the model was based on file data previously measured and similar equipment associated with the Challenger 360 Drilling Rig operated by Hydro Resources. At the time of this assessment, a drill rig and drill rig positioning was not yet finalized, the modeled rig placement was oriented in a position to represent worst-case scenario sound level impacts at the nearest sensitive noise receptors. The predicted modeling results are dependent on equipment and mitigation orientation as indicated.

At the time of this study, a drilling subcontractor has not yet been assigned. Therefore, drilling equipment associated with the Hydro Resources Challenger 360 Drilling Rig was used to model a drilling rig typical for the proposed operations. The modeled equipment and associated sound power levels are presented in Table 4-1. Figure 4-1 shows the proposed water well and drilling pad location provided by Pinery Water & Wastewater District and used in this study.

Table 4-1 Modeled Equipment and Sound Power Levels (Lw)

Quantity	Equipment Type	Proposed Equipment	Data Source	Source Sound Power Level (Lw, dBA)
2	Air Compressor	Sullair HH700	File data, FHWA	*114.3
1	Rig Engine	CAT C-15, 475 hp @ 2100 rpm	File Data	115.9
1	Rig Engine Exhaust Silencer	Not Specified	File Data	110.8
1	Mud Shaker	MiSWACO Mongoose Pro Linear Shaker	File Data	97.7
2	Small Generator	Generac MM130, 100kw	File Data	98.5

*Sound power level calibrated according to the U.S. Department of Transportation, Federal Highway Administration, Construction Noise Handbook



4.2 Noise Sensitive Receptors

The noise sensitive receptors have been chosen to be consistent with the requirements of the CRS 25-12-103 noise standards. The requirements indicate that “sound levels of noise radiating from a property line at a distance of twenty-five feet or more therefrom in excess of the dB(A) established for the following time periods and zones shall constitute *prima facie* evidence that such noise is a public nuisance”. As such, receptor locations were chosen at 25 feet from surrounding property lines of the parent parcel for the Water Well 14 site to represent potential regulatory measurement points should a complaint be made. Figure 4-1 shows the dBA noise sensitive receptor locations.

