List of First Post-Hearing Submittals by Applicant

Email from B. Kloos to T. Carsley (11.4.2024):

Big Game Management Plan for Old Hazeldell Quarry, Wetlands and Wildlife LLC (10.31.2024)

Email from B. Kloos to T. Carsley (11.4.2024):

Northwest Resource Solutions, LLC, Letter to County Board (10.8.2018)(Big Game)

Northwest Resource Solutions, LLC, Letter to County Board (10.23.2018)(Big Game)

Email from B. Kloos to T. Carsley (11.4.2024):

Email chain from County Staff (5.3.2021)(Landfill)

Shannon & Wilson, Inc., Technical Memorandum (5.31.2016)(Landfill)

Kuper Consulting, LLC, Memorandum (5.31.2016)(Landfill)

Email from B. Kloos to T. Carsley (11.4.2024):

Shannon & Wilson, Inc., Technical Memorandum (11.22.2016)(Groundwater, Wells, Landfill, Silca, Etc.)

DSA Acoustical Engineers, Inc. to Perkins Coie (4.29.2021)(Airblast Noise)

Aggregate Resource Industries, Inc., Letter to County Board (10.16.2016)

Email from B. Kloos to T. Carsley (11.4.2024):

Sandow Engineering Memorandum (11.4.2024)(Sight Distance on Dunning Rd.)

From:	Bill Kloos
To:	CARSLEY Taylor H
Cc:	Joseph Stack (joseph.p.stack@odfw.oregon.gov); Bill Kloos; Steve Pfeiffer (SPfeiffer@perkinscoie.com)
Subject:	Old Hazeldell Quarry; First Open Record Period; Applicant"s First Submittal - Goal 5 Big Game Habitat Mitigation Plan
Date:	Monday, November 4, 2024 8:30:46 AM
Attachments:	Applicant"s Proposed Big Game Mitigation Plan Signed Oct 31 2024 REDUCED PDF.pdf

Taylor –

Attached for filing is a "Big Game Management Plan for the Old Hazeldell Quarry, by Wetlands and Wildlife LLC (Oct. 31, 2024).

This is a voluntary proposal by the landowner to undertake habitat mitigation, using the ODFW rules for such plans as guidance, and intended to help minimize potential Big Game impacts of the quarry project. The Plan would begin with the start of mining and continue through the DOGAMI reclamation period. As stated in the Plan, the expected outcomes are:

> Executing this Plan over the lifetime of the mining project, including the approved reclamation
> plan, consistent with the ODFW Mitigation Policy, is expected to:
> • Provide in-kind, in-proximity habitat mitigation to achieve no net loss of habitat quantity
> and quality and provide a net benefit to quantity and quality, consistent with OAR 635-
> 415-025(2)(b)(B);
> • With respect to deer population, maintain and improve the habitat quality for the deer that
> may remain resident in the 1500-foot "impact area" of the quarry site, thus contributing to
> minimizing the Project impacts to deer, as required by the Goal 5 rule; and
> • With respect to elk population, reduce the relocation of elk from the "impact area" of the
> quarry site, thus contributing to minimizing the Project impacts to elk, as required by the
> Goal 5 rule.

This plan has been shared with ODFW.

Bill Kloos
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Big Game Management Plan for the Old Hazeldell Quarry

Lane County, Oregon

Prepared for:
Old Hazeldell Quarry, LLC
800 Willamette St., Suite 800
Eugene, Oregon 97401

Prepared by:
Brian Meiering: Wetlands and Wildlife LLC

PO Box 50878
Eugene, OR 97405

Revised
10/31/2024

INTRODUCTION AND BACKGROUND

The Old Hazeldell Quarry, LLC contracted with Wetlands and Wildlife LLC to assist in the development of a Big Game Habitat Management Plan ("Plan") for its approximately 183-acre contiguous property ("Property") in Lane County, Oregon (Figure 1). The Landowner has applied for a permit to develop a 47-acre rock quarry ("Old Hazeldell Project") in the central portion of the Property (Figure 2). The Old Hazeldell Project proposes mitigating big game (elk/deer) range impacts by enhancing portions of the Property ("Mitigation Lands") not proposed for mining – about 58 acres, with nearly all of that mitigation acreage located within the 1500-foot radius "impact" area around the quarry site. This Plan will be managed by a qualified wildlife professional ("Project Manager") under contract with the landowner. Habitat enhancement projects planned here include: (1) thinning/fuel reduction treatment on portions of selected conifer stands; (2) management of non-native species of plants; and (3) native revegetation.

This Plan is intended to help ensure that the Old Hazeldell Project will not cause impacts to Big Game resources that rise to the level of "significant" in the meaning of OAR 660-023-0180(5) - that is, to ensure that the conflicts can be minimized with conditions, including implementing this Plan.

This is a voluntary Plan that is designed around the ODFW's Fish and Wildlife Mitigation Policy ("ODFW Mitigation Policy"), as stated in OAR 635-415-0015.[1] The ODFW Mitigation Policy provides a useful methodology for designing and executing this Plan.

Purposes of the Plan

This Plan has components and a schedule for a habitat mitigation strategy for offsetting (1:1) potential impacts to big game and other wildlife resources resulting from development of the Old Hazeldell Project. Specifically, the Plan contains the following components:

1. A description of the baseline environmental conditions on the Property, including both the physical (land and water) and biological resources, particularly the target big game species, Roosevelt elk (*Cervus elaphus roosevelti,* "elk") and Columbian black-tailed deer (*Odocoileus hemionus columbianus,* "deer");
2. A description of the primary big game habitat management goals for the Property; and
3. A description of how the Plan will be implemented to meet the big game habitat management goals in the context of the planned Old Hazeldell Project.

The Plan has been designed to achieve no net loss of habitat quality/quantity for deer and elk and to minimize Old Hazeldell Project conflicts with County-inventoried Big Game habitat. The Big Game Habitat Management Plan shall be reviewed annually and updated as necessary, and

[1] Reference is made throughout this Plan to Oregon Department of Fish and Wildlife's (ODFW's) Fish and Wildlife Habitat Mitigation Policy (OAR 635-415), which the ODFW also states provides guidance in evaluating and compensating for potential impacts of development on fish and wildlife habitat. The planned Old Hazeldell Project is located within and is, therefore, designated as "Habitat Category 2" under the ODFW Fish and Wildlife Habitat Mitigation Policy. Habitat Category 2 is considered essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis. The mitigation goal for unavoidable impacts to Category 2 habitat is "no net loss of habitat quantity or quality and to provide a net benefit of habitat quantity and quality" via "in-kind, in-proximity mitigation".

at least every five years, under the direction of the Project Manager, and in consultation with interested agencies including the ODFW.

Expected Outcomes of this Plan

Executing this Plan over the lifetime of the mining project, including the approved reclamation plan, consistent with the ODFW Mitigation Policy, is expected to:

- Provide in-kind, in-proximity habitat mitigation to achieve no net loss of habitat quantity and quality and provide a net benefit to quantity and quality, consistent with OAR 635-415-025(2)(b)(B);

- With respect to deer population, maintain and improve the habitat quality for the deer that may remain resident in the 1500-foot "impact area" of the quarry site, thus contributing to minimizing the Project impacts to deer, as required by the Goal 5 rule; and

- With respect to elk population, reduce the relocation of elk from the "impact area" of the quarry site, thus contributing to minimizing the Project impacts to elk, as required by the Goal 5 rule.

ENVIRONMENTAL SETTING

Property Description

The Property encompasses about 183 acres of privately owned land located just east of the Urban Growth Boundary (UGB) of Oakridge, OR (Figure 1).

Topography and Elevation

The Property is located within the foothills of the Cascade Mountains just east of the City of Oakridge UGB. The Property contains a central high point of approximately 1908' (USGS 24k quad) which slopes moderately downhill in all directions to the Property boundary. Most precipitation within the Property drains southwest. Most notably, one perennial stream flows southwest through the southern portion of the Property south of Dunning Road. Other ephemeral or seasonal drainages occur on the property.

Land Cover/Vegetation Types

A field visit by ODFW and Wetlands and Wildlife LLC revealed the most common vegetation cover types. Each cover type has some element of invasive non-native species presence, particularly where soils have been disturbed and vegetation cover has been cleared. The primary habitat types include, 1) Douglas-fir/Madrone/Bigleaf maple mix, 2) Douglas-fir very young, closed canopy, 3) Oak savannah with mixed native and non-native shrubs, forbs and grasses and, 4) Disturbed Armenian blackberry monocultures. Riparian vegetation is very limited, generally limited to the ordinary high water along the southern perennial stream.

The historic landcover was likely Oak savannah with mixed stands of older conifer and hardwoods.

Land Use

The primary land use on the Property is timber related, with mostly young stands of mixed conifer or mixed conifer/hardwood. The zoning for the north side of the Property is F1 non-impacted forest and the south side F2 impacted forest. A small, historic quarry exists along Dunning Road, and a water tank has been constructed recently in the northwest corner of the Property.

Big Game Resources

The Property and surrounding lands have documented populations of elk and deer use based on surveys conducted by ODFW (Pers. Comm. Christopher Yee, ODFW). Deer and elk sign observed during a site visit with ODFW staff in August of 2021 clearly supports that both species use portions of the Property proposed for mitigation.

MANAGEMENT RESPONSIBILITIES

Landowner

This is a voluntary, private plan for managing private property to achieve habitat improvement outcomes in anticipation of Lane County's land use approval for the Old Hazeldell Quarry Project. The Landowner is responsible for funding the work described in this Plan, hiring a qualified Plan Manager, and ensuring that annual reports anticipated by this Plan are filed with the County as a basis for the County confirming compliance with county land use approvals and conditions.

Plan Manager

The Plan Manager will be responsible for scheduling and overseeing habitat work to be done, evaluating the effectiveness of work done, modifying the Plan to achieve intended goals, and preparing annual reports on effectiveness. The Plan Manager will be hired by the Landowner and will have professional qualifications adequate for their responsibilities. The initial Plan Manager will be Wetlands and Wildlife LLC.

MANAGEMENT PLAN OBJECTIVES

ODFW is responsible for managing big game populations at healthy and sustainable levels. However, ODFW is not a land-management agency and, therefore, has little direct control over the majority of big game habitat in the state. As a result, ODFW relies heavily on private landowners who play a critical role in helping to manage wildlife populations by implementing conservation actions on their property. This Plan is such a voluntary, private, conservation action – one intended to help minimize potential impacts of the Old Hazeldell Project. The primary specific management objectives for the Property, as supported by this Plan, include the following:

Objective #1: Compensatory Mitigation Actions

The landowner will offset impacts from loss of quality and quantity of big game habitat resulting from the development of the Old Hazeldell Project through mitigation actions, including the

restoration and enhancement of big game habitat on the Mitigation Lands, which comprise approximately 58 acres of the Property (Figures 2 and 5), using as guidance the ODFW Fish and Wildlife Habitat Mitigation Policy and the conflict minimization standards of OAR 660-023-0180(5). Mitigation shall be in-kind and provide for no net loss of habitat quality or quantity.

Objective #2: Habitat Management

The landowner will implement conservation and habitat management actions on the Mitigation Lands consistent with supporting the functions and values of the year-round range for deer and elk consistent with the goals of the Big Game Habitat Management Plan. Habitat management objectives shall prioritize elk and deer conservation actions through enhancement of habitat.

Objective #3: Forest Stewardship

The landowner will implement limited forest thinning, invasive species control measures and planting on the Mitigation Lands which will enhance forage value for big game.

Proposed Mitigation Details

The landowner will implement several mitigation measures on the Mitigation Lands to help fully satisfy, offset, and miniumize impacts of the planned Old Hazeldell Project consistent with conflict minimization requirements under OAR 660-023-0180 and the ODFW Fish and Wildlife Habitat Mitigation Policy. The mitigation described below is intended to ensure no net loss of big game habitat on the Property due to the quarry and to minimize conflicts with Goal 5, County-inventoried Big Game habitat.

Stand Thinning

Habitat improvements will be made of selected regenerating conifer stands within portions of the Property containing ODFW-Major Big Game range habitat which have been field verified (Figure 2). These habitat improvements will include timber thinning and continued maintenance of the stands for big game habitat. Stand management to remove or thin overstory vegetation can create openings and improve forage quality and quantity for big game. However, excessive removal of overstory cover may reduce or eliminate necessary thermal and hiding cover and increase the encroachment of non-palatable species as well as non-native species in general. The prescribed thinning treatments will take into consideration the forage and cover needs of deer and elk. The locations of the proposed stand thinning are identified in Figure 2.

Invasive/Non-Native Species Control; Revegetation

The mitigation will include removal of known populations of invasive species. Currently, *Rubus armeniacus* (Armenian blackberry) and *Cytisus scoparius* (Scotch broom) are the primary targets which will be removed within the Property. The purpose of controlling invasive species is to reestablish native vegetation cover. Control of invasives will incorporate re-establishment of native forb, grass and shrub species where practicable. To successfully reduce invasive species and increase native browse for big game, methods of removal in different portions of the site will vary. Methods will include hand removal, herbicide treatments and mechanical removal. Minimizing disturbance to native cover/soils will dictate the methods used from one treatment area to the next. In some cases, revegetation of native species is proposed in conjunction with removal of the invasives. A planting/seeding recommendation will be made to fit each locale based on the surrounding plant community and best professional judgment regarding efficacy.

Planting/seeding efforts to promote native forage for deer and elk will be implemented after Invasive/non-native species control has been successfully completed. Successful completion of invasive/non-native species control will be based on best professional judgment of Wetlands and Wildlife LLC regarding the potential need for future control efforts (e.g., successful completion will assume that future invasive/non-native species control efforts will be minimal and planting/seeding efforts will not be inhibited by future disturbances). The locations of the proposed invasives control (with and without revegetation) are identified in Figure 2.

Mitigation, Monitoring Schedule and Performance Standards

Habitat improvements within the Mitigation Lands will be implemented in phases commensurate with the phasing of the Old Hazeldell Project mine plan on a 1:1 acreage or greater basis. See Figure 2 for a map of the approximate location and size of the various mitigation measures.

- For Phase 1 of proposed mining, mitigation measures will occur on lots 100 and 401 within areas mapped as:
  - *"Thermal Cover Retention" (14.74 acres, Figure 2).*
- For Phase 2 of proposed mining, mitigation measures will occur on lots 100 and 401 within areas mapped as:
  - "*Invasive/Non-Native Species Control*" (13.3 acres, Figure 2).
  - "*Invasive/Non-Native Species Control/Reveg*" (3.27 acres, Figure 2).
  - "Thin/*Invasive/Non-Native Species Control/Reveg*" (5.92 acres, Figure 2).
- For Phase 3 of proposed mining, mitigation measures will occur on lot 1900 within areas mapped as:
  - "*Invasive/Non-Native Species Control*" (14.92 acres, Figure 2).
  - "*Invasive/Non-Native Species Control/Reveg*" (7.03 acres, Figure 2).

The performance standards for each criterion are listed below:

- "*Thermal Cover Retention*"
  - Access- Outright allowable uses within this area will be limited to performing mitigation measures and subsequent monitoring. Other uses can be approved on a case-by-case basis after agreement by the landowner and the Project Manager.
  - Invasive/Non-Native Species applies to woody vegetation and vines and will be maintained below 20% cover at any location. Cover is measured at a 30' radius using actual cover (not relative).
  - Thermal cover will be provided primarily by early seral stands of conifers. Any die-back creating openings larger than 1 acre will be planted with native species of trees and shrubs as required for revegetation in adjacent mitigation areas.
- *"Invasive/non-Native Species Control"*
  - Access- Outright allowable uses within this area will be limited to performing mitigation measures and subsequent monitoring. Other uses can be approved on a case-by-case basis.
  - Invasive/Non-Native Species will be maintained below 20% cover at any location within the respective mitigation areas. Applicable species include woody vegetation and vines. Cover is measured at a 30' radius using actual cover (not relative).
- *"Thinning"*
  - Thinning, where required, will involve approximately 20% reduction of conifers over 5.92 acres. As a requirement, thinning will not create a significant new clear

view into Mitigation Lands from roadways and is therefore limited to an area setback from local roads. Thinning will occur under the supervision of the Plan Manager.

- *"Revegetation"*
    - Native plantings/seeding will primarily include shrubs and herbaceous species which are beneficial to the target big game species (deer and elk). Planting will occur after November 31st. Any seeding will occur as prescribed by the distributor, which is expected to be either spring or fall depending on the seed and habitat type. Planting materials and seed will be proposed (planting plan) 6 months before the beginning of Phase 2 mining operations.

The landowner will work closely with the Plan Manager in the selection of reproduction stands to be thinned. The landowner will facilitate annual site visits by interested county staff and/or ODFW personnel to monitor the progress of the mitigation activities.

The Plan Manager will prepare an annual report, for filing with Lane County, describing the mitigation measures performed, and the results of monitoring will be available on December 1st of each year.

OREGON ADMINISTRATIVE RULES AND WHERE THEY ARE ADDRESSED IN THIS PLAN

OAR 635-415-0020(4)(a)-(d)

The Department's recommendations or requirements for mitigating the impacts of a development action shall be based on the following considerations:

(a) The location, physical and operational characteristics, and duration of the proposed development action; and

Please see Figures 1 and 2 for physical location. The development action involves three phases of surface mining operating under DOGAMI permit no. 20-0166.

(b) The alternatives to the proposed development action; and

The alternatives to the proposed development action include changing mining acreage footprint, changing the mining volume footprint, changing access and egress to mining operation, changing land use through zone change and a no action alternative.

(c) The fish and wildlife species and habitats which will be affected by the proposed development action; and

Please see the "Big Game Resources" section on page 3. Current habitat includes mostly mixed conifer and deciduous habitats managed for timber. Most of the proposed impact sites are even aged forest classes. Species associated with this habitat type are the most likely to be using the habitat within the proposed development action. One major drainage intersects the lots owned by the applicant paralleling Dunning Road, although this feature is proposed for protection/enhancement within this Plan. A separate drainage skirts the eastern edge of the proposed development action. This feature drains to the drainage described as paralleling Dunning Road. Just west of what is described on Figure 2 as "Phase 2", an additional drainage

originates and flows under Fish Hatchery Road. All are classified as intermittent based on the National Hydrography Dataset (NHD).

(d) The nature, extent, and duration of impacts expected to result from the proposed development action.

The proposed development action involves surface mining in three phases. Phase 1 is expected to occur within years 0-10, while Phase 2 is expected to be completed by year 20. The final phase is anticipated to end within approximately 50 years. Timing of mitigation is linked to the mining phases, therefore there is no foreseen risk in a more compressed phase timeline.

OAR 635-415-0020 (8)-(10)

8) In addition to any other information that may be required by law, a written mitigation plan prepared for the Department shall:

This is a private, voluntary Plan designed to ODFW specifications.

(a) Include the information required in OAR 635-415-0020(4)(a)–(d); and

Described above.

(b) Describe the mitigation actions which shall be taken to achieve the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025; and

See pages 4-6

(c) Describe and map the location of the development action and mitigation actions including the latitude and longitude, township, range, section, quarter section and county; and

The development and mitigation actions are located primarily in the southeast quarter of section 15, Township 21S, Range 03E. The development action area and mitigation areas are centered around 43.740168, -122.434467 within Lane County. The mitigation actions are proposed on property owned by the same entity as the proposed development action.

(d) Complement and not diminish mitigation provided for previous development actions; and

The proposed development action and mitigation actions don't have any known conflicts with current or proposed mitigation actions.

(e) Include protocols and methods, and a reporting schedule for monitoring the effectiveness of mitigation measures. Monitoring efforts shall continue for a duration and at a frequency needed to ensure that the goals and standards in OAR 635-415-0025 are met, unless the Department determines that no significant benefit would result from such monitoring; and

Please see pages 6-7. The mitigation areas are proposed to maintain 5 permanent plot locations for every acre of mitigation proposed. Each plot will be marked with rebar stakes and their locations determined using a submeter grade GPS unit. Each plot will be surveyed during the growing season to establish the total cover of all species within a 30' radius of plot center. The focus of success criteria will be on shrub and tree species, although herbaceous strata will need to meet criterion for the maximum cover of problematic species.

(f) Provide for future modification of mitigation measures that may be required to meet the goals and standards of OAR 635-415-0025; and

The applicant proposes that this Plan is a living document which can be modified at any time during the life of the required mitigation. Notably, success criterion for future phases of mitigation which correlate with future phases of development actions will necessitate addendums

which specify performance standards for mitigation to meet requirements. Since it is unknown how many phases will be completed, it is recommended to revise this Plan every 5 years or less based on the progress of the development actions.

(g) Be effective throughout the project life or the duration of project impacts whichever is greater.

This Plan will accompany the proposed development actions through the life of the project development actions and any mandated reclamation actions which extend beyond the development actions.

(h) Contain mitigation plan performance measures including:

(A) Success Criteria. The mitigation plan must clearly define the methods to meet mitigation goals and standards and list the criteria for measuring success;

See Discussion above.

(B) Criteria and a timeline for formal determination that the mitigation goals and standards have been met;

(C) Provisions for long-term protection and management of the site if appropriate;

See Discussion above. The Plan will be in effect during the lifetime of the Old Hazeldell Project and the mandated reclamation actions.

(D) A reporting schedule for identifying progress toward achieving the mitigation goals and standards and any modification of mitigation measures. Mitigation goals and standards must be achieved within a reasonable time frame to benefit the affected fish and wildlife species.

Reports due by December 1st of any monitoring and/or mitigation activity year. Monitoring will occur throughout the life of mining operations unless all success criteria have been met. If conditions meet all success criteria within all Mitigation Lands, monitoring can be decreased to every 5 years. Monitoring will cease after mining reclamation has been achieved and acknowledged by DOGAMI.

(9) The requirement for a mitigation plan pursuant to OAR 635-415-0020(8) may, at the discretion of the Department, be partially or entirely fulfilled by incorporation of environmental assessments or environmental impact statements prepared for the proposed development action; or by local government land use regulations which implement the requirements of Statewide Planning Goals 5, 8, 15, 16, or 17 pertaining to fish and wildlife habitat protection.

This Plan is intended to provide further assurance that a finding of no significant impact on Big Game resources is supported by evidence.

(10) The project proponent is responsible for the expenses of developing, evaluating, and implementing the mitigation plan and monitoring the mitigation site; however, to the extent that available resources allow, the Department may take one or more of the following actions to assist in the development of a mitigation plan:

(a) Identify fish and wildlife species and habitats to be affected by the proposed development action;

(b) Determine the Habitat Categories that are likely to be affected by the proposed development action;

(c) Identify the nature, extent, and duration of potential impacts upon fish and wildlife habitat resulting from the proposed development action;

(d) Identify mitigation measures to achieve the goals and standards of OAR 635-415-0025.

(e) Furnish any information or counsel to further the purpose of OAR 635 division 415.

The property owner is responsible for the cost of implementing this Plan.

REFERENCES

Oregon Department of Fish and Wildlife (ODFW). 2003. Oregon's Elk Management Plan. ODFW, Portland, Oregon. February 2003. Available online at: http://www.dfw.state.or.us/wildlife/management_plans/docs/ElkPlanfinal.pdf

Oregon Department of Fish and Wildlife (ODFW). 2019. Deer and Elk Winter Range Maps. Accessed on 8/1/2021. Information available online at: http://www.dfw.state.or.us/maps/

Oregon Department of Fish and Wildlife (ODFW). 2021, 2023. Pers Comm. Yee, Christopher.

