

MINE RESOURCE EVALUATION REPORT

Good/Avapollo Property
Lewis County, Washington

For
Good Crushing, Inc.
December 21, 2021

Project: GoodCrush-4-01

N|V|5

December 21, 2021

Good Crushing, Inc.
265 Rupp Road,
Toledo, WA 98591

Attention: Alan Good

Mine Resource Evaluation Report
Good/Avapollo Property
Lewis County, Washington
Project: GoodCrush-4-01

NV5 is pleased to submit this report summarizing our mine resource evaluation for the Good/Avapollo property located southeast of the town of Ethel in unincorporated Lewis County, Washington. Our services for this project were conducted in accordance with our confirming agreement dated January 11, 2021.

We appreciate the opportunity to be of service to you. Please call if you have questions regarding this report.

Sincerely,

NV5



Erick J. Staley, L.G., L.E.G.
Principal Engineering Geologist

EJS:sn

Attachments

One copy submitted (via email only)

Document ID: GoodCrush-4-01-122121-geor.docx

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
BGS	below ground surface
DNR	Washington State Department of Natural Resources
FPARS	Forest Practices Application Review System
GCI	Good Crushing, Inc.
GIS	geographic information system
H:V	horizontal to vertical
LCC	Lewis County Code
LiDAR	light detection and ranging
MRL	Mineral Resource Lands
MSL	mean sea level
USGS	U.S. Geological Survey
WSDOT	Washington State Department of Transportation

1.0 INTRODUCTION

NV5 is pleased to submit this report to Good Crushing, Inc. (GCI) summarizing our mine resource evaluation for the Good/Avapollo property located southeast of the town of Ethel in unincorporated Lewis County, Washington. Figure 1 presents a vicinity map of the site. The subject property consists of 443.5 acres and includes two parcels owned by Alan and Pamela Good (tax identification numbers 028043004001 and 028043004002; total of 431.4 acres) and three parcels owned by Avapollo Land Corporation (tax identification numbers 028061000000, 028025001000, and 028024001000; total of 12.1 acres). Figure 2 presents an aerial photograph and the parcel ownership for the subject property. Figures 3 and 4 show existing and final topographies, respectively, while Figure 5 shows relevant cross sections.

GCI intends to develop a surface mine at the site. All of the parcels are currently zoned as Agricultural Resource Lands. In order to facilitate applying for a permit from Lewis County to mine the property, the landowners must first have the subject property rezoned to be designated Mineral Resource Lands (MRL). This can be accomplished through Lewis County's opt-in provisions described under Lewis County Code (LCC) 17.30.850 and 17.30.720(2). GCI requested that NV5 prepare a mine resource evaluation of the subject property to determine if the property has sufficient resources to meet the criteria required under the Lewis County landowner opt-in process.

2.0 SCOPE OF SERVICES

The purpose of our scope was to conduct a mine resource evaluation of the potential quantity and quality of aggregate resource at the site and to provide an estimated value of the resource. Our services were conducted and managed by a geologist registered in the state of Washington with more than 20 years of experience consulting on mineral resource evaluations and mine planning projects. Our scope of services included the following:

- Reviewed readily available geologic mapping, aerial photographs, well logs, and topographic data for the site and vicinity.
- Reviewed available public information regarding wetlands, streams, and other critical areas mapping.
- Analyzed LiDAR elevation data to characterize the site geomorphology and variability.
- Conducted surface reconnaissance of the site and vicinity for site conditions, surface geologic exposures, and potential critical areas for permitting constraints.
- Collected representative samples from excavated exposures for aggregate quality testing.
- Developed a potential mine excavation to maximize the extent of the interpreted resource within the confines of what overseeing agencies would likely permit.
- Created a three-dimensional geologic model for the site and calculated an estimated volume of the resource.
- Conducted a survey of the local pricing for aggregate in the area.
- Summarized our findings in this mine resource evaluation report, including the estimated resource volume, value calculations, and supporting figures.

3.0 SITE CONDITIONS

3.1 SURFACE CONDITIONS

The subject property is located approximately 2.5 miles southeast of Ethel, Washington, and 3 miles southwest of Salkum, Washington. The site is accessed from Brim Road using an existing gravel road that leads to the main area of the site, as shown on Figure 2. There is also an older, gravel access roadway leading northwest onto the lower portion of the site from Spencer Road. The site primarily consists of a broad, flat area oriented northeast-southwest and continuing off site to the north and west. The existing site topography is shown on Figure 3. Elevations across this main area range from approximately 450 to 420 feet above MSL. There is also a moderately steep slope in the northwestern corner leading farther northwest and uphill to another flattened area, which is traversed by the site access road. The main area is covered by grasses, brush, and patchwork tree cover following past commercial tree harvest. One fish-bearing stream (Blue Creek) and a non-fish-bearing tributary are mapped in the northwestern site by DNR FPARS/Lewis County (Figure 3). Dense trees and shrubs are located along these drainages and cover the western main area. Blue Creek ultimately flows into the Cowlitz River approximately 2.5 miles southwest of the site.