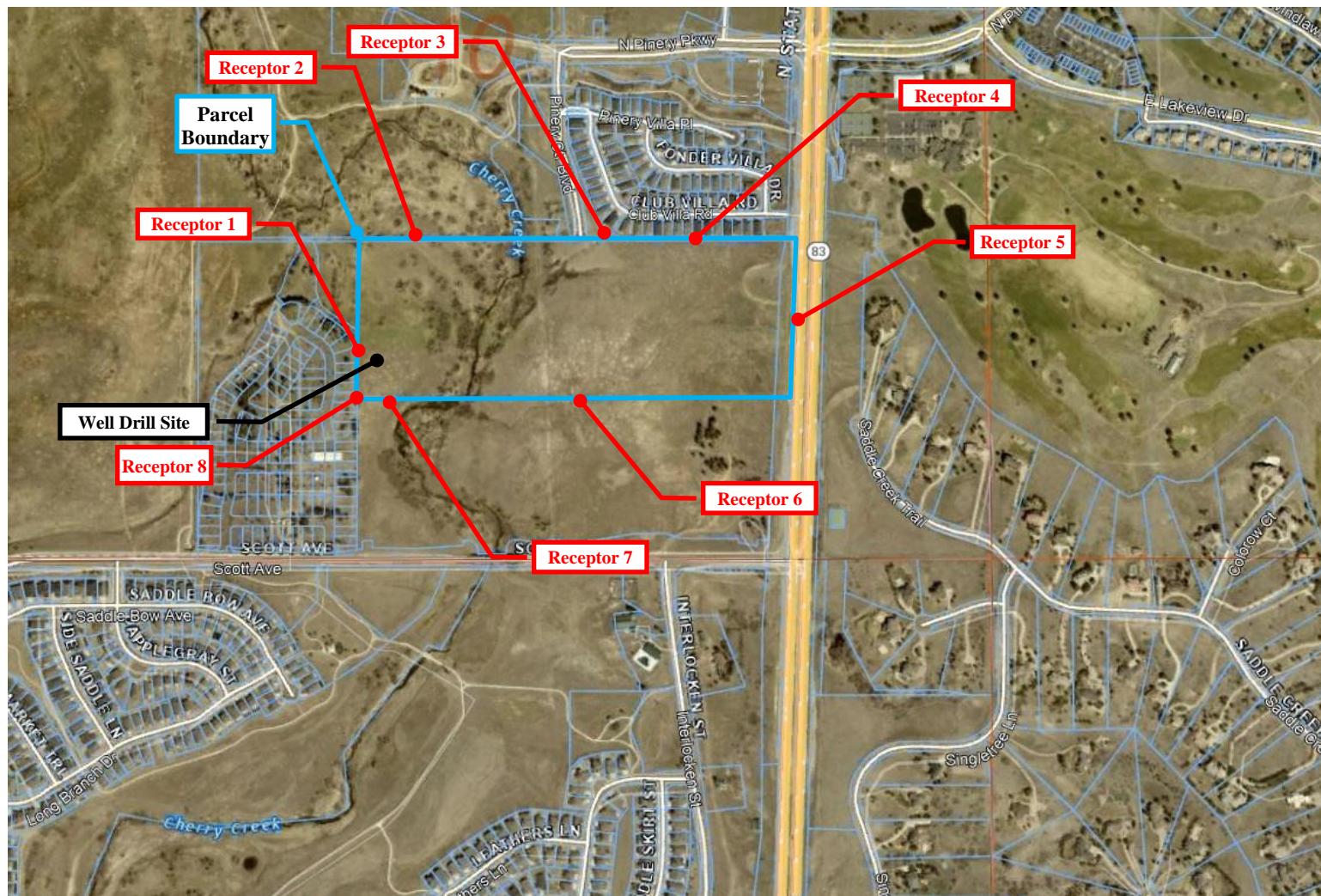


Figure 4-1 Site and Noise Sensitive Receptor Locations



4.3 Unmitigated Noise Modeling Results

The proposed borehole drilling program operations will operate for 24 hours per day for multiple days and therefore the nighttime noise standard for construction of 75 dBA has been used to assess compliance. The results of the unmitigated noise modeling are presented in Table 4-2. The locations in the tables correspond to the receptor locations identified in Figure 4-1. The results of the unmitigated noise modeling are also shown as a noise contour map in Figure 4-2. The noise contours are provided in 5 dB increments with the color scale indicating the sound level of each contour.

Table 4-2 A-Weighted Unmitigated Noise Modeling Results (dBA)

Receptor	Drilling	Predicted Noise Level (dBA Leq)
Location 1	25 feet from West Parcel Boundary	73
Location 2	25 feet from North Parcel Boundary	58
Location 3	25 feet from North Parcel Boundary	52
Location 4	25 feet from North Parcel Boundary	49
Location 5	25 feet from East Parcel Boundary	48
Location 6	25 feet from South Parcel Boundary	55
Location 7	25 feet from South Parcel Boundary	69
Location 8	25 feet from West Parcel Boundary	69
CRS Construction Noise Limit	25 Feet From Property Line	75 dBA Nighttime

The results of the unmitigated noise modeling indicate that the proposed Water Well 14 drilling activities are predicted to comply with the allowable nighttime construction noise limit of 75 dBA at all modeled receptor locations.