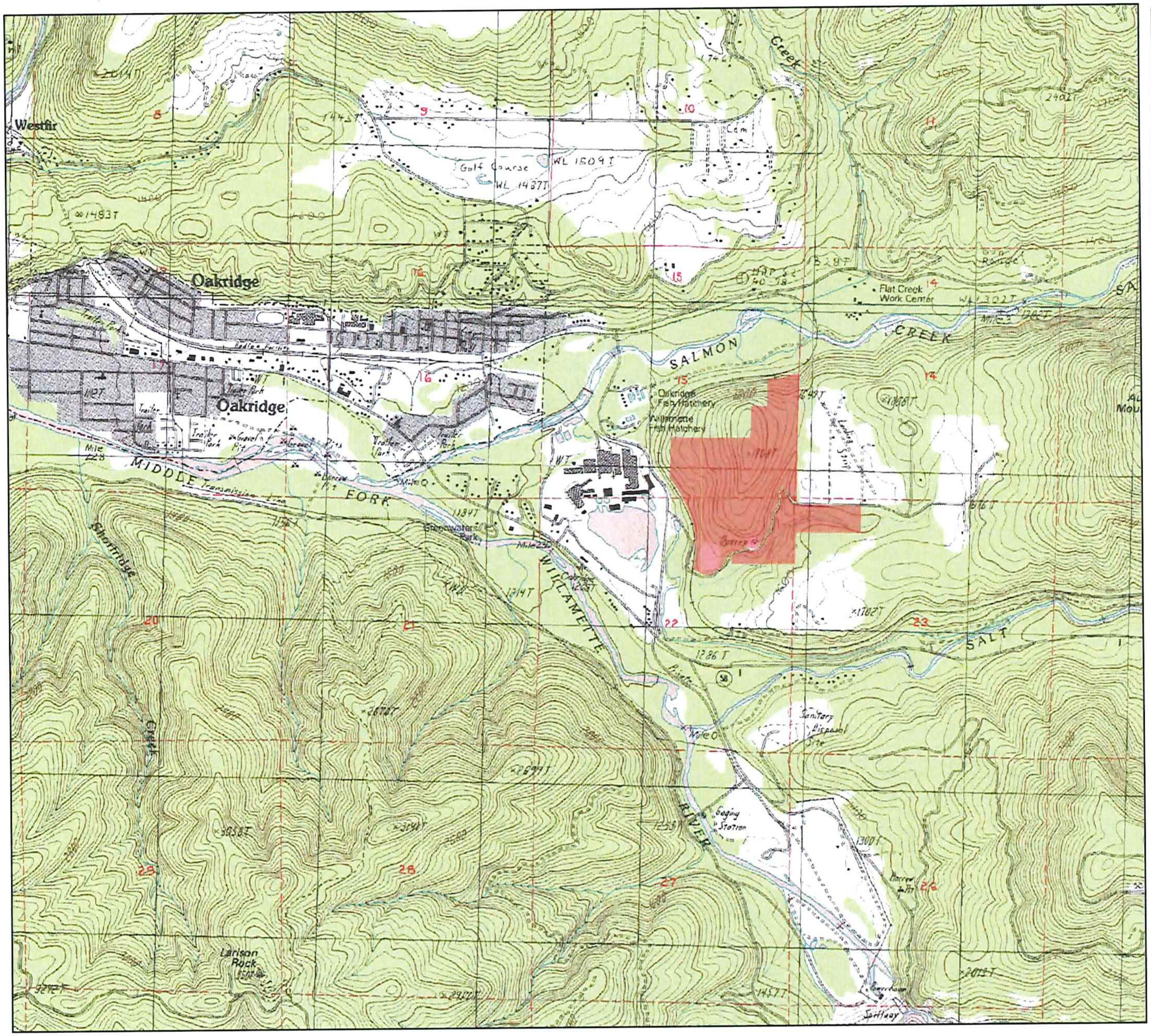
Rost, G. R. and J. A. Bailey. 1979. Distribution of mule deer and elk in relation to roads. Journal of Wildlife Management 43(3): 634-641.

Rowland, M.M., M.J. Wisdom, B.K. Johnson, and J.G. Kie. 2000. Elk distribution and modeling in relation to roads. Journal of Wildlife Management 64:672-684.

Stephenson, T. R., M. R. Vaughan, and D. E. Andersen. 1996. Mule deer movements in response to military activity in southeast Colorado. Journal of Wildlife Management 60: 777-787.

Western EcoSystems Technology, Inc. 2020. Big Game Management Plan for the Ponderosa Ranch Union County, Oregon.

U.S. Geological Survey, 20180830, USGS National Hydrography Dataset Plus High Resolution (NHDPlus HR) for 4-digit Hydrologic Unit - 1709 (published 20180830): U.S. Geological Survey.



Legend

Lots owned by applicant ("Property")

0 2,000 4,000 Feet

1 inch = 2,000 feet

SOURCE

- The information on this map was derived from multiple sources. Extreme care was taken in the creation of this map, but it is provided "as is". Wetlands and Wildlife LLC cannot accept any responsibility for errors, omissions, or positional accuracy in the digital data or the underlying records. There are no warranties, express or implied, accompanying this product.
- Questions regarding production of this map can be sent to Brian Meiering: brian@wetlandsandwildlifellc.com

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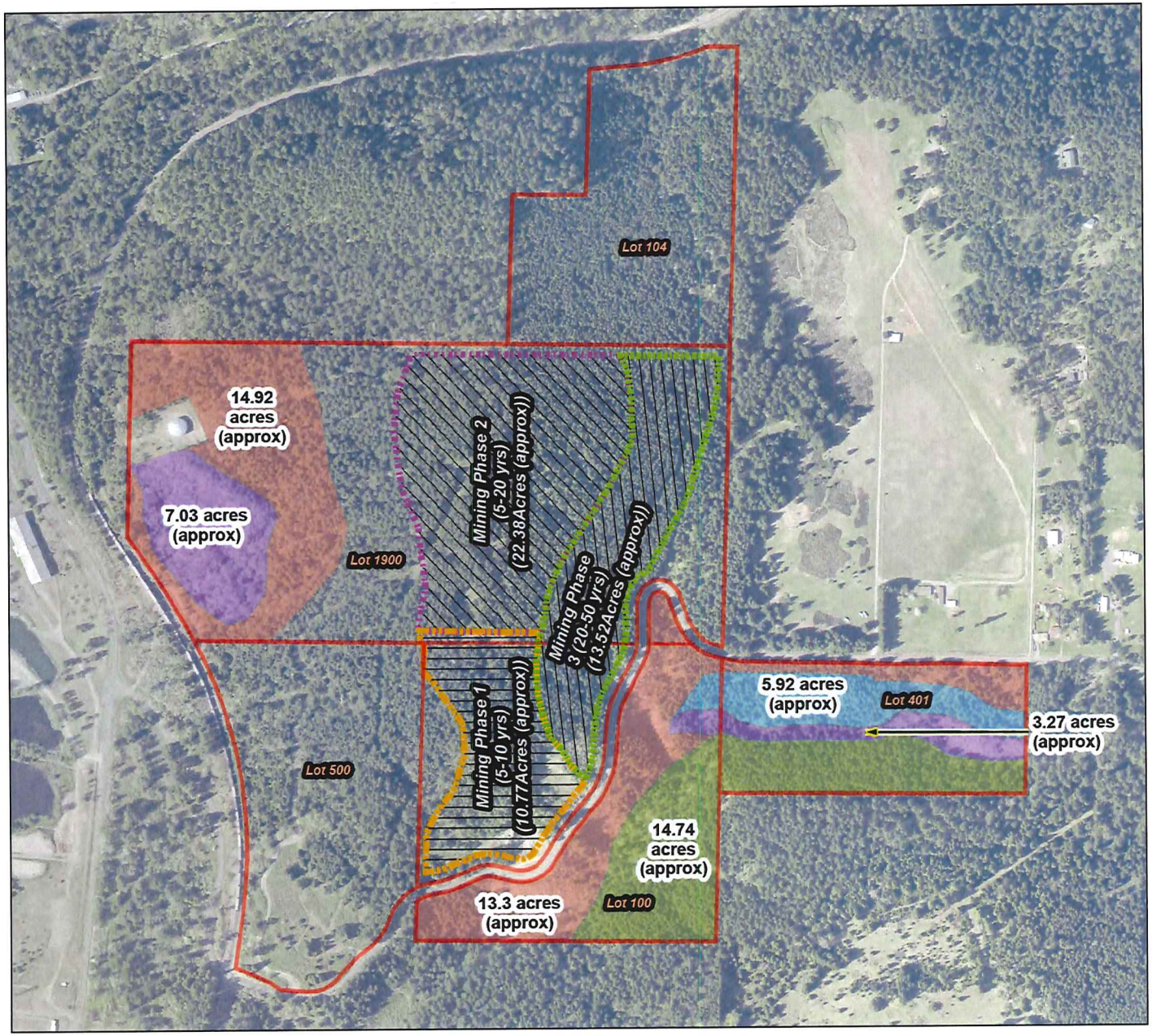
Location Map
Old Hazeldell Quarry
Oakridge-Lane County, OR

Revisions		
#	Date	Description

Project Number 0140
Drawn By BTM
Checked
Date: 8/21/24
Figure 1



Legend

Lots owned by applicant

Approximate Mining Impact Phases

Name

- Phase 1 (5-10 yrs)
- Phase 2 (5-20 yrs)
- Phase 3 (20-50 yrs)

Proposed Mitigation

- Invasive/Non-Native Species Control
- Invasive/Non-Native Species Control/Reveg
- Thermal Cover Retention
- Thin, Invasive/Non-Native Species Control/Reveg

0 425 850 Feet

1 inch = 425 feet

SOURCE

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- Questions regarding production of this map can be sent to Brian Meiering: brian@wetlandsandwildlifellc.com

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Potential Big Game Range Mitigation Areas and Associated Mining Phasing
Old Hazeldell Quarry
Oakridge-Lane County, OR

Revisions

#	Date	Description

Project Number: 0142
Drawn By: BTM
Checked
Date: 8/21/24
Figure 2

Brian Meiering
Environmental Specialist
Wetlands and Wildlife LLC

Education

- Bachelor of Science, Wildlife Biology, *University of Montana,* 1998
- Masters Certificate, Fisheries Management, *Oregon State University*, 2015

Professional Affiliation

- Member, Society of Wetlands Scientists

Professional Experience

- 2016-present, Environmental Specialist, *Wetlands and Wildlife LLC*, Eugene, Oregon
- 2011-2015, Environmental Specialist, *Schirmer Satre Group*, Eugene, Oregon
- 2006-2011, Environmental Specialist, *Satre Associates, P.C.*, Eugene, Oregon
- 2002-2015, Biologist, *Oregon State University*, Corvallis, Oregon
- 2003-2005, Fisheries Biologist , *Oregon Department of Fisheries and Wildlife;* Newport, OR
- 2001-2002, Biological Science Technician, *United States Forest Service*, Ogden, UT
- 2000-2001 Park Ranger (Endangered Species Protection), *Bureau of Land Management*, Palm Springs, CA
- 1999-2001, Biological Science Technician, *National Parks Service*; Grand Canyon, AZ
- 1999, Biological Field Technician, *Hawkwatch International, Inc*; Salt Lake, UT

Supplemental Coursework

- 2015 Graduate Cert. in Fisheries Management
- 2008, Fish Survey / Electrofishing, Correspondence (DOI)
- 2006-2007, Wetland Studies, *Portland State University*
  Professional Certifications
  - Wetland Delineation
  - Plants of the Pacific Northwest
  - Advanced Soils and Hydrology for Delineators
  - Wetland Mitigation, Installation, and Construction
  - Grasses and Sedges and Rushes of the Pacific Northwest
- 2003, Geographic Information Systems, *Oregon State University*
- 2003, Remote Sensing and Cartography graduate level training, *University of Oregon*

Volunteer Activities

- 2006-2020, Northern Spotted Owl demography study, Corvallis, OR
- 1999-2003, *Goshute Mountains raptor migration monitoring*, Wendover, UT
- 1990-1992, *United States Fish and Wildlife* Service Ecological Services Division, Albuquerque, NM

Brian brings extensive skills and diverse expertise in environmental services to Wetlands and Wildlife LLC clients. With 25 years of experience throughout the Western United States, Brian can help clients with regulatory compliance regarding aquatic and terrestrial environments.

Whether wetland or upland, rare or common species, site-specific or watershed scale, Brian's field-based science, expert documentation and agency relationships help clients achieve their goals.

Services include:

- Complete Clean Water Act scoping and compliance permitting
- Wetland delineation, mitigation, permitting, and monitoring
- Rare species, natural resources due diligence.
- FEMA Endangered Species Act compliance for CLOMR, CLOMR-F
- Terrestrial and aquatic species surveys
- Flora and fauna isolation, salvage
- Geographic Information Services
- Mapping and Spatial Analysis
- Trail Corridor analysis and design
- Habitat type mapping and analysis
- Viewshed and watershed interpretation, mapping and analysis
- Aerial photography interpretation
- Soils, geomorphology

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From: Bill Kloos
To: CARSLEY Taylor H
Cc: Bill Kloos; Steve Pfeiffer (SPfeiffer@perkinscoie.com)
Subject: Old Hazeldell Quarry; First Open Record Period; Applicant"s First Submittal - Goal 5 Big Game
Date: Monday, October 28, 2024 8:30:31 AM
Attachments: 10.8.2018 - Northwest Resource Solutions Report.pdf
10.23.2018 - Northwest Resource Solutions Report.pdf

Taylor –

Please include the attached in the record; I will drop off a hard copy submittal.

This deals with the Big Game issue. Pages 19 and 20 of your Staff Report summarize the applicant's Appendix L (Northwest Resource Solutions, LLC, May 7, 2018) report on Big Game and also the John Goodell responding report (Oct. 9, 2018) resubmitted here by Sean Malone.

I am attaching supplemental material from the same previous proceeding. Included are the following:

- October 8, 2018, Northwest Resource Solutions Report: This report responded to the BCC request for additional information. Specifically, the Report addressed: (1) Potential conflicts to other types of big Game; (2) Elk calving near the mining site; and (3) Discussion of conditions related to DEW noise regulations.

- October 23, 2018, northwest Resource Solutions Report: This report specifically rebutted the evidence contained in the October 9, 2018, John Goodell report. This report also rebutted testimony submitted by Kevin Matthews. The Matthews testimony was not resubmitted in this record, I believe; however, the points made here are generally relevant to other testimony submitted.

Thank you.

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October 8, 2018 **Submitted Via Email

Board of Lane County Commissioner
Harris Hall, 125 East 8th Avenue
Eugene, Oregon 97401

Re: Goal Five Big Game Impact Assessment Report, Old Hazeldell Quarry, Lane County, Oregon. – Supplemental Report No. 1

This report responds to your request for additional information following recent public testimony for the remand in Save TV Butte v. Lane County, __ Or LUBA __ (LUBA No. 2017-031, January 8, 2018) and addresses whether Lane County Ordinance No. PA 1343, which approved the construction and long-term mining and processing operation at the Old Hazeldell Quarry site, will generate conflicts with inventoried Big Game Range within the 1,500-foot impact area of the Old Hazeldell Quarry mining area." The scope of analysis below is limited to the impact area, which is defined as the area within 1,500 feet of the mining area.

The project background and scope are as set forth in our memorandum dated May 7, 2018.

(1) Potential Conflicts to Other Types of Big Game.

Big game is a term of art often defined as relatively large animals sought or taken by hunting or fishing especially for sport. Although not formally defined under Oregon statute, according to the Oregon Department of Fish and Wildlife (ODFW), the primary big game species in Oregon include; deer, elk, cougar, bear, pronghorn antelope, bighorn sheep, and mountain goat. Pronghorn antelope, bighorn sheep, and mountain goat are not found within the project area.

Our previous analysis analyzed the impacts and potential conflict of the proposed quarry operation on deer and elk; however, the Lane County commission also inquired about black bears and cougars. The following provides a supplemental analysis which assess the potential impacts on Bears and Cougars within the 1500-foot impact area.

Both black bears (*Ursus americanus*) and cougars (*Felis Concolor*) are currently distributed throughout the state of Oregon including the portions of the Willamette Valley and along the western edge of the Cascades. Both species also persist under a wide range of habitat conditions, have expansive home ranges, and can utilize the resources within these home ranges to meet their life history needs (ODFW 2012, 2017). Studies conducted by the ODFW have observed average annual home-range sizes for Black Bear were 21.3 km2 (8.2 mi2) for adult females, 27.6 km2 (10.7 mi2) for sub-adult females, 133.5 km2 (51.5 mi2) for sub-adult males and 140.6 km2 (54.3 mi2) for adult males in the central Cascades during 1993–1998 (ODFW, 2012). Adult male cougars roam widely,

covering a home range of 50 to 150 square miles, depending on the age of the cougar, the time of year, type of terrain, and availability of prey. Female home ranges are about half that of males and there is considerable overlap in female home ranges.

As mentioned in our previous assessment, the impact area consists of three primary habitat types, open meadow/early seral, high canopy conifer forest with a diverse understory, and dense regenerated Douglas fir stands. All these habitat types could be used by both black bear and cougar; however, there is only anecdotal information available regarding the use of the area by these species. No black bear or cougar sign was identified during site visits.

Since the project would not remove habitat within the 1500-foot impact area, there would be no significant conflicts on black bear or cougar habitat; however, if they are present in the area, potential conflicts may occur through behavioral modification resulting from noise disturbance and other activities occurring at the mine site. We do not believe these impacts are significant for the following reasons.

(1.) No habitat will be removed and/or modified within the impact area;
(2.) Both black bears and cougars can react to changes in their home range and utilize other areas within their home ranges for meeting life history needs;
(3.) Based on professional judgement, black bears and cougars living within the urban interface have adapted and modified their behaviors to adjust to anthropocentric disturbances; and,
(4.) The project would not result in a measurable decrease in primary prey or forage densities.

Given the home range size of black bears and cougars, their general tendency to avoid roads, and their seclusive nature, both black bears and cougars are less likely to be impacted via vehicular collision resulting form increased truck traffic at the site. Therefore, we do not believe this activity poses a significant conflict.

Furthermore, the impacts to black bear and cougar within a portion of the impact area has been considered insignificant by Lane County. The County drafted a working paper and inventory map titled "Working Paper: Flora and Fauna," that notes that the County has designated its Big Game Range into three tiers; Major, Peripheral, and Impacted. According to this Inventory Map, the eastern half of the impact area is classified as "Major Range," while the western half is classified as "Impacted Range." The Flora and Fauna paper describes "Impacted Big Game Range" as "areas that have existing levels of land use which preclude future wildlife management options of maintaining viable wildlife populations." It also says that "Impacted Range is the lowest quality habitat." The working paper goes on to say: "Impacted Range has essentially been 'written off' for big game management."

(2) Elk Calving Near Mining Site

As discussed in public testimony, an alleged elk calving site may occur within some portion of the impact area; however, there is no specific information available as to the potential location of this calving site. Optimal calving sites for elk are hypothesized to have a combination of good nutritious food and provide enough cover to seclude neonates to reduce risk of predation (Brook 2010, Allan 2014). Ungulates are reported to select calving sites based on forest cover type (Bender 2002, Chranowski 2009, Brook 2010), proximity to water (Poole et al. 2007), degree of slope (Bowyer et al. 1999, Poole et al. 2007), amount of vertical and horizontal vegetation layer coverage (Rearden 2005, Barbknecht et al. 2011) and proximity to conspecifics. It is possible that the impact area could support a calving site given the current habitat conditions.

Information on fidelity in elk, specifically related to calving sites, is limited and at times anecdotal. Reports on fidelity vary in ungulates and some findings suggest that philopatry is low among some ungulate species including Elk (i.e. Elk don't always return to the same calving sites). In contrast, one study specifically analyzing the impacts of land development on home range use dynamics of female elk show high levels of site fidelity even in the presence of increasing annual land development (Webb et. al. 2011). In this study Females did not appear to abandon previously established birthing areas but used their home ranges in a manner that minimized interaction with development within these areas based on reductions in range use size and fidelity as land development increased. This is consistent with our previous discussions/findings alluding to the fact that any elk using the area will likely redistribute themselves within their home ranges as needed to adjust to increased disturbance levels and carry out life history needs. Furthermore, Kuck et al (1985) found that human disturbance at or near a previous year's parturition site may cause females to seek other locations within their home range for birthing.

As was discussed in our analysis, based on the literature, reproductive success is likely to be impacted by disturbances associated with the mining activities; however, this impact is not likely to result in any long-term measurable impacts on local elk populations for the following reasons:

- The habitat within the impact area (485 acres) will remain intact thereby continuing to provide security, thermal cover, foraging opportunities, and birthing opportunities for elk.
- Elk naturally move across their home ranges to exploit changes in resource availability. Disturbance within the impact area may temporarily displace elk; however, they will likely continue to use the habitat within the impact area for portions of their life history, and they would likely

select other areas and microhabitats within their home range to meet other seasonal needs.

- Activities which may disturb and/or disrupt deer and elk within the impact area would take place in three phases and not all at once thereby reducing the magnitude of disturbance impacts over time and allowing for more time for deer and elk to adapt to the new baseline levels of disturbance.
- The local population of elk is highly adapted to existing noise and disturbance from localized anthropocentric activities and will likely habituate to some level of additional disturbance. In general, the impact area comprising the scope of this analysis is characterized by and is nearby and adjacent to areas of high human activity including: an active railroad and active air strip, roads, a gun club, the City of Oak Ridge, an industrial park to the west, noise from nearby residences, Highway 58 and recreational activities such as mountain biking and hunting.
- According to Lane County, the "Impacted Range is the lowest quality habitat and has essentially been 'written off' for big game management."

(3) Reference to Conditions of Approval Addressing DEQ Noise Standards

The reference to conditions of approval designed to ensure compliance with the DEQ noise regulations was added to our original analysis to provide further requirements for reducing noise at the site and therefore reducing the potential for noise related disturbance to big game living within the impact area. The use of DEQ noise control measures was added to lessen the magnitude of any impacts from noise; it was not intended to establish the DEQ rule as a "safe harbor" as applied to wildlife. We maintain our position that in our best professional judgment, compliance with these conditions will help minimize conflicts with big game in the quarry impact area.

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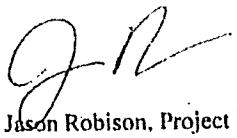
Sincerely,



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Enclosure

Cc. King, Seth J.
Dorian E. Kuper
Pfeiffer, Steven I.

October 23, 2018 **Submitted Via Email

Board of Lane County Commissioners
Harris Hall, 125 East 8th Avenue
Eugene, Oregon 97401

Re: Goal Five Big Game Impact Assessment Report, Old Hazeldell Quarry, Lane County, Oregon. – Supplemental Report No. 2

This report responds to testimony submitted during the first open record period for the Old Hazel dell Quarry land use applications regarding the potential impacts to big game caused by the quarry.

(1.) Response to issues raised in J. Goodell report submitted October 9, 2018.

- Mr. Goodell's report relies heavily upon studies conducted on populations of Rocky Mountain elk in areas with habitats extremely different then the project area. He asserts that the use of scientific literature is appropriate where data on Roosevelt elk are absent or limited. We agree that data on Rocky Mountain Elk can be used to make general inferences regarding elk behavior; however, less is known of Roosevelt elk biology than of the closely related Rocky Mountain elk east of the Cascades. This has frequently resulted in the incorrect generalization of Rocky Mountain elk research findings to management of Roosevelt elk. Some researchers suggest that differing evolutionary histories may have resulted in significant differences in the two subspecies' behavior, physiology, and habitat requirements (Starkey Et. Al 1982). Therefore, we would assert that it is improper to rely heavily on studies that pertain solely to Rocky Mountain elk. Furthermore, although the state combines the species for management purposes west of the east boundary of the current Cascade elk season boundary (Highway 97) they do not assert that these subspecies are similar. In fact, ODFW separates these subspecies within their management plan and management objectives (ODFW 2003 and 2016). Of the 18 references cited in Mr. Goodell's report, only three described impacts associated with some level of disturbance on Roosevelt Elk, and only one report cited (Northwest Resource Solutions (2018). Goal Five Big Game Impact Assessment Report. Northwest Resource Solutions LLC. May 7, 2018) included specific information about the TV Butte site.
- To truly assess the potential impacts of a proposed action on wildlife populations one must take into consideration the existing site-specific environmental baseline conditions. Mr. Goodell's report does not address the site-specific habitat types, surrounding habitat conditions, topography, and/or baseline disturbance thresholds associated with the TV Butte site. Instead Mr. Goodell relies on offsite literature (primarily based on Rocky Mountain Elk) to make inference about potential project impacts without specifically addressing the differences between conditions reported in the literature cited and the conditions on and near the TV Butte site. There is significant difference in the literature

regarding impacts to elk in dense mountainous forest environments and open environments.