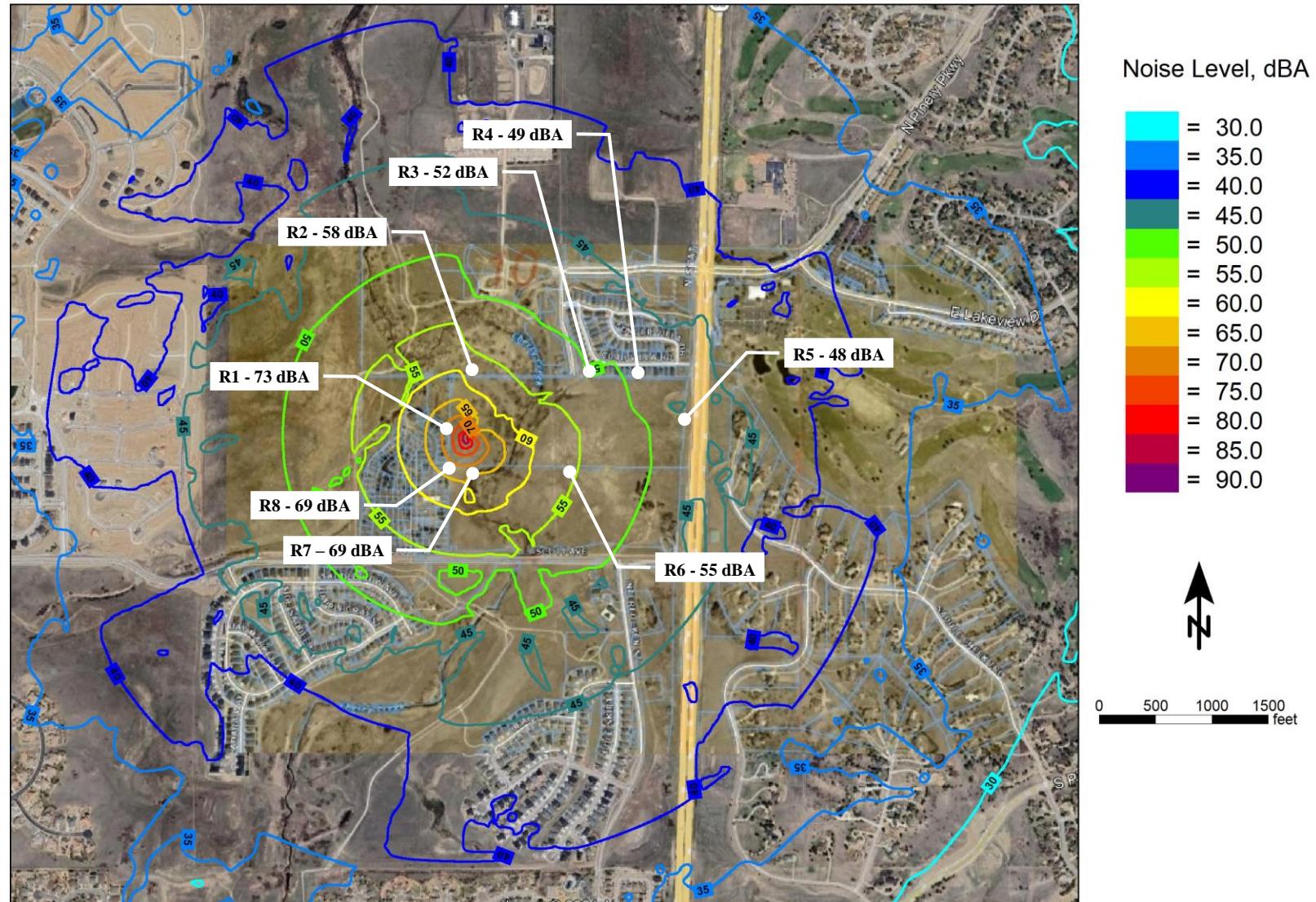
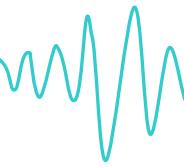


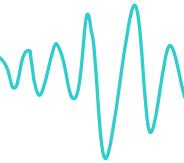
Figure 4-2 Unmitigated Water Well 14 Drilling Activities Noise Contour Map (dBA)



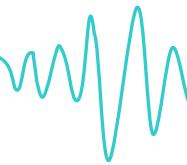
5. Conclusion

A predictive noise model representing the proposed drilling operations at the Water Well 14 well site was created to assess the operational drilling noise levels in relation to the Douglass County Noise limits. To assess the noise levels of the proposed well site, historical noise level data previously measured by Behrens and Associates Environmental Noise Control (BAENC) and typical of water well drilling equipment was used in the noise model. The noise model was developed using SoundPLAN 9.0 software.

The results of the unmitigated modeling indicate that the proposed Water Well 14 drilling activities are predicted to comply with the allowable nighttime construction noise limit of 75 dBA at all modeled receptor locations.



Appendix A - Glossary of Acoustical Terms



Ambient Noise

The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources both near and far.

Average Sound Level

See Equivalent-Continuous Sound Level

A-Weighted Sound Level, dB(A)

The sound level obtained by use of A-weighting. Weighting systems were developed to measure sound in a way that more closely mimics the ear's natural sensitivity relative to frequency so that the instrument is less sensitive to noise at frequencies where the human ear is less sensitive and more sensitive at frequencies where the human ear is more sensitive.

C-Weighted Sound Level, dB(C)

The sound level obtained by use of C-weighting. Follows the frequency sensitivity of the human ear at very high noise levels. The C-weighting scale is quite flat and therefore includes much more of the low-frequency range of sounds than the A and B scales. In some jurisdictions, C-weighted sound targets are used to target the low-frequency content of noise sources.

Community Noise Equivalent Level (CNEL)

A 24-hour A-weighted average sound level which takes into account the fact that a given level of noise may be more or less tolerable depending on when it occurs. The CNEL measure of noise exposure weights average hourly noise levels by 5 dB for the evening hours (between 7:00 pm and 10:00 pm), and 10 dB between 10:00 pm and 7:00 am, then combines the results with the daytime levels to produce the final CNEL value. It is measured in decibels, dB.

Day-Night Average Sound Level (Ldn)

A measure of noise exposure level that is similar to CNEL except that there is no weighting applied to the evening hours of 7:00 pm to 10:00 pm. It is measured in decibels, dB.

Daytime Average Sound Level

The time-averaged A-weighted sound level measured between the hours of 7:00 am to 7:00 pm. It is measured in decibels, dB.

Decibel (dB)

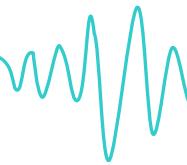
The basic unit of measurement for sound level.

Direct Sound

Sound that reaches a given location in a direct line from the source without any reflections.

Divergence

The spreading of sound waves from a source in a free field, resulting in a reduction in sound pressure level with increasing distance from the source.



Energy Basis

This refers to the procedure of summing or averaging sound pressure levels on the basis of their squared pressures. This method involves the conversion of decibels to pressures, then performing the necessary arithmetic calculations, and finally changing the pressure back to decibels.

Equivalent-Continuous Sound Level (L_{eq})

The average sound level measured over a specified time period. It is a single-number measure of time-varying noise over a specified time period. It is the level of a steady sound that, in a stated time period and at a stated location, has the same A-Weighted sound energy as the time-varying sound. For example, a person who experiences an L_{eq} of 60 dB(A) for a period of 10 minutes standing next to a busy street is exposed to the same amount of sound energy as if he had experienced a constant noise level of 60 dB(A) for 10 minutes rather than the time-varying traffic noise level.

Fast Response

A setting on the sound level meter that determines how sound levels are averaged over time. A fast sound level is always more strongly influenced by recent sounds, and less influenced by sounds occurring in the distant past, than the corresponding slow sound level. For the same non-steady sound, the maximum fast sound level is generally greater than the corresponding maximum slow sound level. Fast response is typically used to measure impact sound levels.

Field Impact Insulation Class (FIIC)

A single number rating similar to the impact insulation class except that the impact sound pressure levels are measured in the field.

Field Sound Transmission Class (FSTC)

A single number rating similar to sound transmission class except that the transmission loss values used to derive this class are measured in the field.

Flanking Sound Transmission

The transmission of sound from a room in which a source is located to an adjacent receiving room by paths other than through the common partition. Also, the diffraction of noise around the ends of a barrier.

Frequency

The number of oscillations per second of a sound wave

Hourly Average Sound Level (HNL)

The equivalent-continuous sound level, L_{eq}, over a 1-hour time period.

Impact Insulation Class (IIC)

A single number rating used to compare the effectiveness of floor/ceiling assemblies in providing reduction of impact-generated sound such as the sound of a person's walking across the upstairs floor.

Impact Noise

The noise that results when two objects collide.



Impulse Noise

Noise of a transient nature due to the sudden impulse of pressure like that created by a gunshot or balloon bursting.

Insertion Loss

The decrease in sound power level measured at the location of the receiver when an element (e.g., a noise barrier) is inserted in the transmission path between the sound source and the receiver.

Inverse Square Law

A rule by which the sound intensity varies inversely with the square of the distance from the source. This results in a 6dB decrease in sound pressure level for each doubling of distance from the source.

L_n Sound Level

Time-varying noise environments may be expressed in terms of the noise level that is exceeded for a certain percentage of the total measurement time. These statistical noise levels are denoted L_n , where n is the percent of time. For example, the L_{50} is the noise level exceeded for 50% of the time. For a 1-hour measurement period, the L_{50} would be the noise level exceeded for a cumulative period of 30 minutes in that hour.

Masking

The process by which the threshold of hearing for one sound is raised by the presence of another sound.

Maximum Sound Level (L_{max})

The greatest sound level measured on a sound level meter during a designated time interval or event.