- Furthermore, Mr. Goodell makes the statement: In the case of this mine proposal, elk may be seen near the mine following construction, but the overall occupancy of the area and/or reproductive performance of the herd may decline due to stress or lack of alternative refugia. These are unsubstantiated claims made without the use of site-specific information. It is extremely important to point these differences out as avoidance of human activity, and any associated impacts might be expected to be greater in more open habitats lacking adequate refugia than in areas like the project site where refugia habitat is available on large contiguous blocks of adjacent Forest Service Land (Exhibit A).
- For his analysis of mining impacts, Mr. Goodell relies heavily on a simulated mining study assessing impacts on elk calves. Kuck et al. (1985) captured and collared 25 elk in the Dry Ridge area of Idaho, and compared movement rates, resource selection, and calf survival between the groups during summer for two years. Disturbed elk moved greater distances, showed strong selection for closed conifer, had reduced fidelity, but there was no difference in survival rates between treatments for calves. The authors conclude that mining exploration will likely cause abandonment of spring calving ranges but fell short of being able to connect these changes in behavior to demography.
- To date, there is currently no rigorous scientific evidence that mining development will have population-level impacts on Roosevelt elk. What is consistent in the literature however is that Ungulates in general predictably avoid areas during periods of high human activity, moving to denser cover and areas farther from human activity. One can conclude from many studies on the impacts of disturbance on Elk, that in general, elk responded to disturbances by shifting their use of the range, centers of activity, and use of habitat and when possible, they will maintain physical barriers (Topographic and or vegetative) between themselves and the site during activities.
- We agree with Mr. Goodell's conclusion that it is likely that surface mining activity, and related increases in vehicle and human traffic, will result in elk movement away from the site, potential abandonment by pre and post-calving cows in the event that a calving site is located within the project area, potential decreases in local reproduction, and possible increases in local mortality; however, we don't believe these impacts rise to the level of a significant conflict for the reasons already stated on the record and:
    - There are approximately 34,484 acres of federal forest land connected to and within 2.5 miles of the project site (Exhibit A), and as Mr. Goodell has pointed out these lands are managed by the Willamette National Forest under a Forest Management Plan which takes into consideration potential impacts on Roosevelt Elk populations, and if Elk are displaced from the TV Butte site, these lands may be used as refugia habitat in addition to meeting other life history requirements for resident elk.
    - None of the habitat within the impact area would remove and/or modified. Mr. Goodell is silent on this issue in his analysis. Although Roosevelt Elk currently using the mining area and the impact area will be impacted via disturbance and these disturbance impacts may subject these elk to increased stress hormone response, decreased birth rates and other behavioral responses we believe that any elk using the area will at some point in time likely redistribute themselves within their home ranges as needed to adjust to increased disturbance levels and carry

out life history needs. This is consistent with the literary findings regarding ungulates. For example, Webb et al (2011) suggests that ungulates appear to respond spatially to development in two different ways. First, animals use larger areas in relation to development, which allows them to seek new areas with less development and less human activity. Second, animals use small areas further from development more intensively. Thus, although development/disturbance may be present in areas used by elk, they prefer to use areas of cover away from development.

- This subpopulation of Elk (N= 20-30 animals according to ODFW) is part of a much larger population of elk in and around the Oakridge area (N = 300 animals). Despite the potential for some level of decreased local production this would not significantly impact the Oakridge population for Roosevelt Elk as these elk likely interchange freely across a much larger landscape. Harper (1964, 1971) found that Roosevelt elk herds in southwestern Oregon continuously changed composition and that marked members of adjacent groups interchanged freely.

- Mr. Goodell fails to make any concise argument as to the significance of impacts associated with a potential reduction in productivity of Elk on or near the TV Butte Site. He simply asserts that there may be local impacts, including elk movement away from the site, abandonment by pre and post-calving cows, decreases in local reproduction, and possible increases in local mortality. The Oregon Department of Fish and Wildlife (ODFW) manages elk based on management objectives (MOs) for winter population size and post-season bull ratios in each Wildlife Management Unit (WMU) in the state. The McKenzie unit has been consistently close to the MO. Between 2013 and 2015 (Data not available between 2016-2018), populations ranged from 4,600 elk to 4,900 averaging around 4,700 elk. Any potential reduction in productivity at the TV Butte site because of disturbance would not fall outside of the natural range of variability at the population-level in the McKenzie MGT Unit. Furthermore, the TV Butte subpopulation is not closely monitored by ODFW and is simply combined within general heard composition statistics for management purposes.

- Mr. Goodell states that in the case of this mine proposal, elk may be seen near the mine following construction, but the overall occupancy of the area and/or reproductive performance of the herd may decline due to stress or lack of alternative refugia. He makes an incorrect assumption that there is a lack of refugia and ignores nearby/adjacent habitats in his analysis (Exhibit A).

- Mr. Goodell points out that a recent study in Oregon demonstrated elk responded negatively to various forms of outdoor recreation including a reduction in feeding time and increase in movement time. Specifically, ATV and mountain bike traffic had larger negative effects than hiking or horseback activities (Naylor et al. 2009). This information is valuable when considering a range of other baseline impacts associated with the TV Butte area.

  In previous comments from petitioners there was a huge concern that mining activities would result in a decrease in recreational uses of the area despite the communities want for increasing these types of activities. One petitioner wrote: "*Promoting the amazing*

outdoor recreational opportunities of Oakridge and the surrounding area, mountain biking, hiking, camping, rafting, etc., has made the city a destination for outdoor enthusiasts and has obviously had a very significant impact economically..." Another writes: "*We have people all around the world that come up here to ride mountain bikes because of the topography where you can ride a bike over 3,000 feet and have flat spots and everything all in one spot.*"

The petitioners seem to compartmentalize different conflicts into two categories good and bad. A conflict is good when it promotes recreation; however, it's bad when it promotes resource utilization. When, in reality, these conflicts elicit similar disturbance responses by wildlife.

- We agree with Mr. Goodell's admission that elk avoid trafficked roads, which would suggest that collision impacts with Elk would not pose a significant conflict. This was addressed in our previous testimony.

- Mr. Goodell states that although the 1,500 foot impact area distance may be an appropriate impact area affecting elk movement in relation to new forest roads, there is no evidence to suggest it is an <u>adequate</u> distance to assess the impacts of surface mining on elk or many other wildlife species; however, Mr. Goodell's also correctly asserts that <u>no distance data exists</u> to show how far elk avoid mined areas. So instead he arbitrarily selects a 0.5-mile distance with no supporting scientific rationale. He states that "*while the literature on forest road disturbance suggests that elk avoid using habitats within 500m (1640.42ft) of roads, it is reasonable to assume elk will avoid surface mining activities at much greater distances from the mining site, due to blasting and other invasive activities - <u>although no distance data currently exists</u>*". His assumption is unfounded and lacks site and project specific information.

- Some general studies of Elk behavior have demonstrated that although Elk may have a high degree of flexibility to disturbance and may avoid a disturbed site during active operations, they may in fact utilize portions of the site when activities are minimal. Edge (1982, 1985) concluded that elk avoided a minimum of a 500m buffer from logging activity. In a unique comparison, Edge also found elk were closer to active logging operations on weekends, when logging activities temporarily ceased, than during weekdays, showing a high degree of behavioral flexibility.

(2.) Response to Kevin Matthews' testimony, pertaining to elk conflicts.

- Mr. Matthews asserts that the applicant did not adequately consider or mitigate for conflicts such as displacement from calving area, reduced reproduction, increased indirect mortality, and potential long-term population decline.
  - Displacement from a calving area is addressed on our supplemental report dated October 8, 2018.
  - We don't believe reduced reproduction or increased indirect mortality impacts rise to the level of a significant conflict for the reasons already stated in this supplemental analysis and on the record.

- Based on our professional judgment, the site-specific conditions, surrounding refugia habitat, and previous analyses, we don't believe this project will result in measurable long-term population impacts.

- Mr. Matthews asserts that there is no showing that complying with DEQ noise regulations will be helpful or relevant. The reference to conditions of approval designed to ensure compliance with the DEQ noise regulations was added to our original analysis to provide further requirements for reducing noise at the site and therefore reducing the potential for noise related disturbance to big game living within the impact area. The use of DEQ noise control measures was added to lessen the magnitude of any impacts from noise; it was not intended to establish the DEQ rule as a "safe harbor" as applied to wildlife. We maintain our position that in our best professional judgment, compliance with these conditions will help minimize conflicts with big game in the quarry impact area.

- Mr. Matthews asserts that there are no references to support the conclusion that elk adapt to living near the mine. Previous reports did not assert that elk will simply adapt to living near the mine. We simply assert that elk in general will habituate to some levels of disturbance. We also assert that elk that have been exposed to higher baseline levels of disturbance may in fact tolerate more disturbance than those that do not. This issue is also pointed out by the petitioner's expert testimony. Mr. Goodwell provides that *elk are known to habituate to some human activity and that many wildlife species including elk may display anecdotal tolerance of human disturbance in some scenarios*. Some studies have found that ungulates habituate over time to frequent stimuli. Some ungulates are known to habituate to regular exposure to noise, and other non-lethal human activities and to display individual variation within populations in their avoidance or tolerance of roads (Weisenberger et al. 1996, Stankowich 2008). Elk exhibit behavioral patterns that suggest habituation along roads and other areas disturbed by human activities. (Lyon et. al. 1982, and Thompson and Henderson 1998)

- Mr. Matthews asserts that there is No documentation that a warning sign alone, with a related speed reduction, is adequate to minimize collision conflicts to a level that is not significant. Several studies have shown that roadkills tend to be clustered, with a large portion of roadkills occurring at a relatively small percentage of locations (Puglisi et al. 1974, Bashore et al. 1985, Hubbard et al. 2000, Malo et al. 2004, Gunson and Clevenger 2005). Based on the best available information, and our own professional judgment, we do not believe the project impact area is an area where a large number of collisions with deer and/or elk would occur and therefore the proposed activity would not significantly increase the number of deer and/or elk impacted with the Project Impact Area or vicinity.

  Furthermore, expert testimony provided on behalf of the petitioners by Mr. Goodell provides that elk avoid trafficked roads, which would also suggest that collision impacts with Elk would pose an insignificant conflict.

  Even though we do not believe that the additional truck traffic generated by the proposed use would significantly increase the rate of deer and/or elk collisions along the haul route

and within the impact area, signage is an effective mitigation measures that could be implemented based on our experience and best professional judgment, along with our knowledge of the full range of possible mitigation measures. Found and Boyce (2011) found that in the first year after installation, deer- crossing signs targeting high collision locations can be effective at reducing vehicle collisions.

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Sincerely,

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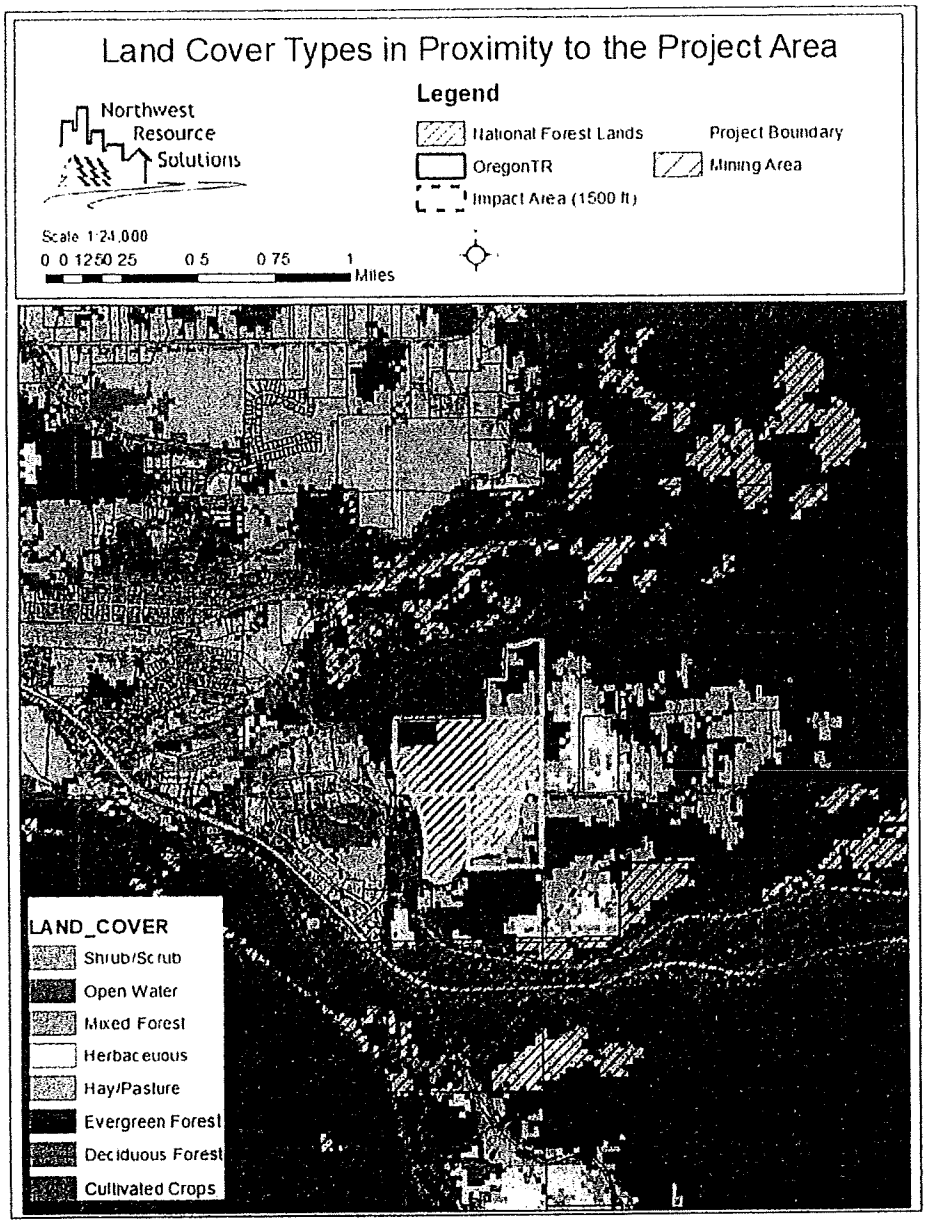
Enclosure

Cc. King, Seth J.
Dorian E. Kuper
Pfeiffer, Steven L.

Exhibit A


Land Cover Types in Proximity to the Project Area
Northwest Resource Solutions
Legend
National Forest Lands
Project Boundary
OregonTR
Mining Area
Impact Area (1500 ft)
Scale 1:24,000
0 0.125 0.25 0.5 0.75 1 Miles
LAND_COVER
Shrub/Scrub
Open Water
Mixed Forest
Herbaceuous
Hay/Pasture
Evergreen Forest
Deciduous Forest
Cultivated Crops

WRIGHT Deanna

From: Gail Cross <gcross@eugenelaw.com>
Sent: Tuesday, October 23, 2018 3:11 PM
To: WRIGHT Deanna
Cc: Zack Mittge
Subject: Matthews/Save TV Butte - 509-PA18-05392
Attachments: LT Board Open Record 10-23-18.pdf

Ms. Wright,
Please see attached response.

Thank you,
Gail C. Cross | Legal Assistant to Zack P. Mittge | Hutchinson Cox | 400 Woolworth Building | 940 Willamette Street | Eugene OR 97401 | Mailing: P O Box 10886 | Eugene, OR 97440 | 541-686-9160 | 541-343-8693 (fax)

From: Bill Kloos
To: CARSLEY Taylor H
Cc: Bill Kloos; Steve Pfeiffer (SPfeiffer@perkinscoie.com)
Subject: Old Hazeldell Quarry; First Open Record Period; Applicant"s First Submittal - Landfill Issue
Date: Monday, November 4, 2024 8:30:49 AM
Attachments: 2021-102 1769-1771 Email String to BCC re Oakridge Dump 5.3.2021.pdf
2021-102 1793-1794 Kupper Amended Site Plan re Dump.pdf
2021-102 1772-1792 Sahnnon & Wilson Response Dump Site Issue 5.31.2021.pdf

---

Taylor –

Please include this material in the record.

The landfill issue is discussed at pages 5, 6, 14-15 of your staff report, and at page 4 of our narrative, and in proposed condition 54 accompanying the narrative. It was a recurring issue the hearings.

Enclosed are:

May 3, 2021, Email string from PW Director Hurley to Board on landfill Status. This transmits to the Board the Shannon and Wilson Report on the landfill. The email string notes the applicant's history with the landfill. The boundaries were determined. The mining plan was amended to avoid the landfill and keep stormwater out. The landfill would be fenced.

Shannon & Wilson, Inc., Technical Memo, Response to Public Testimony and Written Comments, Old Hazeldell Quarry Historic Land Use Study, (May 31, 2016). This report was in response to testimony stating concerns about the landfill site and its relation to the processing facility. It documents an Historic Records Search; an Historic Air Photo Study, including photos from 1944 to 2013; a Site Reconnaissance; and Site Development Conclusions and Recommendations. Fourteen air photos and on-site phots are included.

Kuper Consulting, LLC Memorandum (May 31, 2016). Documenting amendments to the Site Plan to avoid any physical impacts to the landfill.

Bill Kloos
Law Office of Bill Kloos PC
375 W. 4th Ave., Suite 204
Eugene, OR 97401
Phone: 541-954-1260
Email: Bill Kloos@LandUseOregon.com
Web: www.LandUseOregon.com

WRIGHT Deanna

From: HURLEY Daniel M
Sent: Monday, May 3, 2021 3:59 PM
To: STRUNK Donald L; BUCH Heather H
Cc: MILLER Keir C; WRIGHT Deanna
Subject: FW: Dunning Rd Landfill
Attachments: SW Lane Cty Historic Land Use.pdf; Kuper Revised Site Plan Memo May 31, 2016.pdf; Revise Site Plan.pdf

Terrific. Thanks for providing this, Don.

Commissioner Buch – Here is some information related to the closed landfill in Oakridge. I haven't had a chance to read through this yet, so I'm not sure if it addresses the concerns that have been voiced recently by your constituents. If you have specific questions, Don Strunk manages our closed landfill programs and will be the best point of contact.

-Dan

From: STRUNK Donald L <don.strunk@lanecountyor.gov>
Sent: Monday, May 3, 2021 11:12 AM
To: HURLEY Daniel M <dan.hurley@lanecountyor.gov>
Subject: FW: Dunning Rd Landfill

Hi Dan,

Here is some information from when we looked at the Dunning Road site back in 2016. (Old Oakridge Landfill)

Don Strunk
Hazardous Waste Supervisor/Engineering Analyst
Waste Management Division, Lane County Public Works
3100 E. 17th Ave. Eugene, OR 97403
Office: (541) 682-3899

From: MASON Bill [mailto:MASON.Bill@deq.state.or.us]
Sent: Wednesday, June 8, 2016 11:04 AM
To: STRUNK Donald L <Donald.Strunk@co.lane.or.us>
Subject: FW: Dunning Rd Landfill

FYI.

From: Dorian Kuper [mailto:dorian@kupercon.com]
Sent: Wednesday, June 08, 2016 8:38 AM
To: MASON Bill <MASON.Bill@deq.state.or.us>; KELLEY Eric <KELLEY.Eric@deq.state.or.us>
Cc: Vaughn Balzer <vaughn.balzer@mlrr.oregongeology.com>
Subject: RE: Dunning Rd Landfill

HI Bill and Eric,

Please see attached the analysis Shannon & Wilson did in researching the Dunning Rd. Landfill. Attached are a series of aerial photos that track the old landfill over time. Two large trenches were excavated and trash and debris was probably burned. The intent is to **avoid** this area, which we show on the attached map as well. There is a lot of dumped old bed springs, metal objects, old water heaters (?) etc. not in the landfill area, but to the northwest a bit as shown on the map. This could have been a time when the County separated out metal that wouldn't burn and/or people just dumped their debris in ravines on the property. Shannon & Wilson has documented what looks like the same photos that someone sent to DEQ of dumped debris, northwest of the landfill.

Please let us know if you have any questions or concerns.

Thank you,

Dorian Kuper

Kuper Consulting LLC
(503) 638-9722 Oregon
(406) 475-3244 Montana

From: Pfeiffer, Steven L. (Perkins Coie) [mailto:SPfeiffer@perkinscoie.com]
Sent: Tuesday, June 07, 2016 5:54 PM
To: MASON Bill; KELLEY Eric; Dorian E. Kuper (dorian@kupercon.com)
Subject: RE: Dunning Rd Landfill

Thanks, Bill. And greetings, Eric.

Dorian and I are assisting the owner of the subject site with an aggregate mining and processing application before Lane County. The former landfill site is part of a larger parcel purchased from the City of Oakridge. Once we learned of the prior activity, we undertook a variety of efforts to identify the location and boundaries of the former site and ultimately decided that a series of aerial photos over many years provides the most accurate location of the two trenches and the associated vehicle maneuvering areas within the overall ownership. Once completed, we revised our initial mine/site plan to avoid any activities within or in close proximity to the former landfill, which means that nay approval of the pending application will not include authorization to undertake any activities in the area, and we will avoid all storm water intrusion as well per anticipated DOGAMI requirements. Finally, the delineated area will be fenced to preclude access to this portion of the property. In short, our objective to date has been to identify and avoid this area completely during the course of proposed mining and processing activities at the site.

During my conversation with Bill, he noted that the site is likely included on the DEQ database but, as often, the information available to the agency is limited. As such, I indeed did offer to provide the aerial photo information we have developed for the above purposes. Dorian, you likely have the best compilation of the photo information we have developed. Could you forward the same to Eric?

Steve

From: MASON Bill [mailto:MASON.Bill@deq.state.or.us]
Sent: Tuesday, June 07, 2016 1:37 PM
To: KELLEY Eric; Pfeiffer, Steven L. (Perkins Coie)
Subject: Dunning Rd Landfill

Hi Steve and Eric! You now have each other's email addresses. Steve, you kindly offered to send the results of your aerial photo research to Eric to load into ECSI. Much appreciated! And no, we weren't planning to do a site visit.

B.

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3990 Collins Way, Suite 100
Lake Oswego, Oregon 97035
Phone: 503·210·4750
Fax: 503·210·4890

TECHNICAL MEMORANDUM

TO: Lane County Planning Commissioners

COMPANY: Lane County Planning Department, Lydia McKinney, Planning Director

Customer Service Center

3050 N. Delta Highway

Eugene, OR 97408

FROM: Gary L. Peterson, CEG
Oregon Certified Engineering Geologist
Peter J. Shingledecker, PE
Oregon Registered Professional Engineer

DATE: May 31, 2016

RE: **RESPONSE TO PUBLIC TESTIMONY AND WRITTEN COMMENTS**
OLD HAZELDELL QUARRY
HISTORIC LAND USE STUDY, TAXLOT 502

This Technical Memorandum provides Shannon & Wilson, Inc.'s evaluation of historic land use on tax lot 502 where material processing, stockpiling, and material sales are planned. No mining is proposed for this tax lot. During public testimony on May 10, 2016, and in written testimony that followed, several individuals expressed concern for an historic landfill and debris observed on tax lot 502 at the site of the proposed processing facility. Specific references follow:

- K. Allen provided a table of Lane County landfills from an unknown source. The Dunning Road Dump is listed as #77, and described as a "closed burning dump" of "minor" volume that operated between 1951 and 1968.
- K. Pokorny's May 10, 2016 testimony referred to the "crushing operation on top of a potential hazardous waste dump."

- M. Maxwell expressed concerns for "potential contamination of wells" and a "toxic waste dump". Neighbors testimony suggested the site was initially a Pope & Talbot dump that later transitioned to a municipal landfill where materials were burned.

Historical Records Search

In an effort to further delineate the landfill and evaluate its impact on proposed use of the property as a processing, storage and sales yard for the rock products produced solely by Old Hazeldell Quarry on adjacent properties, an historic records search was conducted. Stonebroke LLC purchased the property from the City of Oakridge in 2011. In the purchase agreement, the existence of the landfill is documented. The property deed incorporates a legal description of the "Former Landfill", however the legal description failed to define an enclosed area based on mapping by Westlake Engineers. Subsequent research described below provides a more accurate depiction of both the location and nature of the former landfill. For these reason, we do not consider this legal description to be sufficiently accurate to determine the location of the former landfill trenches.

Several landfills/dumps are referenced at this and nearby sites. Documents reviewed indicate that Pope and Talbot Lumber Company first began use of the disposal cells on Lot 502; the City of Oakridge operated the site as a municipal landfill from 1951 to 1968. A listing of Lane County Disposal Sites indicated the Oakridge Landfill was an open-burning dump with a cover material (presumably soil), salvage operations, and an estimated annual volume of 22,800 cubic yards in 1967.

It appears that disposal operations were transferred to the Oakridge Landfill, located at 48977 Kitson Springs Road in Oakridge, around 1968. The Oakridge Landfill, located approximately 3800 feet south south-east of Lot 502, operated from 1968 to 1991, when it closed following the construction of the Oakridge Transfer Station.

Historic Air Photo Study

To assist the design team in determining the location, history and closure of the landfill, Shannon & Wilson performed Historical Land Use Studies to better understand the location, history and past activities on the site. Historic Aerial Photographs were obtained from the University of

Oregon archives to evaluate past land use of the site. Photographs from 1936, 1944, 1954, 1960, 1968, 1979, 1995, and 2005 were reviewed. Based on the quality of the photo images, three photographs were not further utilized. The selected photographs were georeferenced in GIS to accurately position site features on the base photographs.

Historic aerial photographs spanning 69 years (1944 to 2013) were studied to locate and interpret the history of the landfill / dump site. The available air photographs have not defined the startup or closure dates for the landfill. Figures 1 through 6 present the selected images with historic landfill cells and observed debris shown. A summary of the key elements of historic land use are listed below

- **1944:** Figure 1 shows the site to be modestly vegetated due to earlier logging. Debris dump sites are shown where located in 2016 on all photographs, because we have no reliable age assigned to the debris.
- **1954**: Figure 2 shows the site has been graded with clearly defined current and potential future landfill cells defined by access roadways. This image reflects a well-organized plan for current and future landfill use, with circumferential access roads. Two parallel trenches (landfill cells) are excavated to about 300 and 400 feet in length, and 30 to 40 feet wide, with ramped access at either end. These cells are located at substantial distances from UPRR and Dunning Road cut slopes that bound the lot. Recently mapped dumped debris is shown, although its age is not known. The image suggests no trafficked access exists to the dumped debris.
- **1960**: Figure 3 shows two cells in the same location and dimensions as in 1954. The area to the east of the trenches has been cleared of vegetation, but no new excavations are apparent.
- **1968**: Figure 4 shows that the two cells are still apparent and in the same locations as in 1954 and 1960. The width of the cells appears larger, and protrusions are apparent near the northeast corner of each cell. Documents discussed above indicate the landfill was closed the year of this photograph. We infer that the protrusions are likely earthwork features where dozers pushed capping soil into the trenches. The expanded width, in our opinion, is likely due to the shallow cell boundaries that have been graded and widened. In our opinion, the changes in 1968 are consistent with closure of the landfill as reported by some sources.

- **1979**: Figure 5 shows no trenches or earthwork that was apparent in earlier photographs. Vegetation is reestablished across much of the trafficked areas apparent in earlier photographs. The property appears accessible to vehicles, however, as trafficked areas and roadways exist. No developed access routes exist to the dumped debris areas. Landfill cells (trenches) shown represent 1968 dimensions, which are considered the most conservative interpretation.
- **2013**: Figure 6 represents conditions much like today. Vegetation is well established, including tree growth in the northeast area where the crusher site is proposed. No waste is observed at the ground surface in the landfill trench areas. Photographs of the dumped debris areas are provided in Figures 7 through 10.

Site Reconnaissances

Site reconnaissances were performed on tax lot 502 by geologists to evaluate the potential for impacts from onsite historic land uses, with a focus on the landfill history and reports of surficial debris. Our reconnaissances extended to the property boundaries along UPRR tracks and Dunning Road. Much of the area is overgrown with dense vegetation, limiting the ability to see the ground surface. Nonetheless, no features were disclosed that might represent a surface expression of the landfill trenches discussed above. On the site, no settlement, uneven ground, seeps, ponded water, exposed waste, and/or stressed or dead vegetation was noted.

Two debris dump sites of limited extent were exposed at the ground surface and their extent was mapped during our reconnaissance, refer, Figures 1 through 6. The two sites were approximately 60 to 80 feet northwest of the nearest landfill cell trench. Surficial dumped metallic debris with limited other materials (glass, plastic, etc.) was observed to be well embedded in an organic mass of soil, trees, brush, moss and berries. These overgrown areas included metallic objects such as washers, tanks, and industrial application containers.

During the site reconnaissances photographs were taken. Photographs of the northern and southern debris fields are shown on Figures 7 through 10 and Figures 11 through 14, respectively. The debris was generally modest in dimension, typically suitable for transport in a pickup truck. Deteriorated, empty drums were identified, as were both industrial and municipal

waste. Steel drums were noted, but they were severely rusted and damaged, displaying no labels or evidence of their past contents. Much of the metallic debris could not be readily identified.

No age has been assigned to the debris, but it is appears decades old. These may have been materials unsuitable for the landfill. Our historic records search disclosed that the landfill operating from 1951 through 1968 performed salvaging. We theorize that the materials in the dumped debris areas represented metallic objects that would not burn, would not compact well, and would be difficult to place and compact in the landfill trenches. Hence, these materials may represent items that were salvaged from the landfill, but ultimately left on site.

We observed no sign of sheens, impacted soils, or distressed vegetation in the debris areas. In addition, no future development is planned for this area.

Site Development Conclusions and Recommendations

Quarry excavation occurs only on tax lots 100 and tax lot 1900, located to the north and east of tax lot 502, refer, Old Hazeldell Quarry, Goal 5 Application, Figure 6, Westlake Consultants, Inc. No significant excavations will occur on tax lot 502, described here as the Processing Area. Areas within the Processing Area but outside the known landfilled areas will host the scale house and parking, material stockpiles, crusher, acoustic berm, roads for quarry rock delivery, commercial truck access, reservoir access (should the City construct the planned reservoir), and parking for staff, equipment, and customers.

Figures 2 through 6 show the proposed use of tax lot 502 overlain on historic photographs with the landfill trenches defined. To lessen the potential that current environmental conditions might be adversely impacted by activities in the processing area, we recommend establishing a perimeter offset from the mapped landfill cells to create a buffer between material processing operations and the buried landfill trenches. The attached aerial photographs, Figures 4, 5 and 6, portray the largest area of landfilled trenches based on the historic photo review.

Institutional controls will be implemented on tax lot 502 that focus on avoiding any disturbance of the historic landfill trenches. We recommend a 25-foot offset perimeter be adopted as shown on Figures 4 through 6 to protect the buried landfill from intentional or unintended disturbance.

A key control is to construct fencing or install access constraints that prohibit access to the buffered landfill area during normal operations. Site uses, such as active material stockpiles, crusher siting, parking, and water detention or transmission, should avoid the buffered area to prevent disturbance to the waste materials buried in the landfill. Office facilities and scale-house are located outside the buffered landfill area. Stormwater injection into the subsurface and detention ponds near or upslope from the landfill trenches will be prohibited. Detention ponds may be located away from the buried landfill when it can be assured no above or below ground disturbance or groundwater diversion occurs within the former landfill. With established avoidance measures in place, it is our judgment that adverse site impacts due to landfill disturbance will be avoided.

Installation of a well on tax lot 502 is planned to provide an industrial water supply (in accordance with Oregon Water Resources Department, OWRD criteria). Preliminary siting of this well places it over 500 feet north of the historic landfill trenches. A more comprehensive discussion of this water well is included in Shannon & Wilson's Technical Memorandum regarding Geology and Hydrogeology Issues. The significant lateral distance to the well site at approximately the same elevation from the known landfill site assures that groundwater intercepted by the well will not encounter or affect groundwater passing through the landfill area. A separate memorandum addresses a recommended groundwater supply alternative.

LIMITATIONS

This technical memorandum provides a summary of our evaluation of on-site conditions relating to the former landfill and limited surficial debris at the site. No quarry excavation is proposed for this specific tax lot. Our opinion, conclusions and recommendations are presented regarding use of the subject site for material processing, stockpiling and sales.

This technical memorandum was based solely on the services described herein. Site-specific studies have not been completed to quantify or evaluate "recognized environmental conditions", which might include regulated hazardous or dangerous wastes and/or substances, including petroleum products, under conditions that indicate an existing release, a past release, or a material threat of a release into the structures on the property or into the ground, groundwater, or surface water of the property. No Chain of Title Report has been reviewed. A Phase I

environmental site assessment, based on a review of records and files, as well as a site reconnaissance of the property, has not been performed.

FIGURES

Figure 1: 1944 Aerial Photograph, Historic and Proposed Land Use

Figure 2: 1954 Aerial Photograph, Historic and Proposed Land Use

Figure 3: 1960 Aerial Photograph, Historic and Proposed Land Use

Figure 4: 1968 Aerial Photograph, Historic and Proposed Land Use

Figure 5: 1979 Aerial Photograph, Historic and Proposed Land Use

Figure 6: 2013 Aerial Photograph, Historic and Proposed Land Use

Figure 7: Site Photographs 1 though 4

Figure 8: Site Photographs 5 and 6

Figure 9: Site Photographs 7 and 8

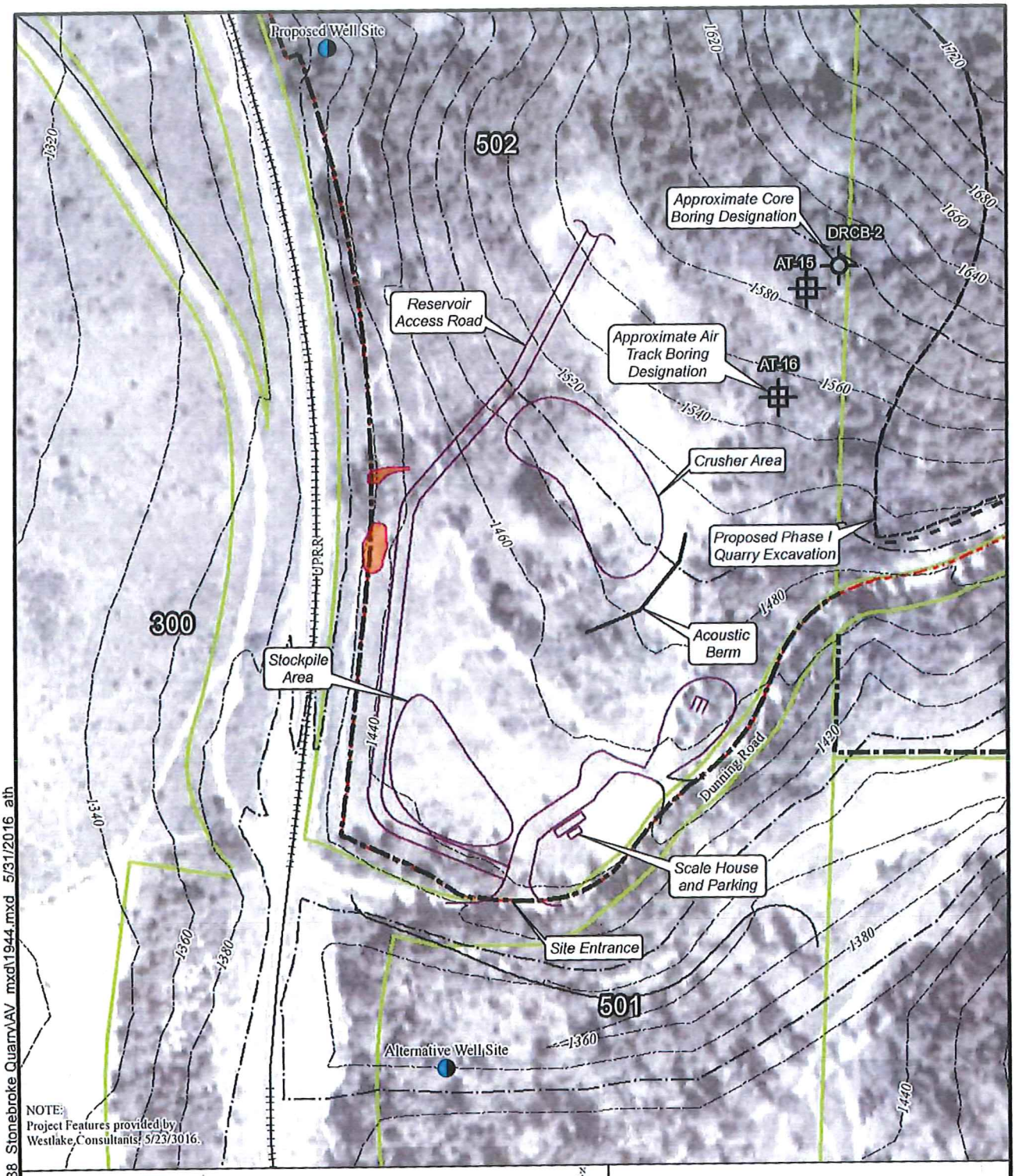
Figure 10: Site Photographs 9 and 10

Figure 11: Site Photographs 11 and 12

Figure 12: Site Photographs 13 and 14

Figure 13: Site Photographs 15 and 16

Figure 14: Site Photographs 17 and 18



Document Path: T:\Projects\24-113888 Stonebroke Quarry\AV mxd\1944.mxd 5/31/2016 ath

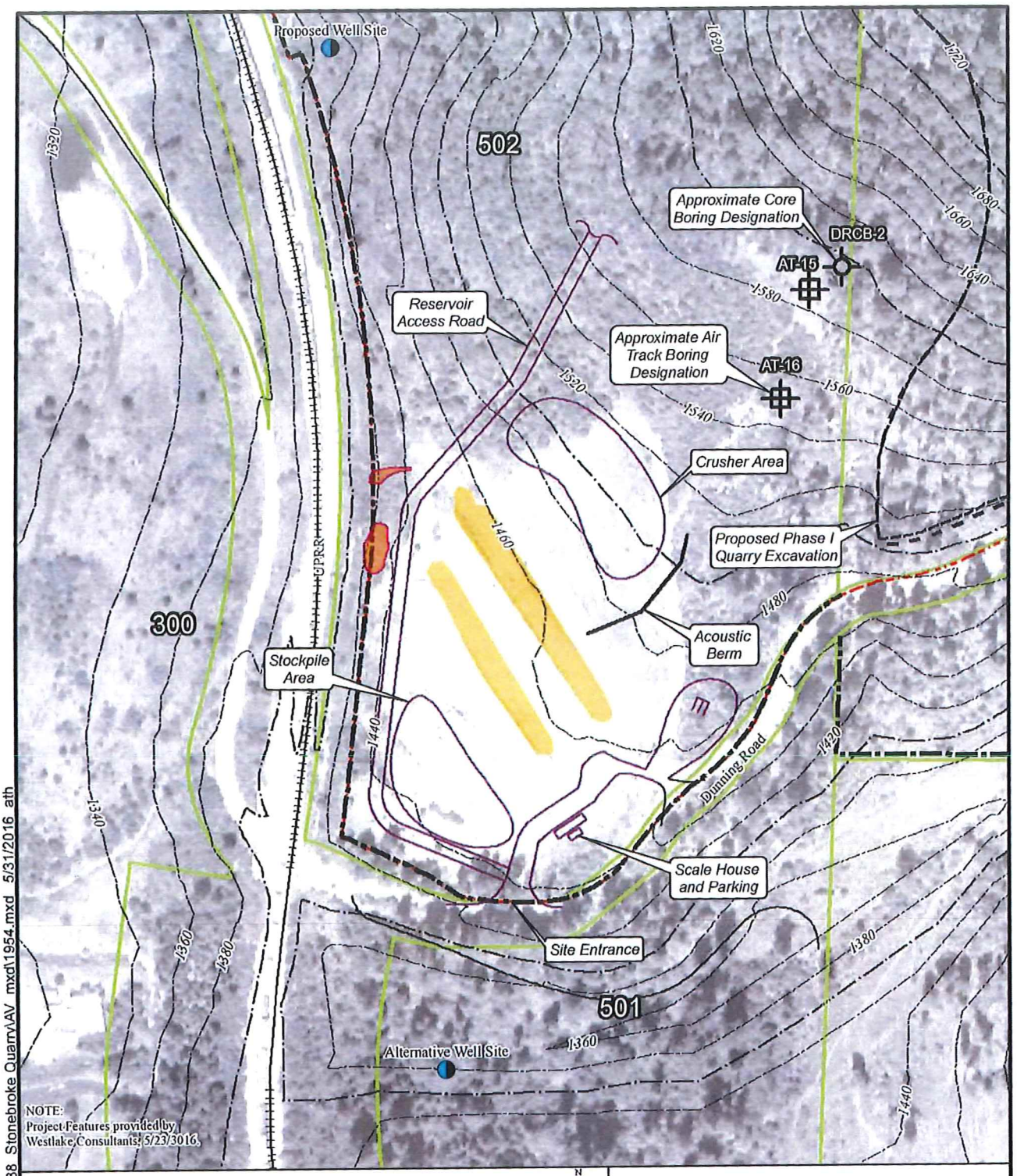
Old Hazeldell Quarry
Oakridge, Oregon

HISTORIC AND PROPOSED LANDUSE
1944 AERIAL PHOTOGRAPH

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1



Document Path: T:\Projects\24-113888 Stonebroke Quarry\AV mxd\1954.mxd 5/31/2016 ath

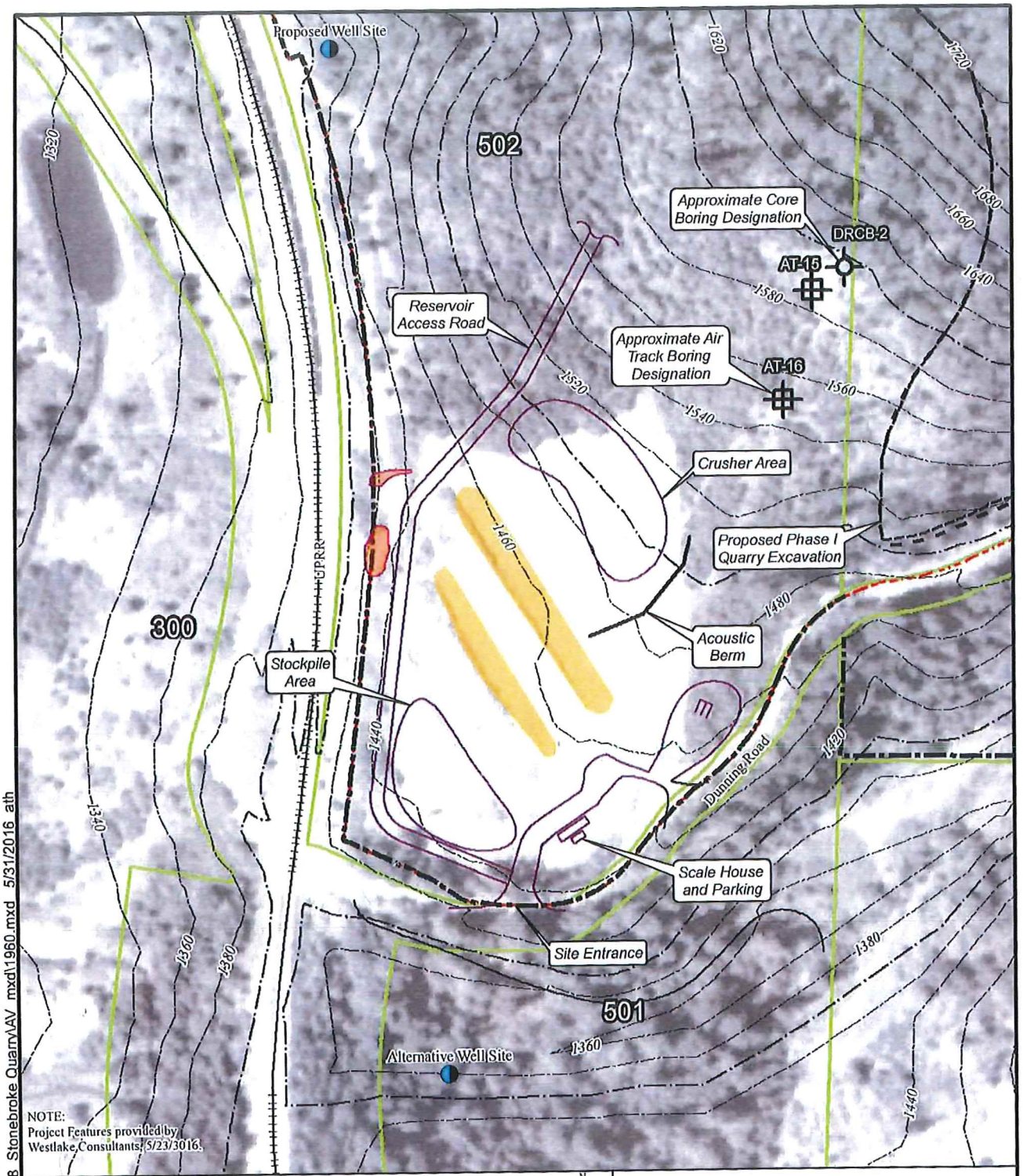
Old Hazeldell Quarry
Oakridge, Oregon

HISTORIC AND PROPOSED LANDUSE
1954 AERIAL PHOTOGRAPH

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2



LEGEND

- Approximate Property Boundary
- Mining Permit Boundary
- Acoustic Berm
- Project Features
- Excavation Boundary
- Existing Railroad
- Phase I Boundary
- Approximate Well Location
- Historic Landfill Trenches
- Debris Dump Sites (Observed in field by SW)
- Existing 100' Major Contours
- Existing 20' Minor Contours
- Taxlots (provided by Westlake Consultants)