NC Curves (Noise Criterion Curves)

A system for rating the noisiness of an occupied indoor space. An actual octave-band spectrum is compared with a set of standard NC curves to determine the NC level of the space.

Noise Reduction

The difference in sound pressure level between any two points.

Noise Reduction Coefficient (NRC)

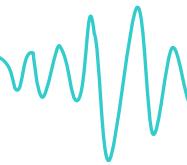
A single number rating of the sound absorption properties of a material. It is the average of the sound absorption coefficients at 250, 500, 1000, and 2000 Hz, rounded to the nearest multiple of 0.05.

Octave

The frequency interval between two sounds whose frequency ratio is 2. For example, the frequency interval between 500 Hz and 1,000 Hz is one octave.

Octave-Band Sound Level

For an octave frequency band, the sound pressure level of the sound contained within that band.



One-Third Octave

The frequency interval between two sounds whose frequency ratio is $2^{(1/3)}$. For example, the frequency interval between 200 Hz and 250 Hz is one-third octave.

One-Third-Octave-Band Sound Level

For a one-third-octave frequency band, the sound pressure level of the sound contained within that band.

Outdoor-Indoor Transmission Class (OITC)

A single number rating used to compare the sound insulation properties of building façade elements. This rating is designed to correlate with subjective impressions of the ability of façade elements to reduce the overall loudness of ground and air transportation noise.

Peak Sound Level (Lpk)

The maximum instantaneous sound level during a stated time period or event.

Pink Noise

Noise that has approximately equal intensities at each octave or one-third-octave band.

Point Source

A source that radiates sound as if from a single point.

RC Curves (Room Criterion Curves)

A system for rating the noisiness of an occupied indoor space. An actual octave-band spectrum is compared with a set of standard RC curves to determine the RC level of the space.

Real-Time Analyzer (RTA)

An instrument for the determination of a sound spectrum.

Receiver

A person (or persons) or equipment which is affected by noise.

Reflected Sound

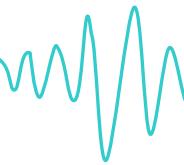
Sound that persists in an enclosed space as a result of repeated reflections or scattering. It does not include sound that travels directly from the source without reflections.

Reverberation

The persistence of a sound in an enclosed or partially enclosed space after the source of the sound has stopped, due to the repeated reflection of the sound waves.

Room Absorption

The total absorption within a room due to all objects, surfaces and air absorption within the room. It is measured in Sabins or metric Sabins.



Slow Response

A setting on the sound level meter that determines how measured sound levels are averaged over time. A slow sound level is more influenced by sounds occurring in the distant past than the corresponding fast sound level.

Sound

A physical disturbance in a medium (e.g., air) that is capable of being detected by the human ear.

Sound Absorption Coefficient

A measure of the sound-absorptive property of a material.

Sound Insulation

The capacity of a structure or element to prevent sound from reaching a receiver room either by absorption or reflection.

Sound Level Meter (SLM)

An instrument used for the measurement of sound level, with a standard frequency-weighting and standard exponentially weighted time averaging.

Sound Power Level

A physical measure of the amount of power a sound source radiates into the surrounding air. It is measured in decibels.

Sound Pressure Level

A physical measure of the magnitude of a sound. It is related to the sound's energy. The terms sound pressure level and sound level are often used interchangeably.

Sound Transmission Class (STC)

A single number rating used to compare the sound insulation properties of walls, floors, ceilings, windows, or doors. This rating is designed to correlate with subjective impressions of the ability of building elements to reduce the overall loudness of speech, radio, television, and similar noise sources in offices and buildings.

Source Room

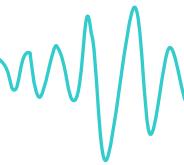
A room that contains a noise source or sources

Spectrum

The spectrum of a sound wave is a description of its resolution into components, each of different frequency and usually different amplitude.

Tapping Machine

A device used in rating different floor constructions against impacts. It produces a series of impacts on the floor under test, 10 times per second.



Tone

A sound with a distinct pitch

Transmission Loss (TL)

A property of a material or structure describing its ability to reduce the transmission of sound at a particular frequency from one space to another. The higher the TL value the more effective the material or structure is in reducing sound between two spaces. It is measured in decibels.

White Noise

Noise that has approximately equal intensities at all frequencies.

Windscreen

A porous covering for a microphone, designed to reduce the noise generated by the passage of wind over the microphone.