0 100 200 Feet

Old Hazeldell Quarry
Oakridge, Oregon

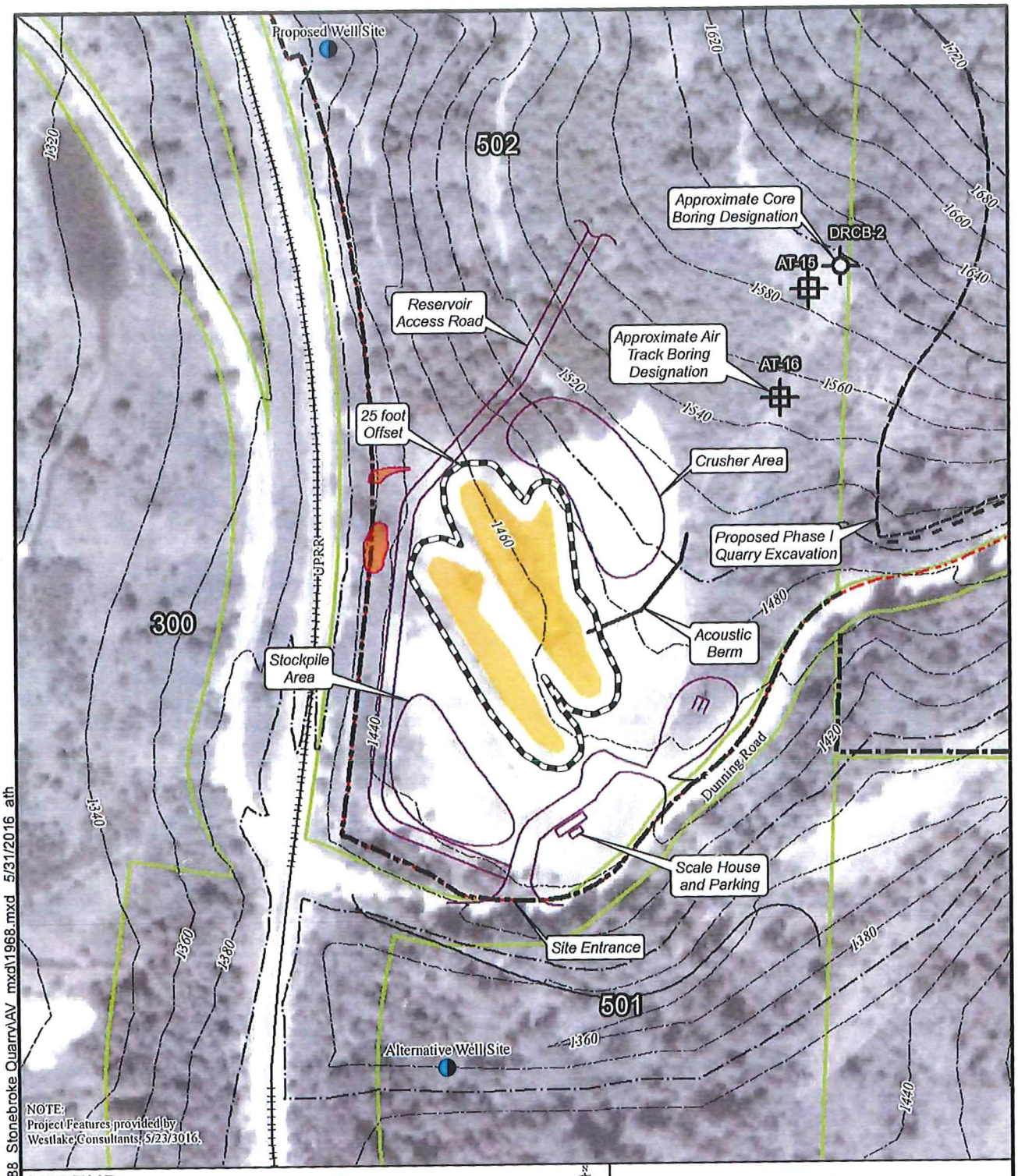
HISTORIC AND PROPOSED LANDUSE 1960 AERIAL PHOTOGRAPH

May 2016 24-1-03888-015

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 3

Document Path: T:\Projects\24-1\3888 Stonebroke Quarry\AV mxd\1960.mxd 5/31/2016 ath



LEGEND

- Approximate Property Boundary
- Mining Permit Boundary
- Acoustic Berm
- Project Features
- Excavation Boundary
- Existing Railroad
- Phase I Boundary
- 25 foot Offset
- Approximate Well Location
- Historic Landfill Trenches
- Debris Dump Sites (Observed in field by SW)
- Existing 100' Major Contours
- Existing 20' Minor Contours
- Taxlots (provided by Westlake Consultants)

0 100 200 400 Feet

Old Hazeldell Quarry
Oakridge, Oregon

HISTORIC AND PROPOSED LANDUSE
1968 AERIAL PHOTOGRAPH

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 4

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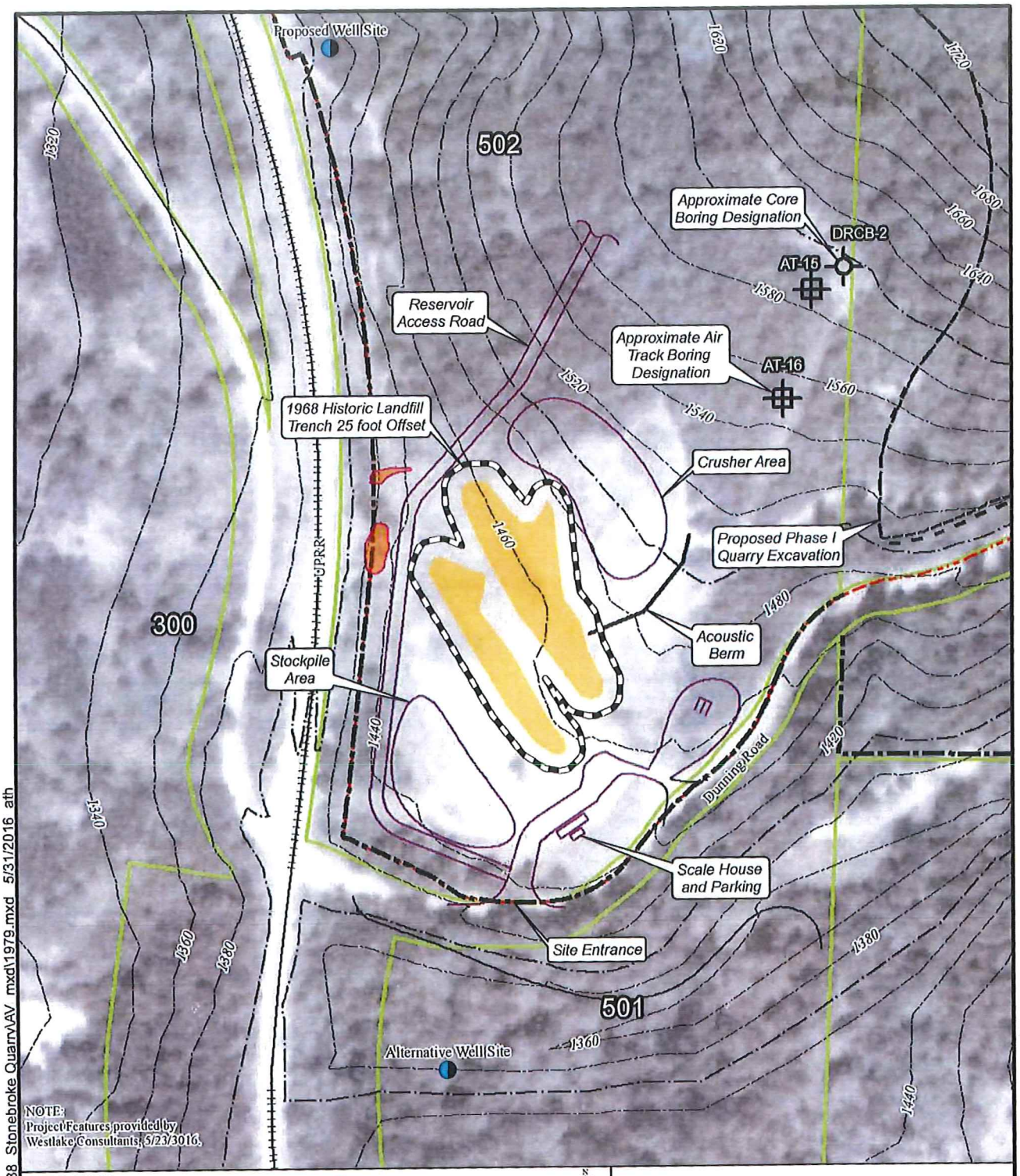

LEGEND

- Approximate Property Boundary
- Mining Permit Boundary
- Acoustic Berm
- Project Features
- Excavation Boundary
- Existing Railroad
- Phase I Boundary
- 1968 Historic Landfill Trench 25 foot Offset
- Approximate Well Location
- 1968 Historic Landfill Trenches
- Debris Dump Sites (Observed in field by SW)
- Existing 100' Major Contours
- Existing 20' Minor Contours
- Taxlots (provided by Westlake Consultants)

0 100 200 400 Feet

Old Hazeldell Quarry
Oakridge, Oregon

HISTORIC AND PROPOSED LANDUSE 1979 AERIAL PHOTOGRAPH

May 2016 24-1-03888-015

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FIG. 5

Document Path: T:\Projects\24-113888 Stonebroke Quarry\AV mxd\1979.mxd 5/31/2016 ath

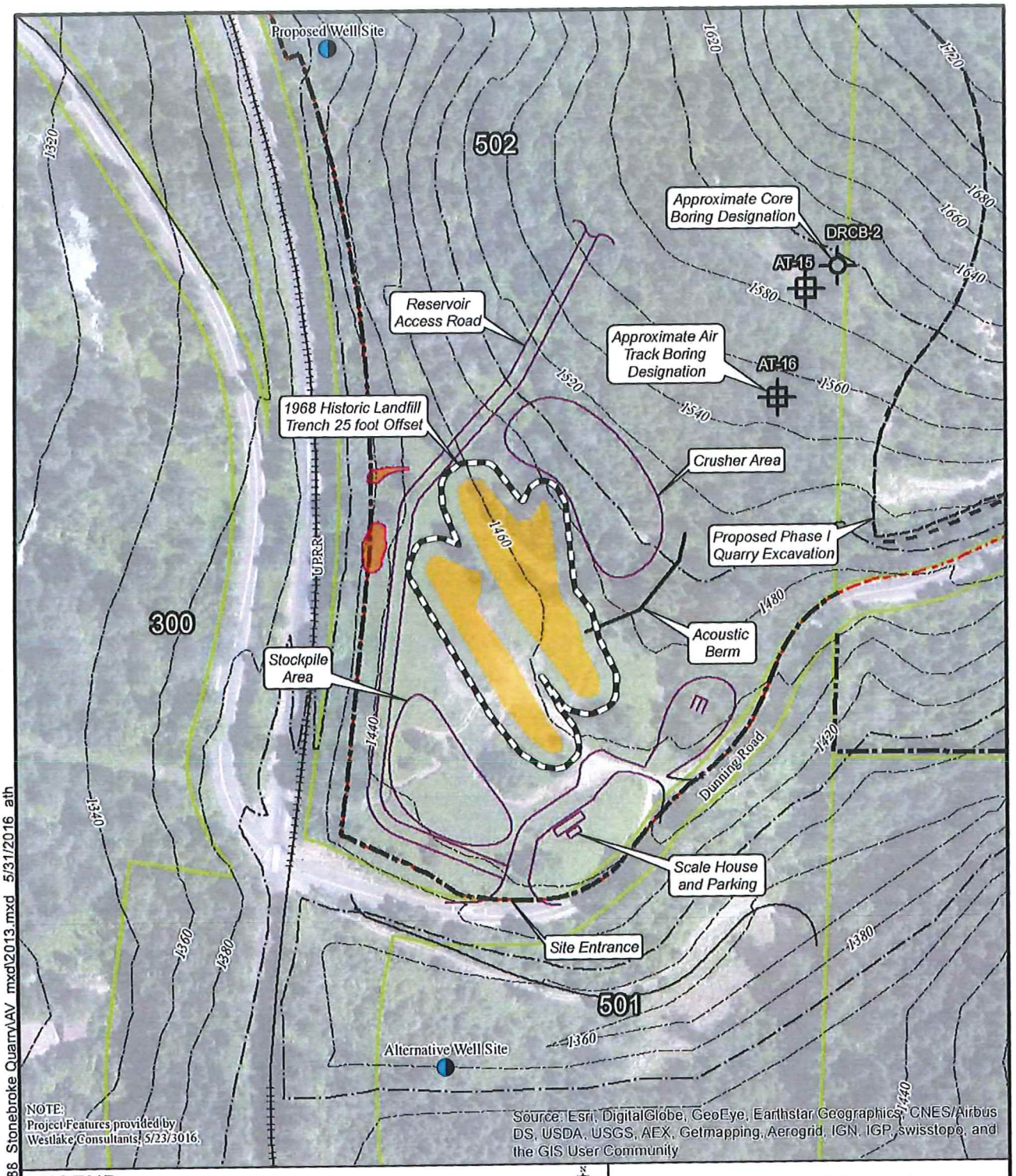
Proposed Well Site
502
Approximate Core Boring Designation
DRCB-2
AT-15
Reservoir Access Road
Approximate Air Track Boring Designation
AT-16
1968 Historic Landfill Trench 25 foot Offset
Crusher Area
Proposed Phase I Quarry Excavation
300
Acoustic Berm
Stockpile Area
UPRR
Dunning Road
Scale House and Parking
Site Entrance
501
Alternative Well Site
1320
1340
1360
1380
1400
1420
1440
1460
1480
1520
1540
1560
1580
1620
1640
1660
1680
1720
NOTE:
Project Features provided by Westlake Consultants, 5/23/3016.
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
LEGEND
Approximate Property Boundary
Mining Permit Boundary
Acoustic Berm
Project Features
Excavation Boundary
Existing Railroad
Phase I Boundary
1968 Historic Landfill Trench 25 foot Offset
Approximate Well Location
1968 Historic Landfill Trenches
Debris Dump Sites (Observed in field by SW)
Existing 100' Major Contours
Existing 20' Minor Contours
Taxlots (provided by Westlake Consultants)
0 100 200 400
Feet
Old Hazeldell Quarry
Oakridge, Oregon
HISTORIC AND PROPOSED LANDUSE
<2013 AERIAL PHOTOGRAPH
May 2016
24-1-03888-015
SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
FIG. 6
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Photo 1 and 2 (left to right): Stainless steel vessel in northern debris dump site

Photo 3 and 4 (right to left): Broken glass in northern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 7

Add File Path to the source files' folder, Date, and Login

Photo 5: Rusting empty gas can next to metallic debris in northern debris dump site

Photo 6: Tire in northern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 8

Add File Path to the source files' folder, Date, and Login

Photo 7: Wire cable adjacent to metallic debris in northern debris dump site

Photo 8: Tank in northern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
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FIG. 9

Add File Path to the source files' folder, Date, and Login

Photo 9: Bed spring in northern debris dump site

Photo 10: Miscellaneous metallics in northern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 10

Add File Path to the source files' folder, Date, and Login

Photo 11: Metallic hopper in southern debris dump site

Photo 12: Miscellaneous metallics in southern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 11

Add File Path to the source files' folder, Date, and Login

Photo 13: Washing machine In southern debris dump site

Photo 14: Drum and metallic debris In southern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 12

Add File Path to the source files' folder, Date, and Login

Photo 15: Cabinet door and miscellaneous debris in southern debris dump site

Photo 16: Rusted drum in southern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 13

Add File Path to the source files' folder, Date, and Login

Photo 17: Light fixture in southern debris dump site

Photo 18: Tank in southern debris dump site

Old Hazeldell Quarry
Oakridge, Oregon

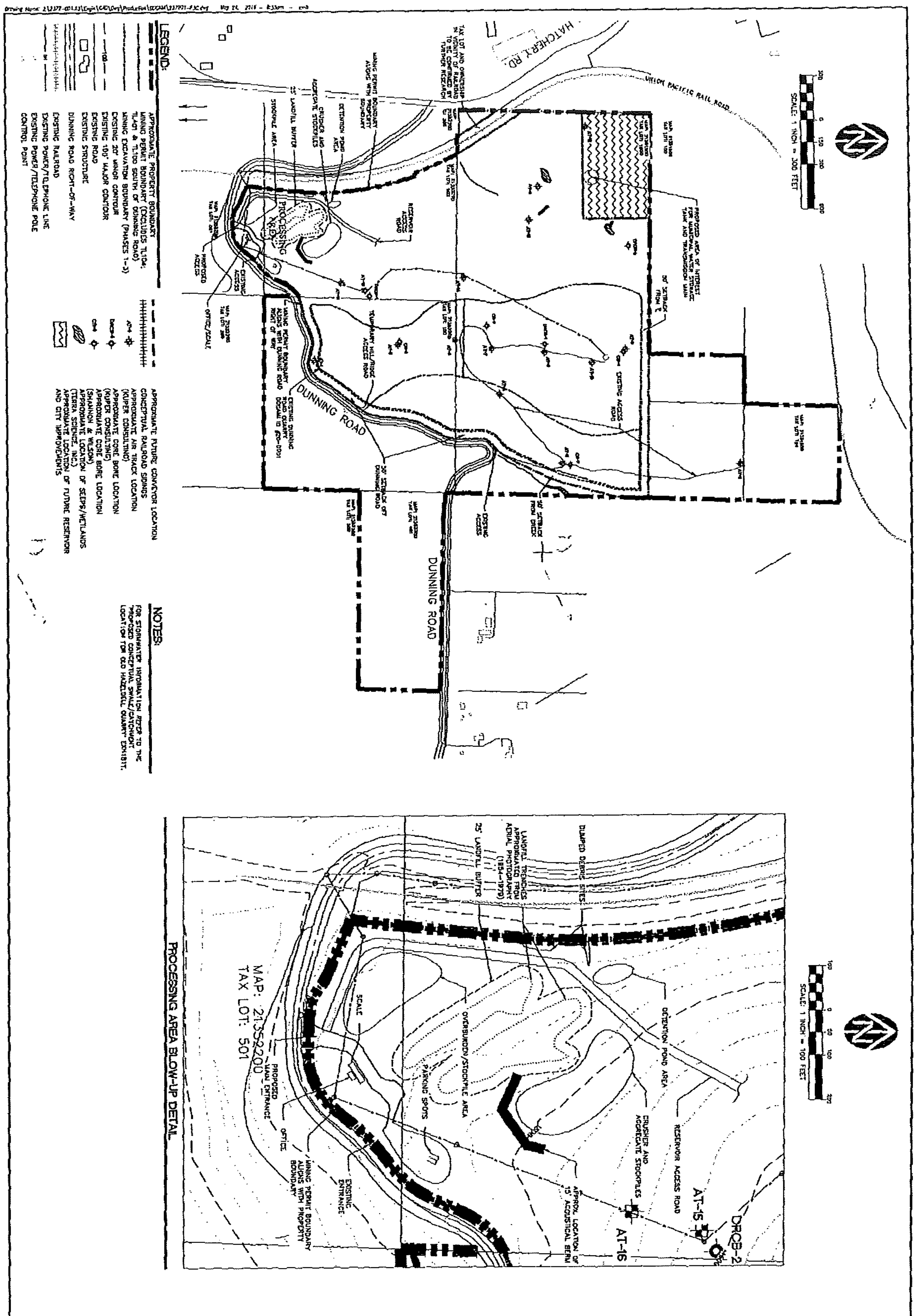
SITE PHOTOGRAPHS

May 2016 24-1-03888-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 14

Add File Path to the source files' folder, Date, and Login



WESTLAKE CONSULTANTS INC	OLD HAZELDELL QUARRY		
ENGINEERING • SURVEYING • PLANNING	DOGAMI ID# 20-0166	PLATE 3C	JOB NO. 2372-001
PACIFIC CORPORATE CENTER, 15115 S.W. SEQUOIA PARKWAY, SUITE 150, TIGARD, OREGON 97224	OAKRIDGE, LANE COUNTY, OREGON		
	SITE PLAN		

NO	DATE	DESCRIPTION		

OCTOBER 2015

memorandum

Date: May 31, 2016

To: Lane County Planning Commission

From: Dorian Kuper, Kuper Consulting LLC, Engineering Geologist

Cc:

RE: Old Hazeldell Quarry

Dear Planning Commissioners,

Old Hazeldell Quarry has revised the Site Plan to reflect AVOIDANCE of the former landfill that is located in the area of the proposed processing site of the quarry, as described in the Shannon & Wilson Technical Memorandum re: Historic Land Use/Tax Lot 502, dated May 31, 2016. The intent is to use the area near the landfill for processing of the aggregate, as well as for a scale house and office. The area of the landfill will be either fenced or otherwise barricaded to bar entry, and such protective structures will be placed 25 feet off the landfill trench locations to further restrict any physical impacts on the landfill. As presented in the Shannon & Wilson Technical Memo of the Landfill dated May 31, 2016, there will be no improvements on the landfill.

The attached revised Site Plan is updated to depict the avoidance of documented former landfill improvements described above. Please replace the Site Plan in Appendix L, Figure 3C; and replace Figures 4 & 6 (Mining Overview, Processing Area, respectively) in the PAPA Goal 5 Amendment Text.

Sincerely,

Dorian E. Kuper

Dorian E. Kuper, Certified Engineering Geologist

Kuper Consulting LLC

From:	Bill Kloos
To:	CARSLEY Taylor H
Cc:	Bill Kloos; Steve Pfeiffer (SPfeiffer@perkinscoie.com)
Subject:	Old Hazeldell Quarry; First Open Record Period; Applicant"s First Submittal - Groundwater/Water Wells/Processing Facility and Landfill/Silca Exposure and Air Quality; Water Demand; Airblast
Date:	Monday, November 4, 2024 1:44:40 PM
Attachments:	2021-102 1517-1538 Mem Shannon Wilson Rebuttal re Grndwater, Landfill, Silica 11.22.2016.pdf 2021-102 2328-2329 Lttr from DSA Acoustical Eng. Inc 4.29.2021.pdf 2021-102 1515-1516 Lttr from Aggr Resources Industries Inc re Water Demand 10.29.2021.pdf

Taylor –

Please include these rebuttal items in the record.

Shannon & Wilson Technical Memorandum: Response to Public Testimony on Groundwater, Wells, Landfill, Silca, and other Specific Items (Nov. 22, 2016). Appendix B to the Application deals with Groundwater and includes an October 30, 2015, Report by Shannon & Wilson. The Shannon & Wilson Technical Memorandum attached here addresses groundwater issues. It describes the hydrologic setting. It documents five borings. It compiles 89 well logs. It documents a hydrogeologic area assessment in the Lowlands, Highlands, and Midlands areas. This Memorandum also examines Blast Vibration. Page 14.

- **DSA Acoustical Engineers, Inc. Letter from Kerrie Standlee to Perkins Coie (April 29, 2021).** This letter to Perkins Coie LLP, summarizes Mr. Standlee's previous expert testimony regarding airblast noise at the quarry. Airblast noise is controlled to an insignificant level if the noise does exceed the level stated in the DEQ noise regulations. The letter also notes that previous board decisions has found air blast noise would be adequately minimized if DEQ standards are met and imposed conditions ensuring those standards would be met.

  This letter also explains that excavation and processing noise would not have a significant impact on residences, with conditioning, based on earlier studies in the record, including:

  - DSA Report (Oct. 13, 2015)
  - DSA Rebuttal Report (May 31, 2016)
  - DSA Rebuttal Report (June 20, 2016)
  - DSA Rebuttal Report (Nov. 15, 2016)
  - DSA Report (Oct. 23, 2018) (addressing a new dwelling)

Lttr from Aggregate Resource Industries, Inc. to Lane County (Oct. 29, 2016). Transmitting evidence related to water needs for dust control.

Bill Kloos
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SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3990 Collins Way, Suite 100
Lake Oswego, Oregon 97035
Phone: 503·210·4750
Fax: 503·210·4890

TECHNICAL MEMORANDUM

TO: **Lane County Board of County Commissioners**
c/o Deanna Wright, Associate Planner

COMPANY: Lane County Customer Service Center
3050 N. Delta Highway
Eugene, OR 97408

FROM: **Gary L. Peterson**
Oregon Certified Engineering Geologist, CEG
Peter J. Shingledecker
Oregon Registered Professional Engineer, PE

DATE: November 22, 2016

RE: RESPONSE TO PUBLIC TESTIMONY, OLD HAZELDELL QUARRY PAPA GROUNDWATER, WELLS, LANDFILL, SILICA, AND SPECIFIC ITEMS OAKRIDGE, OREGON

This submittal provides our final public testimony for Old Hazeldell Quarry (OHQ) PAPA Application. Topics rebutted include a wide range of mine related operations, practices, geology, groundwater, historic landfill, water wells, hazardous materials, and mining impacts. Discussion Topics #1 through Topic #4, address additional information submitted by the public regarding issues discussed in prior testimony. Topic #5 provides rebuttal on specific new testimony received by Lane County before October 24, 2016, at the November 1, 2016 submittal date. Figure 1, attached, presents OHQ's proposed processing area land use with the historic landfill location as mapped by Shannon & Wilson. The Opposition Testimony Table, Table1, provides a matrix summarizing the issues raised, and rebuttal response to certain correspondence, emails, and photographs received by Lane County, and published as part of nine large PDF files referenced as attachments. The file and page numbers of the articles are provided in Table 2. Items outside the scope of Shannon & Wilson's technical role on this application are excluded. The topics addressed herein include:

TOPIC #1: MICHAEL JAMES, RG / GROUNDWATER IMPACTS

TOPIC #2: WATER WELL CONSIDERATIONS

TOPIC #3: PROCESSING FACILITY/LANDFILL

TOPIC #4: SILICA EXPOSURE AND AIR QUALITY

TOPIC #5: SPECIFIC PUBLIC TESTIMONY REBUTTAL

TOPIC #1: MICHAEL JAMES, RG / GROUNDWATER IMPACTS

Michael James, RG, submitted a letter titled *"Critical Review of Old Hazeldell Quarry Proposal,"* on October 30, 2016. Shannon & Wilson reviewed Michael James' letter and provide herein comments, alternate findings, and opinions on specific groundwater and resource quality topics. Kuper Consulting is addressing other topics. Michael James is a Registered Geologist in Oregon (RG), but lacks certification/licensing as a Certified Engineering Geologist (CEG) or Geotechnical Engineer (GE). Kuper Consultants will address many other technical topics in a separate rebuttal letter for the Board.

Additional Borings: On-site exploratory investigation and materials analysis for the Old Hazeldell Quarry (OHQ) have been sufficient based upon industry standards to confirm the quantity and quality of the aggregate resource, to establish the footprint (limits) of the mine, andmeet applicable Goal 5 criteria. But this level of investigation is not sufficient to address specific design topics. For example, Michael James recognized that the complex geometry of the andesite dike will require additional exploration to better plan the excavation shape and reclamation plan to optimize andesite extraction. In fact, various aspects of the quarry will require design attention and reclamation planning after a PAPA is secured. Each of the three mine phases will be designed and mined over a period of many years. The design team will periodically work with DOGAMI, who must approve design modifications and update reclamation plans before work can begin. With more information, design changes can be made

over the years as appropriate. However, for purposes of the required threshold determination of resource quality and quantity, the location and extent of borings undertaken are sufficient to document this conclusion.

Groundwater: Michael James expressed concerns regarding groundwater, including overall groundwater impacts, drainage from TV Butte, and changes to groundwater behavior with the excavation in place. These topics are discussed below.

Michael James expressed concern that changes in groundwater movement surrounding the pit will change, potentially affecting neighbors to the east. Keeping in mind the impact area is designated as a *"Groundwater Quantity Limited Area,"* the lack of groundwater can be attributed to the virtually impermeable and massive Little Butte Volcaniclastic rock. The andesite dike is relatively small, possesses tight joints, and is enveloped by massive tuff which seals it from drainage. This geologic setting provides a high degree of protection against aquifer drainage into the quarry excavation.

Study of the *"Groundwater Report"* shows that four domestic wells lie within the impact area east of the excavation. Only one of these wells is documented in Oregon Water Resources Department well log files. Midlands and Uplands wells are typically 300 to more than 600 feet deep, reaching well below the planned pit excavation depth. Half of these wells produce only 1 to 2 gallons per minute (gpm) which is often only found through deep drilling. Consequently, the radius of influence (water source area) for these wells is quite small because groundwater cannot readily flow through tight joints.

Michael James notes that Shannon & Wilson observed clay film and pyrite that will "slow movement of water through the rock mass." He further notes that mineralization in the joints includes iron and manganese oxide, calcite and zeolites, and, within the andesite, clay fillings and pyrite in andesite groundwater. He then notes the high groundwater levels on TV Butte (about Elevation 1820). Based upon these observations, he concludes that "steady drainage into the pit will occur on all sides".

We believe the opposite is true, as presented in the Groundwater Report, Page 19, "*Pit Seepage.*" This section describes how the tight mineralized andesite joints and clayey mineralized tuff fractures will slowly release a very limited amount of groundwater as seeps. After some

seepage, the groundwater properties of cohesion and adhesion will bond the water to the rock, even under high pressure heads. Consequently, exposed rock surfaces will dry out, but moisture will remain in joints and fractures without complete draining. For this reason, Shannon & Wilson stated, *"Quarry cut slopes can be expected to remain dry (seasonally) at elevations both above and below the adjoining property grade. At depth, in the northern portion of the quarry, groundwater pressures may be sufficient to cause limited seepage near the base excavation limit. No persistent springs are anticipated. At the excavation face, blasting likely will trigger seepage from freshly exposed (and blast affected) joints. However, groundwater movement is restricted by the limited and partially healed network of joints, the lower transmissivity in the surrounding tuff, and the very small aperture of the joint sets."*

TOPIC #2: WATER WELL CONSIDERATIONS

The public expressed concerns that the planned industrial well is not sufficient for quarry operations. Others suggest that an onsite well may deplete Oakridge's water supply.

An industrial "exempt use well" to be permitted by OWRD (ORS 537.545.) can supply sufficient water for dust suppression to serve the quarry excavation, haul roads, and processing area. Operation of the new water well to the maximum daily production of 5,000 gallons is not anticipated to conflict with other groundwater well use in the impact area, given satisfactory performance is demonstrated by production testing of this new well.

Our **Groundwater Report**, (see Reference Index, page 8) describes the Impact Area hydrogeology in terms of "uplands, midlands, and lowlands." Groundwater yields are very poor in the uplands and midlands, but significant at lower elevations below the site in the "lowlands" where glacial outwash and gravel alluvium host productive aquifers along Salmon Creek and the Middle Fork Willamette River. The City of Oakridge well field and Oregon Department of Fish and Wildlife (ODFW) hatchery well tap these productive aquifers.

Quarry operators in western Oregon routinely mine rock and process aggregate on 3,000 to 5,000 gallons per day, as testified by Katie Jeremiah. OHQ cannot pump more than 5,000 gallons per day. Quarry operators focus on water conservation, recycling, temporary holding tanks, or ponds

to supplement their exempt industrial well water to provide moisture control in processing, dust suppression, wheel washes, and watering of plantings on spoil piles.

Water Supply Well. Two alternative water well sites have been identified for the single water supply well planned for the site, refer, ***OHQ Processing Area Proposed Land Use, Figure 1.*** Both well sites are at the western margin between the Midlands and Lowlands Hydrogeology Areas, refer, ***Groundwater Report, 2016.*** Both wells seek to tap porous gravel deposits. No existing wells are near, hence no potential for adverse well impacts exist. We are confident that groundwater resources in this area are sufficient for a satisfactory industrial well.

The City of Oakridge's well field taps Salmon Creek's alluvial aquifer and is over 4,000 feet west of the proposed industrial wells. Oakridge's well field is not discussed in the Groundwater Report because it is far beyond the Impact Area, on the north bank of Salmon Creek, and is too distant for any potential interference from OHQ site water wells.

The City of Oakridge contracted GSI Water Solutions to evaluate potential well field interference from OHQ site development. A separate letter provides a detailed review of GSI's report. In summary, GSI found a low threat of adverse impacts at the well field, but expressed concern about water quality on the OHQ site. Shannon & Wilson, Inc. addressed these issues are addressed in separate letter report titled ***GSI Water Solutions letter review, November XX, 2016.***

Similarly, the ODFW fish hatchery well is about 2,800 feet northwest of the northernmost OHQ industrial well site. Also located in the coarse Salmon Creek alluvial deposits, the ODFW well has an enormous capacity having tested initially at 512 gpm. This high capacity well cannot be adversely affected by a 3.5 gpm well located over half a mile away.

With respect to neighboring wells, our ***Groundwater Report*** documents only three residential wells known to be present in the impact area. One of these wells has an associated OWRD well log on file. The remaining two are not registered. One landowner, Kim Allen, own all three domestic wells inside the impact area, and within the midlands hydrogeology area. This area and the highlands are the focus of Lane County's classification as a ***"Groundwater Quantity Limited Area."*** None to very little impact is anticipated for existing wells due to quarry excavation. Geologically, this is due to the intrusive andesite and its massive impermeable host rock that blocks groundwater flow. A significant spring north of the "red gate" off Dunning road in taxlot

201 is the surface expression of the subsurface dam posed by impervious tuff deflecting groundwater to the south that formed this deeply eroded stream channel. Wells south of the quarry will be unaffected due to the deeply eroded stream channel that bounds Dunning Road. There, groundwater flow emits as a series of springs on the south ravine slope, refer, ***Groundwater Report, Figure 2, Groundwater Evaluation Area.***

TOPIC #3: PROCESSING FACILITY/LANDFILL

Opponent's testimony expressed concerns that the closed landfill in tax lot 502 contains (undocumented) contamination and that quarry processing operations will breach or compromise the integrity of the Dunning Road landfill. Opponent's testimony also focused on undocumented "toxic waste" disposal at this site. No evidence such as photographs or interviews with observers was provided to substantiate opponent's testimony. Figure 1, OHQ Processing Area Proposed Land Use, presents proposed and existing site conditions.

The Oregon Department of Environmental Quality (DEQ) database for the Dunning Road Landfill was reviewed. The subject site is listed as a closed Lane county landfill. No evidence of contaminants has been identified; hence the site is not listed on DEQ's "Confirmed Release Inventory". In addition, DEQ states that there is "no imminent threat", and ranks the site as a medium priority. Mapping developed by the OHQ team was provided on request to DEQ, with the comment that the imagery was the best information available regarding this site.

The Dunning Road landfill was opened by Lane County 65 years ago (1951). It operated as Oakridge's community burning dump for 17 years and was closed in 1968, according to DEQ records. Using historic aerial photographs, we mapped the footprint of two trenches that formed the land filled over its 17 year use.

In addition to the trenched landfill, two sites with metallic debris were observed on site, refer to Figure 1. Based on the aerial photographs, it is clear that these debris sites are not extensions of the trenched landfill. Instead, the collections of predominantly large metallic debris, such as water heaters, empty drums, miscellaneous appliances, tires, bed springs, and other debris associated with residential disposal. Opponents and OHQ team representatives observed the

same debris areas. Discussion with DEQ staff provided an understanding of the most likely source of these debris collections. During the 1950s and 1960s, Lane County staff routinely recovered large debris from ditches and roadside disposal, then hauled them to the nearest dump. As this material was non-combustible and difficult to handle, it was dumped on the ground surface in defined drainages near, but not within the actual landfill. Our observation of two sites with miscellaneous coarse metallic debris provided no indication that the debris was contaminated, now or in the past. The verbal history appears to explain the location, form and materials in the mapped debris dump sites.

As a result, the processing area was reconfigured to protect the known landfill area from surface disturbance. Our generous interpretation of the trench limits, coupled with a buffer of 25-feet minimum to a fenced or blocked perimeter, will prevent public or worker access to prevent any potential for exposure to vapors, if present. Surface runoff and water used for material processing upslope in the processing and crusher area will be collected and conveyed away from the landfill area to prevent infiltration the long buried landfill trenches.

In summary, our field activities and research has disclosed no evidence of an impacted site that would warrant soil or groundwater explorations, removal of materials from the landfill, or avoidance of creating a materials processing operation to as presented.

The OHQ processing area will include a rocked working surface, heavy traffic loads, vibratory equipment, and dust suppression watering, which will be captured and recycled. This effect of the processing area will be to increase the soil density and to reduce groundwater infiltration. In addition, a surface water catchment berm will be constructed immediately upgradient of the 25-foot offset landfill barrier. This berm and associated runoff water conveyance serves two important tasks: First, water sprayed for dust suppression in the crusher area will be captured and recycled, and second, infiltration into the historic landfill will be prevented. The community has no reason to fear adverse impacts from operation of the processing area in the undisturbed ground surrounding the landfill site.

TOPIC #4: SILICA EXPOSURE AND AIR QUALITY

Opponents expressed concern regarding silica exposure to the community.

Dust containing silica is primarily an occupational (work related) health hazard. Oregon's new rules put a focus on reducing silica exposure in the workplace through dust suppression and/or control techniques. Portions of the new rule affecting quarry operations were incorporated in technical memoranda dated October 11, and November 1, 2016.

Oregon OSHA and Oregon MSHA have regulatory authority implemented in "*Adopted Changes to Occupational Exposure to Respirable Silica in General Industry, Construction, and Maritime*" (September 28, 2016). Mitigating silica exposure is a subject of concern and action across the country. OSHA routinely performs unannounced visits to quarries to observe, test, and, evaluate silica hazards. Fines, penalties, and other actions result from poor performance. MSHA has a similar role with a broader focus on other mining related issues.

LRAPA has regulatory authority for Lane County air quality, including fugitive dust emissions. LRAPA must permit the crusher to be used on the property, with a focus on air quality/dust suppression. LRAPA responds to, and investigates neighbor complaints if adverse air quality impacts are reported. Similar testing for dust deposition and silica content may be performed by LRAPA.

OHQ has committed to adhere to LRAPA requirements in written testimony from Arctic Engineering, LTD, dated November 11, 2015, May 23, 2016, and November 1, 2016. The Old Hazeldell Quarry project *"will fully comply with the air quality standards imposed by Lane Regional Air Protection Agency (LRAPA) of a General Air Contaminant Discharge Permit (ACDP) for an aggregate sizing operation and all associated mining activities - AQGP-008 for stationary aggregate screens and material handling activities, in accordance with Oregon Revised Statues (ORS) 468A.040 and incorporated into Oregon Administrative Rules (OAR) 340-216-0060 by the Environmental Quality Commission in the State of Oregon."*

Arctic Engineering, LTD, has also prepared and submitted an additional **Fugitive Dust Mitigation and Daily Reporting Plan** on June 12, 2016, that Old Hazeldell Quarry, LLC has agreed to subject itself to which imposes operational obligations beyond the air quality

requirements of the LRAPA Air Quality Permit for its Aggregate Crushing operations prior to commencing operations at the quarry. In these measures, neighbors can be assured that onsite operations will avoid convlicts from fugitive dust.

TOPIC #5: SPECIFIC PUBLIC TESTIMONY REBUTTAL

The following categories address specific public testimony received following November 1, 2016. Numbers indicate Lane Counties "Attachment" number as posted on their website:

"RESPONSE TO PUBLIC COMMENT REGARDING SILICA (14)

Kathy Pokorny submitted a 5 page letter with 9 attachments October 23, 2016, designated Attachment 14 by Lane County staff. Topics addressed three OHQ presenters, Mr. Peterson's testimony is addressed here. Shannon & Wilson have addressed silica concerns in the two following ***Tech Memo's***:

- **October 11, 2016, Tech Memo: Response to Public Comments regarding Silica**
- **November 1, 2016, Tech Memo: Topic #1: Silica Exposure and Air Quality**

Kathy Pokorny expressed concern that OHQ had not addressed silica earlier, and that OSHA focuses on occupational (worksite) safety, not public safety. Business compliance with OSHA is mandatory, and rules have existed for decades to reduce worksite silica exposure. New Oregon silica rules focus more attention on this occupational health hazard because industrial exposure is where long term health issues arise, and history has shown that the hazard can be controlled through practical means. This issue was not addressed in public hearings because managing silica exposure is a regulated workplace requirement.

Kathy Pokorny questioned the effectiveness of "watering" and suggested silica dust will be washed "into the Willamette River," as well as into Oakridge. Silica represents a hazard only through respiration of dust into the lungs. Oregon OSHA rules require the use of water spray as a fundamental mitigation for dust containing silica in industrial and mine environments. Fugitive dust leaving the OHQ site is best controlled proactively by watering at the source, whether it be a roadway, borehole, or crusher. LRAPA must inspect the crusher onsite before it is licensed to operate, with a specific focus on mitigation of silica hazards. As mining proceeds, LRAPA will

respond to reports of dust emanating from the quarry site and can assist in sampling, testing, and mitigation.

Silica exposure is present world-wide as SiO_2 is the second most common material on earth, only surpassed by feldspar minerals. Mitigation methods are successful and routinely employed. OHQ will not measurably increase the exposure to neighbors. Should violations occur that impact air quality, neighbors have a voice with LRAPA.

RESPONSE TO PUBLIC COMMENTS REGARDING INDUSTRIAL WELL (14)

Kathy Pokorny expressed concern that OWRD's allowable 5,000 gpd industrial water well limit is inadequate, designated Attachment 14 by Lane County staff. She also was concerned that a new well would affect a neighboring well (Kinyon's) some 1,400 to 2,900 feet northwest of proposed well sites. Shannon & Wilson addressed industrial well concerns in the following ***Tech Memo's***:

- **May 31, 2016, Tech Memo: Topic #2: Conflicts with Neighboring water wells**
- **May 31, 2016, Tech Memo: Topic #4: Water Supply for Site Use**
- **November 1, 2016, Tech Memo: Topic #2: Water Supply Well Discussion**

Shannon & Wilson's Groundwater Report, Oct. 30, 2015, identified and categorized three groundwater impact areas designated "Highlands," "Midlands," and "Lowlands" based on their similar geology and well characteristics, refer Tables 1 – 3, Groundwater Report. The highlands and midlands areas display very limited groundwater in very deep wells and is designated as "Groundwater Quantity Limited" by Lane County. Professional geologist involvement is required to site new wells in this area.

The "lowlands" area is very different, with a few high production wells, such as City of Oakridge well field and those serving the USFW hatchery. The lowlands geology is dominated by glacial outwash and recent stream gravel deposits that form large aquifers in stream floodplains. The OHQ water supply well (exempt industrial well) will be targeted to tap alluvial and/or glacial deposits at the boundary between these impact areas. These wells can produce hundreds of gallons per minute (gpm). But OHQ must abide by OWRD's maximum daily pumping rate of 5,000 gallons per day, or about 3.5 gpm.

Two potential well sites are being considered for the single OHQ well, and these locations have been presented on figures showing the processing area since May 2016. Both potential sites are far from and downgradient (below) neighbor's water wells. Consequently, no influence on water quality or quantity will be noted, including the Kinyon well site some 1,600 feet from one site. Both target glacial or alluvial deposits at elevations typical for "lowlands" deposits. The November 1, 2016, Tech Memo, Topic #2, provides a more comprehensive discussion of OHQ's water supply well.

BLASTING IMPACTS (18)

The Durands inquire about blasting impacts to facilities outside the quarry excavation, designated Attachment 18 by Lane County staff. They specifically ask if blasting can open cracks that extend through TV Butte to the west slope or landfill area. Concern is expressed about crusher vibrations near the landfill and about the processing area entry from Dunning Road. Shannon & Wilson addressed blasting impacts in the following ***Tech Memo's***:

- **May 31, 2016, Tech Memo: Topic #3: Adverse Impacts from Blasting**
- **June 21, 2016, Tech Memo: Topic #2: Blasting Impacts**

Quarry blasts are designed and performed by specialists to fracture and dislodge competent rock for processing. Numerous boreholes and explosive charges sequenced by delays are used to develop a progressive explosion that lifts, fractures, and slightly displaces intact rock to ease excavation, handling, and crushing. Blast induced fracturing of rock typically extends several feet to a few yards into a rock mass, depending on blast design. Fractures do not extend significant distances (tens or hundreds of feet). Blasting will not fracture or displace soil or rock on the west flank of TV Butte. The closest quarry blasting is about 500 feet from the historic landfill. No discernable impacts will occur at the landfill and processing areas. Lane County conditions require notification of neighbors regarding pending blasts.

Blasting activities shall comply with the federal Mine Safety and Health Administration (MSHA), 30CFR criteria. The Oregon State Fire Marshall provides oversight regarding the use of explosives in Oregon. An experienced blasting consultant will develop site specific blasting plans for Old Hazeldell Quarry. Monitoring of each rock blast is an industry standard in Oregon, and is routinely reviewed by DOGAMI in the event of a complaint. Blast records are maintained typically for 2 years. Based upon our expertise and industry experience, we believe that such

mandatory compliance will ensure that any blasting impacts to off-site properties will be insignificant.

"Active Faults" (18)

The Durands viewed and submitted DOGAMI online hazard maps which show faults along Hills Creek and Salt Creek east of OHQ, designated Attachment 18 by Lane County staff. Study of geologic maps of the area reveals many other mapped faults. The Durands ask how blasting might affect these mapped faults. Shannon & Wilson addressed seismic risk in the following ***Tech Memo***:

- **May 31, 2016, Tech Memo: Topic #1: Seismic Hazards / Faults**

It is incorrect to consider mapped faults "active" without further research. Many faults, including those near Oakridge, were investigated during the early 1980's to identify any evidence of seismic activity in the Late Quaternary period, i.e. past million years. Faults that have slipped during this time are often considered active. The United States Geological Survey (USGS) maintains the national database of faults classified by age of activity.

The following link shows all faults in the western US with Late Quaternary activity: https://earthquake.usgs.gov/hazards/qfaults/map/#qfaults. The USGS fault database lists the nearest "active faults" some 24 to 33 miles from the site. Quarry operations, including blasting will have no impact on these faults.

DOGAMI EARTHQUAKE HAZARD MAPS (42)

Designated Attachment 42 by Lane County staff, Kim Allen viewed DOGAMI's online hazard maps and present screen shots that show faults along Hills Creek and Salt Creek east of OHQ designated in the legend as "Active Faults." Study of these and other geologic maps of the Oakridge area reveals many other mapped faults, including some through US Army Corps of Engineers dams. Kim Allen asks if quarry operations are an incompatible land use given these geologic hazards. Shannon & Wilson addressed seismic risk in the following ***Tech Memo***:

- **May 31, 2016, Tech Memo: Topic #1: Seismic Hazards / Faults**

As discussed above, the USGS fault database is the standard for seismic hazard evaluations and design. DOGAMI's online hazard viewer provides the public a tool to view Oregon specific geologic mapping, some of which was completed years ago. Faults identified by Kim Allen in the DOGAMI mapping tool are no longer considered active by the USGS. As noted above, USGS known "active faults" are, at their closest, some 24 to 33 miles from the site. No active faults are known near Oakridge.

DOGAMI LANDSLIDE HAZARD MAPS (43)

Kim Allen viewed DOGAMI's online hazard maps and presents screen shots that show relative landslide hazards for the quarry are ranging from "High" to "Very High." Kim Allen asks if quarry operations are an incompatible land use given these geologic hazards.

Shannon & Wilson completed explorations, reviewed extensive historic aerial photograph study, and completed numerous field reconnaissances of the OHQ site. No evidence of active or old ground movements due to landslides were noted by seven Oregon Registered Geologists who spent time onsite.

Landslide hazards maps are generated using remotely sensed imagery and interpretation. The result is a relative hazard assessment. DOGAMI's online hazard viewer represents the quarry area as "***moderate***" to "***high landslide susceptibility***." However, Review of the "***Landslide Inventory***" map layer discloses **no landslides** on or near the OHQ site. This finding agrees with staff observations of no unstable slopes. Shallow competent bedrock and the lack of weak soil horizons do not allow landslides to form. Landslide hazard is not defined solely by classification as a "moderate" or "high **susceptibility.**" Susceptible slopes only fail if weak or adverse soil or rock conditions underlie the susceptible slope. No existing landslides or elevated landslide hazard exists at this site.

Design of stable quarry slopes is an important final design concern for operators and DOGAMI, whose geologists review slope designs and other operational issues. DOGAMI will review mine plans for stable slope designs, and be informed if changes are necessary.

HISTORIC LANDFILL CONCERNS (47) and **DEQ response** (52)

Kim Allen expressed concerns regarding the historic landfill, and filed a claim with DEQ. Shannon & Wilson addressed landfill issues in the following documents:

- **May 31, 2016, Tech Memo: Historic Land Use Study** – Landfill and Debris Study
- **June 21, 2016, Tech Memo:**
  - **Topic #1: Former Dunning Rd Landfill & Metallic Debris Study.**
  - **Topic #4: Processing Facility Near Landfill**
- **November 1, 2016, Tech Memo:**
  - **Topic #3: Processing Facility Impacts on Landfill**
- **November 22, 2016, Tech Memo:**
  - **Topic #3: Processing Facility / Landfill**

Email testimony submitted by Kim Allen provided attachments from DEQ, partial minutes from Oakridge City Council Meeting, May 18, 2011, and Warranty Deed for Stonebroke LLC. Oakridge city council minutes address sale of TL 500 to Stonebroke LLC. The Deed prohibits the use of "ground engaging equipment" in the lower 1/3 of the parcel. By filing a complaint with DEQ (most likely in May 2016), Kim Allen triggered DEQ staff to screen the Historic Oakridge Landfill. DEQ designates the site as #6108 in DEQ's ECSI database. Status provided online included: ***"no known contamination," "medium priority,"*** and ***"appears to be no imminent threat"***.

Despite this, Kim Allen states as a fact, "***As we know, this former Lane County landfill owned by Pope & Talbot Lumber Co was used as a dump site for chemicals used in the mill.***" No factual evidence has been disclosed that confirms drums or buckets containing chemicals were disposed in this community burn dump. The landfill was closed in 1968 prior to Pope & Talbot's closure. Pope & Talbot had other dump sites in the vicinity that might have taken chemical waste. DEQ refers to landfill as the "City of Oakridge Landfill" or "Historic Oakridge Landfill". Early documents indicate that the landfill was referred to by Lane County as the "City of Oakridge Burning Dump." OHQ team documents have been posted to the DEQ website, including the processor area design and Shannon & Wilson's ***Historic Land Use*** Tech Memo (May 31, 2016).

Shannon & Wilson performed an historic airphoto study (1944 to 2011) documenting onsite operations between the early 1950s and closure in 1968. The landfill, consisting of two excavated trenches, operated from 1951 until closure in 1968, as discussed and illustrated in the "**Historic Land Use Study**" Tech Memo. The June 16, 2016, **Tech Memo, Topic #1: Former Dunning Road Landfill**," provides additional information and discusses the history and characterization of the historic dump. Field reconnaissance disclosed no surface expression of the landfill area identified through historic air photos. Two areas of metallic debris were also identified to be separate from the landfill area. No indication of site contamination or groundwater seepage was observed at either location, or in slopes extending down to UPRR Railroad. Regarding the two Metallic Debris areas, we understand from Lane County staff that during the 1950s and 1960s, debris dumped on local road shoulders was routinely picked up and transported by County Staff to a nearby landfill. Debris recovered typically included awkward and heavy metallic household items, not industrial waste. The two metallic debris areas were separated from the landfill trenches.

As a "burning dump," the site received residential and community trash from Oakridge area residents. Debris dumped in the trenches was routinely burned. Alleged chemical waste dumped in the landfill (if it occurred) would have been subjected to periodic burning. Such burning of many chemical waste products would likely incinerate at least the volatile components of the waste, leaving a non-soluble residue. Such residue is typically not subject to natural transport by seepage or vapors.

Closure: In summary, OHQ design team has identified the landfill location, evaluated its history of use and associated risks, and refined the processing area design to protect the landfill from inadvertent disturbance in accordance with the deed requirements. The presence of the landfill and metallic debris dumps is incorporated into the project design. A barrier or fence will protect the area from equipment access, and surface water will be managed to avoid infiltration near the landfill site. DEQ acknowledges that no known contaminants or eminent threat exist. Impacts have been assessed from the proposed crusher, processing areas, stockpiles, and trafficked areas, as well as those occupied by staff and public sales. We are confident DEQ will accept these measures as sufficient to protect onsite workers from landfill materials, effluent, or vapors.

ENFORCEMENT OF SILICA RULES: (51)

Michael Garvin states that there is *"no mechanism whereby the quarry would have to halt should silica particulate be greater than estimated, or the mitigation measures (spraying water) inadequate to the task."*

Oregon OSHA and MSHA routinely inspect and test quarry sites for occupational exposure to silica. LRAPA responds to air quality complaints and can initiate testing and mitigation. New OSHA silica rules are backed up by enforcement, including citations, correction orders, staff assistance, and civil penalties, refer, Shannon & Wilson, November 1, 2016, Tech Memo.

DUNNING ROAD PAVEMENT CONDITIONS (Alleged to be landslide related)
(52, 53, 54, 55, 60, 61, 62, and 64)

Kim Allen submitted a series of emails, each with photographs of pavement cracks purportedly on Dunning Road near the proposed OHQ quarry. In her transmittals, she alleges these photographs show the impact of landslides impacting Dunning Road. The first set of photographs (attachment 52) show a relatively small scale (few square feet in area) arcuate area of pavement distress and patching, as well as an unpatched longitudinal pavement cracks near the road shoulder. The roadway pavement appears to lie very near a steep slope decline. Settlement on the order of inches may occur locally. Areas of repeated repairs are obvious. Although the roadway shoulder (likely a fill section) is settling over time, no landslide evidence is present.

Additional emails and photos (attachments 53, 54, 55, 60, 61, 62, and 64) show longitudinal shoulder cracks in the pavement very close to the top of a steep slope. Settlement on the order of an inch appears likely in email 53. Areas of repeated repairs are **not obvious**. Subsequent attachments show pavement cracks both parallel and transverse to the centerline. Settlement appears negligible. Areas of repeated repairs are not apparent. Dunning Road surface appears generally good. Transverse cracks appear to be of low severity.

The photographic evidence provided indicates solely typical pavement cracks from aging pavement. Close proximity to steep slopes is responsible for some longitudinal and arcuate

cracks and may require minor reconstruction of the roadway shoulder, with the possible need for a low height retaining wall for the small arcuate disturbance.

In our professional opinion, nothing in the submitted pavement photographs suggests landslide activity adversely impacting Dunning Road.

SUMMARY TESTIMONY RE: OTHER DISCHARGES - EARTHFLOWS (63)

Kevin Mathews, Planning Consultant, authored a document designated Attachment 63 for the Oakridge Area Neighbors, titled "Summary Testimony on Old Hazeldell Quarry Application," dated November 1, 2016. Page 5 of that document begins a discussion on **"Other Discharges – Earthflows."** The text indicates a ***"great number of active earth flows all across the site"*** should qualify as ***"other discharges."*** Kevin Mathews further comments that slope stability considerations were ignored. As discussed above, over the past 2 years, our geology team have identified no landslides, debris flows or other evidence of unstable slopes. Kevin Mathews turns to LIDAR images to make this case. The first image appears to be an accurate portrayal of site topography, streams, and manmade features. The second image, with 12 interpretive arrows, reflects someone's interpretation of an "earthflow pattern" indicating hazards radiating outwards from all sides of TV Butte.

Simply put, the interpretation of earthflows on this base topographic setting is completely incorrect. The slopes are stable and display no landslides or earthflow features. Shannon & Wilson and Kuper Consulting engineering geologists routinely interpret LIDAR imagery for unstable slopes. Nothing in our review of this LIDAR image suggests a debris flow or other unstable slope features. The interpretive arrows follow resistant ridges between stream channels. No head scarps, irregular earth surface, or debris piles at the arrow's tow define classic earth/debris flows features.

The inferred earthflow interpretation has no technical merit and appears unprofessional. Our team of seven experienced registered geologists and engineering geologists identified no active or inactive earthflow or landslide features in the quarry or processing areas. Published geologic maps (USGS, Corps, and DOGAMI) represent no known landslides or earthflows on the OHQ site.

PAVEMENT CRACKS VS. EARTH FLOWS (63)

Two photographs of pavement cracks were submitted by Kevin Mathews. Both are transverse at right angles to the centerline. One contains an apparent cut slope in the background. The pavement photos offer no evidence of landsliding. No cause/effect relationship exists between the pavement cracks and arrows symbolizing earthflows in the prior images. No credible evidence has been provided to confirm landslide hazards in the area. Surficial soils on both cut and fill slopes may settle under shoulder pavement.

Attachments: Document Reference Index & Topics
Figure 1: OHQ Processing Area Proposed Land Use
Table 1: Rebuttal of Testimony through Nov. 1, 2016

DOCUMENT REFERENCE INDEX & TOPICS

Shannon & Wilson, Inc., prepared two technical reports in 2015 to assist the design team in preparation for Old Hazeldell Quarry LLC's PAPA application. During Lane County hearings, Shannon & Wilson has submitted six Technical Memoranda (including this one) and a single letter addressing areas of specific interest or controversy during the hearings. These Shannon & Wilson documents listed below, and reference numbers are provided that were used to reference sources in Table 1:

1 ➢ **"Subsurface Investigation Report,"** dated June 5, 2015

2 ➢ **"Groundwater Report,"** dated October 30, 2015.

3 ➢ **"Geology and Hydrogeology Issues,"** May 31, 2016, including:
- 3.1 Topic #1: Seismic Hazards
- 3.2 Topic #2: Conflicts with Neighboring Water Wells
- 3.3 Topic #3: Adverse Impacts from Blasting
- 3.4 Topic #4: Water Supply for Site Use
- 3.5 Topic #5 (incorrectly labelled "6"): Surface Water Runoff Impacts

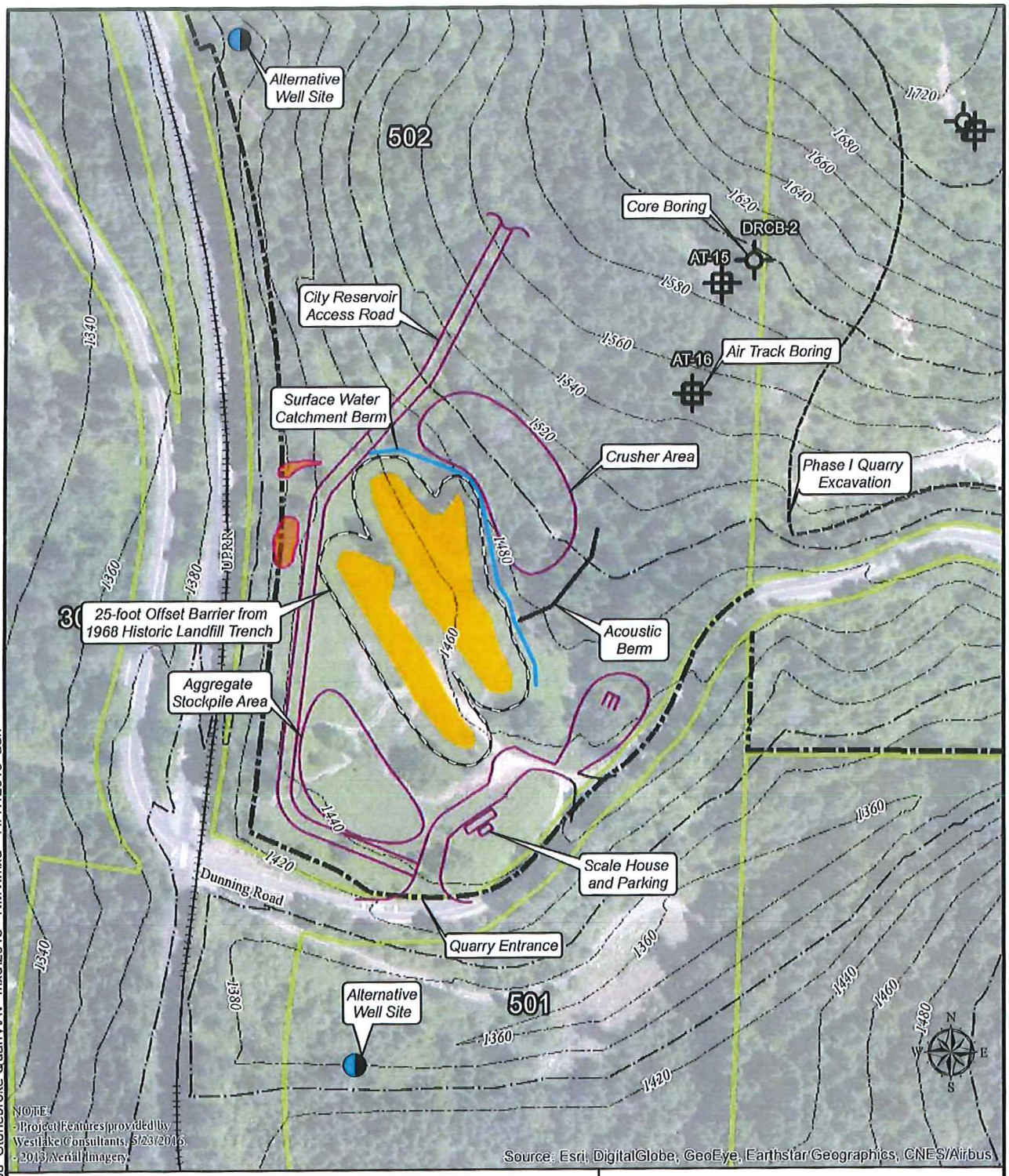
4 ➢ **"Historic Land Use Study,"** May 31, 2016, including:
- 4.1 Former Dunning Road Landfill & Metallic Debris Study
  - 4.1.1 Figures 1 – 6: Aerial Photographs, Historic and Proposed Land Use
  - 4.1.2 Figures 7 – 14: Site Photographs (debris dump sites)

5 ➢ **"Geologic and Environmental Issues,"** June 21, 2016, including:
- 5.1 Topic #1: Former Dunning Road Landfill
  - 5.1.1 Figure 1: Historic and Proposed Land Use
  - 5.1.2 Figures 2 – 5: Debris Dump Site Photographs
- 5.2 Topic #2: Blasting Impacts
- 5.3 Topic #3: Noise Berm
- 5.4 Topic #4: Processing Facility Near Landfill
- 5.5 Topic #5: Contamination by Explosives

6 ➢ **"Response to Public Comments Regarding Silica,"** October 11, 2016

7 ➢ **"Rebuttal of Written and Verbal Public Testimony"** November 1, 2016
- 7.1 Topic #1: Silica Exposure and Air Quality
  - 7.1.1 Table 1: OSHA Administrative Order 4-2016
- 7.2 Topic #2: Water Supply Well Discussion
- 7.3 Topic #3: Processing Facility Impacts on Landfill
- 7.4 Topic #4: Rebuttal to Specific Public Comments

8 ➢ **Rebuttal of Written and Verbal Public Testimony,** November 22, 2016
- 8.1 Topic #1: Michael James, RG Groundwater Impacts
- 8.2 Topic #2: Water Well Considerations
- 8.3 Topic #3: Processing Facility/Landfill
- 8.4 Topic #4: Silica Exposure and Air Quality
- 8.5 Topic #5: Specific Public Testimony Rebuttal
- 8.6 Table 1: Opposition Testimony



LEGEND

- Approximate Property Boundary
- Catchment Berm
- Acoustic Berm
- Project Features
- Taxlots (provided by Westlake Consultants)
- Existing Railroad
- Phase I Boundary
- 1968 Historic Landfill Trench 25 foot Offset
- Approximate Well Location
- 1968 Historic Landfill Trenches
- Debris Dump Sites (Observed by S&W)
- Existing 100' Major Contours
- Existing 20' Minor Contours

0 50 100 200 Feet

Old Hazeldell Quarry (OHQ)
Oakridge, Oregon

OHQ PROCESSING AREA
PROPOSED LAND USE
WITH HISTORIC LANDFILL

November 2016 | 24-1-03888-015

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS | FIG. 1

Document Path: T:\Projects\24-1\3888_Stonebroke Quarry\AV_mxd\2013 - NMV.mxd 11/17/2016 aeh

TABLE 1: REBUTTAL OF OPPOSITION TESTIMONY:

GEOLOGY, GROUNDWATER, ENVIRONMENTAL CONTAMINANTS
Submitted through November 1, 2016

Submitted by — and page reference	Reference	Technical Papers / Online Publications / Email / Written Documents	Content Description	Rebuttal Comments	Finding	Additional Comments
Petersen Letter re: 825a and 826a Industrial well Attachment 14	6.0 - 7.1 - 8.4	Document raises concerns/testimony from these witnesses, Ms. Kapor, Mr. Peterson and Mr. Wilson, listed with Peterson the Property is addressed here.	Ms Petersen expressed concern that OSHA Rocks on occupational (worksite) safety, not public safety. She also questioned the effectiveness of "watering" and requested data that will be tracked – into the Willamette River, as well as Ostridge.	Shannon & Wilson's letter dated Oct. 11, 2016 Shannon & Wilson Technical Memorandum "response to Public Comments regarding Offer". LRAPA responds to all quality concerns including effects of dust suppression.	OSHA will respond to comparable worksite concerns, including Ridge at OHQ. Ostridge is committed to meet LRAPA rules regarding fugitive protection, and in addition submitted an additional fugitive "Dust Mitigation and Daily Reporting Plan"	Controlling fugitive dust by water sprinkling extended 50 ft beyond paths on the OHQ property right? Currently reduces it beyond the limits of the
Attachment 14	7.0 - 8.2 - 8.4 - 8.5 - 8.6		Ms Petersen expressed concern that OAR 333 allowable 5,000 gpd industrial water well limit is inadequate. She also was concerned that a new well would affect neighboring wells (Hayes) some 1400 to 2600 feet NW of proposed well sites.	Shannon & Wilson's Oct. 20, 2015 Groundwater Report, identified and studied known wells in District as the "study wells" and "key wells". The finalization of the water supply well will be targeted in map shown at end per GSD depictions in the hazards for Phase 1 Property well.	No influence on water quality or quantity will be noted at the Hayes well like from other OHQ wells. No other proposed wells are greater than one well of concern.	
Outdoor amplified blasting, vibration and airborne rocks Attachment 18	3.0 - 3.3 - 5.2 - 5.4 - 5.5	The Durand Reader about blasting rocks outside the quarry operation and rocks or debris near the landfill.	Ms Durand and Blasting consultants presented through TV Rocks to the west slope or landfill area. She expressed concern about the quarry activity and not the processing plant.	Quarry blasts are designed and performed by specialists to fracture and dislodge competent rock for processing. Increments, boreholes and explosive charges sequenced by delays are used to develop a progressive blast with fire, fractures, and slight displacement rock to ease excavation, handling, and crushing.	Blasts caused fracturing of rock typically extends several feet on a blast with a rock scan, depending on blast design. Fractures do not extend significant distances (tens or hundreds of feet). Blasting will not fracture or displace soil or rock on the west flank of the Butte. The closest property boundary is about 500 feet from the blasting limits.	Since Currently consultants require notification of neighbors regarding pending blasts.
Attachment 18	3.1 - 3.3 - 5.2 - 7.6	DOGAMI active hazard maps show active faults on Mill Creek and Salt Creek, and west of Corvallis. How will blasting affect these faults?	DOGAMI active hazard maps show faults along Mill Creek and Salt Creek east of OHQ. Study of geologic maps of the area reveals many other mapped faults.	It is incorrect to consider mapped faults "active" without evidence. Geologically recent displacement or known historic earthquakes must support "active" status. The USGS national fault database classifies by activity. To be considered as active fault for design and construction, the USGS must first list as such.	May 31 Tech Memo, titled Geology and Hydrogeology Issues, Topic #1: Seismic Hazards / Faults, addresses common seismic design criteria and local seismic risk. Key findings are the debunking of the EDL as a seismic threat, where "no evidence was found that any faults along the EDL within the Western Cascades has been active in the current tectonic era."	The USGS fault database lists the closest "active faults" some 24 to 33 miles from the site. Quarry operations, including blasting will have no impact on these faults.
Ellen Allen, email Oct. 31, 2016 re: Plan Area Change & Zone Change Attachment 31	3	Disputed water well location.	Ms Allen understood Mr. Peterson's testimony Oct. 11 to refer to a 30 gpm well near her property. She disputed the location and corrected the ownership.	It's possible to correctly apologize. I recognize the well shown as a "landlords well" located NW of the OHQ proposed processing area.	The well described was the Hayes Well, #31873 on Fish Hatchery Road. This well was drilled 139 feet deep, with a static water level 101' below.	Ms. Allen is correct in the ownership and details of the well referenced.
Ellen Allen, email Nov. 1, 2016 - Attachment 42	2.0 - 2.0 - 3.1	DOGAMI Oregon Statewide Hazards Viewer, an online tool for public use. Earthquake Hazards	Study of the Impact Area using DOGAMI's Hazard Viewer shows "strong to Very Strong amplitude" ground motion hazard, and landslide hazard "High to Very High".	Refer, May 31, 2016, SEW Tech. Memo. Topic #1: Seismic Hazards / Faults. Current seismic design criteria and local seismic risk are discussed. Statewide geologic hazard maps provide a basis for identifying potential hazards but are not to be relied upon as a public tool to accurately determine the relative earthquake ground motion intensity or landslide potential compared to neighboring areas.	Seismic hazards for infrastructure and major structures are evaluated on a site specific basis, refer, Topic #1, May 31 memorandum. ODOT investigations for bridge replacements within 12 miles of the site disclosed the nearest "potentially active" faults are about 24 miles from OHQ's site.	Earthquake hazards reflect Quaternary faults within a 50 mile radius of the site. Closest potentially active faults are about 24 miles from the OHQ site. Last activity on these faults are on the order of 15,000 to 130,000 years ago.
Ellen Allen, email Nov. 1, 2016 Attachment 43	2.0 - 2.0 - 3.1	DOGAMI Oregon Statewide Hazards Viewer, an online tool for public use. Landslide Hazards	Using DOGAMI's Hazard Viewer it clearly the OHQ site to be "at high to Very High" susceptibility due to the steep slopes. Ms. Allen suggests incompatible landslide geologic hazards.	Landslide hazards are often mapped using remotely sensed imagery and interpretation. Published geologic maps identified no active or historic landslide features on the OHQ property.	Define geologic hazard zones, like DOGAMI's Hazards, provide general hazards based on slope and geology. Quarry slope stability design is an important fault design concern for operations and DOGAMI who reviews slope stability designs and operational issues. Landslide risk in the processing area is considered to present slight risk of grading or excavation.	Site specific investigations, hazard assessments, and designs are developed by registered professionals who recognize and address these hazards. DOGAMI will receive mine plans for state's input during design.
Ellen Allen, email Nov. 1, 2016 Attachment 47	4.0 - 4.1 - 4.2 - 5.0 - 5.1 - 5.1.1 - 5.1.2 - 5.4 - 7.3 - 8.3	Email by E. Allen with attachments from DEQ, Partial minutes from Ostridge City Council Meeting May 18th, 2011, and Warranty Deed for Stonebrake Property	My Allen stated "As was Law of the Jungle Linn County landfill owned by Pope & Talbot Lumber Co. was used as a dump site for chemicals and the mill."	Ownership title report is incorrect. Ownership included: City of Oakridge, Stonebrake LLC.	DEQ refers to landfill as the "City of Oakridge Landfill" or "Asbestos Oakridge Landfill". DEQ designates the site as 31 Type B ESI database.	The City of Oakridge Burning Dump was closed and covered in 1968. Per DEQ - No contamination is known. No investigation of this is apparent.
Attachment 47			Deed prohibits the use of "ground excavating equipment" in the lower 1/3 of the parcel.	Pope & Talbot had other dump sites in the vicinity, and one site was 200 feet west and 175 feet lower than OHQ's property.	No formal evidence has been disclosed that contains known toxic/hazardous chemicals were disposed in the community burn dump. Per DEQ - No contamination is known. No treatment is apparent.	Waste, burning chemicals into the landfill would result in many hydrocarbon (distillate) volatile compounds. Metals are not volatile or reactive. Such residue is typically not subject to removal or capture.
Attachment 47			Ostridge only received notice regarding sale of 1/3 $30 to Stonebrake LLC: Lower 1/3 of the parcel prohibits the use of ground excavating equipment	The survey's mapping is incomplete. The survey did not close to satisfy the definition of term. A new deed was submitted to County Records with corrected survey and land description by Mark Bender, Nov. 1, 2016	Staff performed an historic aerial photo search to identify and map the landfill location and progression of use. Two separate areas of metal debris were identified.	No indications of contamination or groundwater seepage was observed across the site.

TABLE 1: REBUTTAL OF OPPOSITION TESTIMONY:

GEOLOGY, GROUNDWATER, ENVIRONMENTAL CONTAMINANTS

Submitted through November 1, 2016

Submitted by – and page reference	Reference	Technical Papers / Online Publications / Email / Written Documents	Content Description	Rebuttal Comments	Finding	Additional Comments
Kim Allen, email Nov. 1, 2016, Attachment 52	4.0 - 4.1 - 4.1.1 - 4.1.2 - 5.1 - 5.1.1 - 5.1.2 - 5.4 - 7.1 - 8.1	DEQ Email response by N. Reed, geologist	Complaint to DEQ by Kim Allen triggered DEQ screening of site. DEQ results were: "no known contamination", "medium priority", "appears to be no imminent threat"	OHQ team has identified the life of location, use and backfill. As a "burning dump", it received trash from Oakridge area residents. Debris in the trenches was routinely burned to consolidate the materials.	City of Oakridge Landfill is listed as #6103 in DEQ's Environmental Cleanup Site Information (ECSI) Database.	S&W-TM June 16, 2016; Topic #1: Former Dunning Road Landfill" including Figure 1, Historic and Proposed Land Use, 1969 Aerial Photograph" discusses the history and characterization of the historic dump.
Attachment 52	4.0 - 4.1 - 4.1.1 - 4.1.2 - 5.0 - 5.1 - 5.1.1 - 5.1.2 - 5.3 - 5.4 - 7.1				S&W-TM: Response to Public Testimony and Written Comments, May 31, 2016, including: Historic Land Use Study, Topic 1 #2: Historical Records Search, Historic Air Photo Study (Figures 1-6), Site Reconnaissance and Site Development Conclusions and Recommendations (Figures 7-13)	Historic aerial photo study (1944 to 2011) to identify landfill extent and documenting onsite operations.
K Allen, email Nov. 1, 2016, Attachment 53	1.0	Dunning Road cracks and settlement alleged to be due to landsliding.	Photos show arcuate and longitudinal pavement cracks near the road shoulder. Roadway pavement appears to extend very near a steep slope decline. Settlement on the order of inches may occur locally. Areas of repeated repairs are obvious.	The photos appear to illustrate settlement of the roadway shoulder. Stabilization of the roadway may require engineered fill or sheet wall.	Although the roadway shoulder (likely a fill section) is settling over time, no landslide evidence is present. Displacements on cracks is typically low.	When mining begins in this area, it will occur in the existing rock pit extraction then move northward, away from roadway. Planned mining will have no impact on Dunning Road, refer, DOGAMI plan set.
Attachment 54 & 55	1.0	Dunning Road cracks and settlement alleged to be due to landsliding.	Photos show longitudinal shoulder cracks in the pavement. The paved roadway appears to extend very close to the top of a steep slope. Settlement on the order of an inch may occur locally. Areas of repeated repairs are not obvious.	The photos illustrate longitudinal cracks with localized settlement near the roadway shoulder. Stabilization may require reconstructing the shoulder with engineered fill.	The roadway shoulder (likely a fill section) is settling over time, no landslide evidence is present. Displacements on cracks is low.	
Attachment 60, 61 & 62	1.0	Dunning Road cracks and settlement alleged to be due to landsliding.	Photos show pavement cracks both parallel to, and transverse to the centerline. Settlement appears negligible. Areas of repeated repairs are not obvious.	The photos illustrate no noticeable differential settlement.	Observed cracks are typical pavement cracks resulting from an inadequate subgrade. No landslide evidence is present.	
Attachment 63	1.0	Photos show pavement cracks alleged to be due to landsliding	Two photographs of pavement cracks are presented. Both are transverse at right angles to the centerline. One contains an apparent cut slope in the background.	The pavement crack photographs are alleged to be evidence of landsliding in the area.	The photos presented offer no evidence of landslides. No cause / effect relationship exists between the pavement cracks and arrows symbolizing earthflows in the prior images.	No credible evidence has been provided to confirm landslide hazards in the area. Surficial soils on both cut and fill slopes may settle under shoulder pavement.
Attachment 64	1.0	Dunning Road Damage alleged to be due to landsliding.	Comments indicate attached photos are landslide areas near and the rock pit. Location is indicated to be between rock pit and red gate.	Pavement photos show transverse and longitudinal cracks, typically linear separations <1 inch in width with no obvious vertical offset.	Longitudinal and transverse pavement cracks appear typical for aged asphalt pavement. The photos show no relationship to landslides, and no landslides have been observed along the roadway, refer, Attachment 63 above.	Dunning road surface appears generally good. Transverse cracks appear to be of low severity.
Michael Gaudin "Mick" email Nov. 1, 2016 - Attachment 51	4.0 - 6 - 8.0 - 8.4	Email raises silica particulate threat from blasting and crushing.	Mr. Gaudin States: "No mechanism whereby the quarry would have to halt should silica particulates be greater than estimated, or the mitigation measures (spraying water) inadequate to the task."	Oregon OSHA and MSHA routinely inspect and test for occupational exposure to silica. LRAPA responds to air quality complaints, and can initiate testing and mitigation.	New OSHA silica rules are backed up by enforcement including citations, correction orders, staff assistance, and civil penalties.	S&W TM, June 1, 2016: Topic #1: Silica Exposure and Air Quality" discusses OSHA's silica mitigation measures rules and application to OHQ.
Linda Mathews, Planning Consultant - email with PDF attachment Nov. 1: Groundwater Attachment 83	1.0 - 2.0 - 2.2 - 3.4 - 3.5 - 5.4 - 7.3 - 8.1 - 8.2	Groundwater Control with reference to Michael James, Geologist	Comments that "groundwater generation volumes and locations at various proposed mining stages" are not presented. Therefore "offsite impacts cannot be evaluated".	High groundwater is not apparent at the ground surface or in borings on tax lot 502 (processing area). With the exception of impacts from access and construction of a new water reservoir by the City of Oakridge, no OHQ disturbance will occur near intermittent springs on west flank, TV Butte.	Limited groundwater seepage during excavation, with seasonally dry slopes are expected. Residential wells are located far upgradient from the quarry site and will experience no conflicting use. Refer, Fig 3, Groundwater Report.	Ditches and water impoundments will convey surface and groundwater for beneficial use such as dust suppression. Should higher inflows exist, they may be individually treated.
Linda Mathews, Planning Consultant - email with PDF Nov. 1: Landslides Attachment 83	1.0	Earthflow interpretation, with LiDAR imagery	Comments that a "great number of active earth flows all across the site" should qualify as "other discharges". Comments that slope stability considerations were ignored.	First LiDAR image appears to accurately represent site topography and manmade features. Second image with undefined interpretive arrows, reflects inexperience in landslide mapping. The interpretation is wrong.	S&W site experience and our review of the LIDAR images does not suggest any debris flow features as shown. Arrows follow resistant ridges between stream channels, typical earthflow paths. No head scarps or debris piles define alleged earth/debris flows. The inferred earthflow interpretation has no technical merit and appears unprofessional.	Our team of 7 experienced registered geologists and engineering geologists identified no active or inactive earthflow or landslide features in the quarry or processing areas. Published geologic maps (USGS, Corps, DOGAMI) represent no known landslides or earthflows on the OHQ site.

April 29, 2021

DSA Acoustical Engineers, Inc.

15399 SW Burgundy Street
Tigard, OR 97224

Perkins Coie LLP, Attorneys at Law
1120 N.W. Couch Street Tenth Floor
Portland, OR 97209-4128

Attn: Seth King, Partner
Steven Pfeiffer, Partner

From: DSA Acoustical Engineers, Inc.

Kerrie G. Standlee

Kerrie G. Standlee, P.E.
Principal

Re: Old Hazeldell Quarry Decision - Second Remand Noise Issues
Project #: 101211

As stated on the public notice for the Old Hazeldell Quarry remand, one of the issues within the scope of the remand (conflicts caused by off-site discharges) includes the sub-issue of impacts associated with the "airblast" caused by blasting at the quarry. I am the applicant's acoustical engineer for the project, and I have more than 30 years' experience conducting noise studies for aggregate mine sites. I am writing to summarize the expert testimony I have previously entered into the record regarding airblast impacts associated with the quarry. I also briefly reference the testimony my colleagues and I have presented regarding noise impacts associated with mining and processing activities at the quarry.

Because the Board considering LUBA's second remand includes three commissioners who were not part of the previous information submitted to address that issue, I would like the Board to know that the topic of airblast was addressed in an April 16, 2018 letter that I generated while at ABD Engineering & Design, Inc. This letter is included in the record, and a copy is attached for reference. In that letter, I explained that airblast energy is controlled to an insignificant level if the noise produced by blasting does not exceed 98 dBC, as specified in the Oregon DEQ Noise Control Regulations for Industry and Commerce (OAR 340-035-0035). This statement was confirmed as being accurate in a letter from Mr. John Hector, the director of the DEQ noise control office when the regulations were first promulgated (the letter is included as an attachment in the letter I submitted on April 16, 2018).

It should be pointed out that the previous Board of Commissioners considered this information and found it to be compelling evidence to conclude that conflicts associated

with airblast energy would be minimized to an insignificant level if a condition was included that blasting would have to meet the DEQ Noise Control Regulations for Industry and Commerce standards for blasting noise (Condition 55). In addition, the Board included conditions requiring the applicant to monitor blasting noise at residential properties around the quarry for a period of one-year to ensure airblast from blasting activities would not adversely impact the residences (Condition 57) and requiring compliance with a blasting plan submitted into the record (Condition 58).

Even though the subject of noise generated by the excavation and processing of aggregate materials is considered outside the bounds of the LUBA remand, I would like the Board to know that the previous Board concluded the noise from such operations would not have a significant impact on residences in the area, subject to Conditions 21-25, after considering the information presented in several documents generated by my colleagues and I between October 13, 2015 and October 23, 2018. Those documents are in the record and include the original DSA report dated October 13, 2015, a DSA rebuttal document dated May 31, 2016, a DSA rebuttal document dated June 20, 2016, a DSA rebuttal document dated October 31, 2016, a DSA rebuttal document dated November 15, 2016, and an October 23, 2018 document addressing a new dwelling.

AGGREGATE RESOURCE INDUSTRIES, INC.

DELIVERED VIA EMAIL

October 29, 2016

Lane County Board of County Commissioners
c/o Ms. Deanna Wright
Lane County Customer Service Center
3050 N Delta Highway
Eugene OR 97408

Re: Old HazelDell Quarry – Quarry Water Usage
Plan Amendment & Zone Change (file 509-PA15-05803) with Site Review (file 509-PA15-05804)

Dear Commissioners:

I attended the recent Lane County Board of Commissioners public hearing on October 12, 2016 regarding the Old Hazeldell Quarry. During the hearing, neighbors raised concerns that adequate dust suppression measures will require a quantity of water that exceeds the 5,000 gallon limitation on industrial well use, and may adversely impact nearby aquifers. The purpose of my testimony is to provide facts regarding water usage in similar (and larger/more active) quarry settings, which support the position that water consumption needs do not pose a significant conflict, and would likely be significantly less than 5,000 gallons per day.

At the October 12 hearing, one neighbor offered testimony that 5,000 gallons did not "seem" like enough water to control dust:

> *"You know, 5,000 gallons of water sprayed isn't very much water and for a mine operation of this big and with these kind of trucks and the crusher and excavating and the blasting and stuff like that, it just doesn't seem possible that you can control that with 5,000 gallons of water."*

In actuality, if similar (and larger) Oregon quarries are observed as a point of reference for water consumption, this proposed quarry may use significantly *less* than 5,000 gallons per day.

Our company operates rural quarries in Creswell, Dexter, Halsey and Wren (Philomath), which are similar to the proposed Old HazelDell Quarry in terms of proposed dust-generating activity and size of area requiring dust suppression measures. These quarries are subject to the same dust suppression regulations that will apply to the Old HazelDell quarry, which are established by the Department of Environmental Quality ("DEQ") and Lane Regional Air Pollution Control Authority ("LRAPA"). The quarries are periodically inspected for compliance with those dust control regulations. In one recent visit, LRAPA complemented the quarry manager for his use of "best practices" for dust suppression, including using sprinklers on conveyors, stockpiles, and excavation areas, and use of water trucks to water haul roads.

In the largest of these quarries, there is a road over a mile long that requires dust suppression measures. On days with the highest demand for water (when the portable crushing plant is operating and trucks are being loaded), the water quantity used for adequate dust suppression is estimated to be less than 4,000 gallons. Some sites use half that amount. On average, water is required for dust suppression only five months of the year in this area.

There are several factors that should be considered when weighing whether there is a risk that the quarry will require over 5,000 gallons of water per day, and hence pose a significant conflict that cannot be minimized:

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AGGREGATE RESOURCE INDUSTRIES, INC.

1) The applicant has proposed recycling stormwater on site, which will reduce the demand for water from the well.
2) Water is not the only product available to suppress dust on haul roads. There are organic binders that are biodegradable, non toxic and environmentally safe that can be applied and can reduce the amount of water required for dust suppression. In one recent study for a product called GE DusTreat, the application of the dust suppression binder reduced the demand for water by 90 percent.
3) If there was ever a concern that over 5,000 gallons per day were required, water can be imported by truck from other sources in quantities that will be sufficient to control dust.

In summary, the concerned neighbors have raised an important question as to whether the quarry will be able to adequately control dust with the water supply that is legally available to the applicant. Although it may not "seem" possible to the neighbors that 5,000 gallons per day would be sufficient, in our experience operating nearby similar (and larger) quarries, there are reasonable and practicable measures that the applicant can take to reduce (or eliminate) any conflict between the quarry's water requirements and the neighbor concerns of adverse impacts to the water supply in the area. 5,000 gallons of water per day is more than sufficient to adequately control dust, and thus this concern should not be deemed a significant conflict.

Sincerely,

AGGREGATE RESOURCE CRUSHING, LLC

/s/ Katie Jeremiah

Katie Jeremiah

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From:	Bill Kloos
To:	CARSLEY Taylor H
Cc:	Bill Kloos; Steve Pfeiffer (SPfeiffer@perkinscoie.com); Ed King (edk@kingestate.com); Kelly Sandow - Sandow Engineering (kellysandow@sandowengineering.com)
Subject:	FW: Old Hazeldell Quarry; First Open Record Period; Applicant"s First Submittal -- TIA
Date:	Monday, November 4, 2024 3:14:15 PM
Attachments:	Old Hazeldell Sight Distance 11.4.24.pdf

Taylor –

Please file the attached memo from Sandow Engineering.
This deals with the PW Comments about Sight Distance.
Thanks.

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RENEWAL 06/30/26

DATE: November 4, 2024

FROM: Kelly Sandow PE
Sandow Engineering

RE: Old Hazeldell Quarry- Sight Distance Calculation

Sandow Engineering would like to provide the following response/additional information regarding Lane County's comments on the sight distance measurement at the proposed Old Hazeldell Quarry site entrance on Dunning Road.

SPEED STUDY

Sandow Engineering performed a speed study capturing vehicle speeds approaching the driveway from both the eastbound and westbound directions. The speed study was performed on October 29th, 30th, and 31st from dawn (approx. 7:30 AM) to dusk (approx. 6:00 PM). During this time, vehicle speeds were collected for 75 vehicles. The study collected vehicles traveling during the daylight hours as vehicle speeds may slow in rural areas during night hours, skewing the measured travel speeds. The 85th percentile speed for vehicles passing the site driveway is calculated at 34 mph. The speed study data is provided as an attachment.

SIGHT DISTANCE

The sight distance calculation has been updated to reflect the 85th percentile speed collected from the speed study. Trucks exiting the site will be making a right turn; therefore, the sight distance evaluation considers the need for the vehicles approaching the driveway to see and react to exiting or entering trucks with a pup trailer.

AASHTO design standards require that, at a minimum, the Stopping Sight Distance at driveways be met. Where practical and allowable, the Intersection Sight Distance is recommended to be provided. The following details the AASHTO standards for determining the Stopping Sight Distance and Intersection Sight Distance.

Stopping Sight Distance

The sight distance is based on the 85th percentile travel speed of Dunning Road. Therefore, the sight distance was evaluated for the 34 mph speed. The section of Dunning Road near the site driveway has

an approximate 3.5% upgrade in the eastbound direction. The site driveway is located on the inside of a horizontal curve.

To determine the recommended stopping sight distance for vehicles on Dunning Road approaching the site driveway, Exhibit 8 of AASHTO's *Guidelines for Geometric Design of Very Low-Volume Local Roads* was used. Based on a speed of 34 MPH, a downgrade of 3.5 percent, proximity to the at-grade railroad crossing, and traffic volumes of 100-250 veh/day, the recommended westbound stopping sight distance is 205 feet.

- The stopping sight distance for eastbound traveling vehicles on Dunning Road as they approach the site driveway is sufficient enough that an approaching driver can see a truck with a pup stopped at the driveway waiting to make the turn from Duning Road into the site driveway.
- The available stopping sight distance for westbound traveling vehicles on Dunning Road as they approach the site driveway is measured to be approximately 98 feet. The available sight distance does not meet the 205-foot minimum for 34 mph. This section of roadway is on a horizontal curve; the vegetation and earth berm restrict available sight distance. It is recommended that this area be cleared to improve the SSD. With the clearing of vegetation and berm, the SSD can be met.

Intersection Sight Distance

The recommended intersection sight distance is calculated from the site driveway on Dunning Road to the east. AASHTO's *Guidelines for Geometric Design of Very Low-Volume Roads* refers to the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets* for intersection sight distance calculations. The intersection site distance calculations are based on Case B2 of the 2018 AASHTO manual. Again, the speed used was 34 mph, and the design vehicle used was a combination truck with a base time gap of 10.5 seconds. This is the time a truck making a right turn needs to turn and merge safely into traffic. The recommended ISD is 540 feet for 34 mph. Again, as the trucks will be turning right, the ISD is considered for the line of sight and the vehicles approaching from the east.

- The available departure sight distance at the proposed driveway location is about 95 feet to the east. The vegetation and topography on the inside of the curve limit available sight distance. It is recommended that the obstruction be removed to extend the ISD to at least meet the SSD at 34 mph for this location, which is 205 feet. Due to sight distance limitations at the proposed site driveway, an advanced warning sign "TRUCKS ENTERING ROADWAY" with a supplemental W16-2P "XX FEET" sign placed in advance of the driveway for westbound traffic could help to alert traffic to the

entering trucks. The "XX" will be replaced with the measured distance based on the exact location verified in the field. However, it is recommended that the sign be placed as near to the ISD location of 540 as practical.

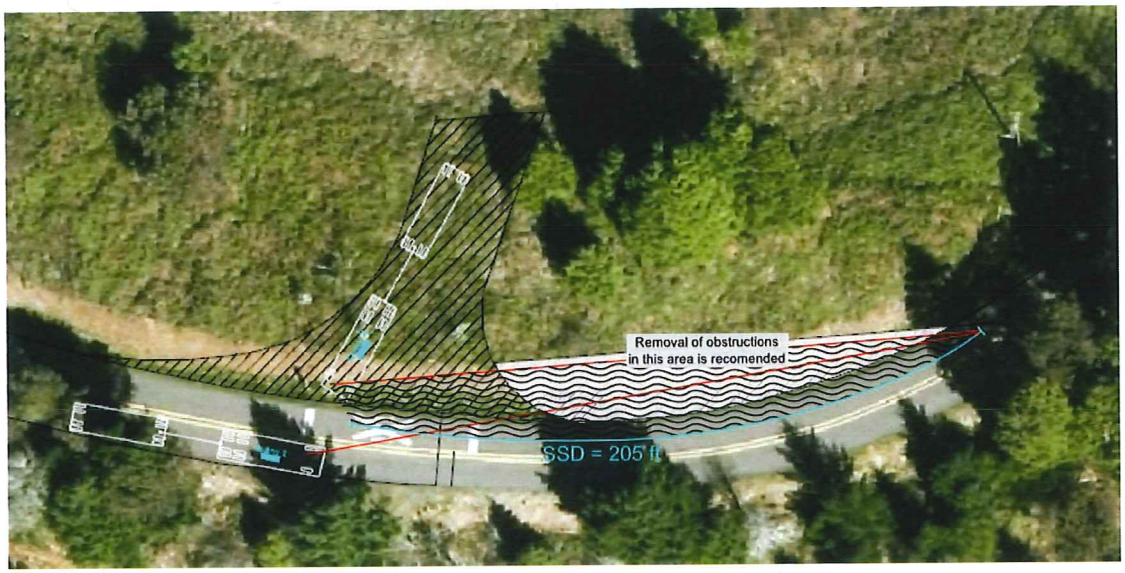

Figure 1: SSD measurement and location of obstructions to be removed at the site driveway on Dunning Road.

Veh #	Direction	Speed
1	westbound	29
2	westbound	22
3	westbound	29
4	westbound	25
5	Eastbound	29
6	westbound	34
7	Eastbound	29
8	Eastbound	35
9	eastbound	29
10	eastbound	29
11	eastbound	25
12	westbound	34
13	eastbound	35
14	eastbound	29
15	westbound	29
16	eastbound	25
17	westbound	20
18	westbound	20
19	westbound	25
20	westbound	29
21	westbound	29
22	westbound	34
23	westbound	29
24	Eastbound	25
25	westbound	34
26	westbound	29
27	westbound	29
28	westbound	29
29	westbound	29
30	Eastbound	29
31	Eastbound	29
32	Eastbound	22
33	Eastbound	16
34	Eastbound	22
35	westbound	29
36	westbound	34
37	Eastbound	25
38	Eastbound	29
39	westbound	34
40	Eastbound	29
41	Eastbound	29
42	westbound	25

average	29
85th	34

43	Eastbound	25
44	Eastbound	29
45	Eastbound	29
46	westbound	40
47	westbound	34
48	Eastbound	29
49	Eastbound	29
50	westbound	34
51	westbound	40
52	westbound	29
53	westbound	29
54	Eastbound	25
55	westbound	34
56	westbound	25
57	westbound	34
58	Eastbound	29
59	Eastbound	25
60	westbound	34
61	westbound	29
62	Eastbound	25
63	westbound	34
64	westbound	25
65	westbound	40
66	Eastbound	29
67	Eastbound	29
68	westbound	34
69	Eastbound	35
70	westbound	29
71	westbound	29
72	Eastbound	29
73	Eastbound	22
74	Eastbound	25
75	Westbound	29