The main area is bound to the east and southeast by a steep slope that traverses the site. Elevations range from 440 to 280 feet above MSL. The slope is mostly covered with trees and has some bare patches along the uphill side of the gravel access roadway. Road cuts expose gravel and sand deposits. While the slopes are steep, sometimes up to 100 to 200 percent gradient, we did not observe signs of recent slope instability. GCI has explored the subsurface conditions at an eastern projection along the steep slope and exposed gravel and sand deposits for the full exposed slope height (Figure 3).

The southeastern lowland below the steep slope is gently sloped to flat and ranges from approximately 220 to 340 feet above MSL. The topography is irregular near the foot of the southern steep slope, likely from past slope instability. The lower area is fully covered with trees, brush, and other vegetation. Lewis County maps several wetlands in this area, and a fish-bearing stream (Jones Creek) is mapped by DNR FPARS/Lewis County east of the steep slope (Figure 3). Jones Creek flows into the Cowlitz River approximately 850 feet southeast of the site. The Cowlitz River itself is located at least 750 feet from the site's southeastern boundary on the other side of Spencer Road and more than 1,700 feet from the steep slope traversing the site.

3.2 GEOLOGIC SETTING

Our understanding of the site geology is based on review of geologic mapping completed by Schasse and the Washington Geological Survey.^{1,2} The site vicinity is underlain by gravel and sand outwash deposits derived from melting alpine glaciers originating from the Cascade Range. Repeated glaciations occurred in western Washington for hundreds of thousands of years, each leaving behind glacial deposits that were later eroded by rivers or more recent glacial events. The drainage basin of the Cowlitz River includes distinct deposits from past glaciations preserved

¹ Schasse, H. W., 1987. *Geologic Map of the Centralia Quadrangle, Washington*. DNR Open-File Report 87-11, scale 1:100,000.

² Washington Geological Survey, 2019. *Surface Geology, 1:24,000-GIS data*. Washington Geological Survey Digital Data Series DS-10, version 3.1, November 2019, previously released September 2017, scale 1:24,000.

as terraces approximately parallel to the river valley that gradually step down toward the Cowlitz River. The oldest of these glacial terraces corresponds to the highest portions of the site in the northwestern corner and the access road off of Brim Road. These deposits are mapped as outwash gravel from the Windgate Hill drift, which may be older than approximately 140,000 years. The next glacial terrace corresponds to the main, flat area of the site and the steep slope. This terrace is underlain by outwash gravel and sand of the Hayden Creek drift and is estimated to be older than 38,000 years and possibly up to 130,000 to 140,000 years old. The last glacial terrace located within the site boundaries is mapped in the eastern lowland, corresponding to outwash gravel and sand of the Evans Creek drift, aged between 12,500 and 20,000 years old. Younger river deposits associated with former cut banks and channels of the ancient Cowlitz River are located southeast of the steep slope and occupy the lowest elevations of the southeastern lowland. Erosion of the Hayden Creek outwash by ancient rivers and glacial meltwater created the steep slope and led to localized landsliding and accumulation of landslide deposits at the foot of the steep slope.

3.3 SUBSURFACE CONDITIONS

We conducted a surface reconnaissance of the site on December 22, 2020, and September 21, 2021. We observed exposures of gravel and sand outwash in road cuts along the access roadway and in excavations in the southeastern portion of the steep slope, as shown on Figure 3. We also reviewed well logs for two on-site wells and for residential wells located in the site vicinity.³ The locations for the on-site wells are shown on Figure 3, and well logs for the on-site and off-site wells used to inform our geologic interpretations are presented in Appendix A.

3.3.1 Outwash Deposits

The flattened terrace is underlain initially by orange-brown clay with sand and trace gravel extending to a depth of approximately 20 feet BGS. This clay unit may represent late-stage outwash or post-glacial river sediments. The clay soil is underlain by bedded outwash deposits consisting of sand, gravel, and cobbles with silt and clay with a total thickness of approximately 100 feet, based on the southeastern exposures and well logs. Gravel deposits are generally matrix supported with sand interbeds toward the top of the outwash. The gravels and cobbles are rounded to subrounded. The amount of gravel and cobbles increases with depth, so that the outwash eventually is clast supported with fewer sand interbeds.

We collected samples of the outwash gravel and sand at several intervals along the steep slope. Table 1 summarizes the approximate sampling depths below the top of the steep slope and provides field descriptions of the observed outwash. The samples were collected by hand and thus under-represent the amount of very coarse material observed in the exposures such as coarse gravel, cobbles, and boulders. Sieve testing of the samples was performed by ACS Testing, Inc. of Tigard, Oregon. Test result reports are presented in Appendix B. The relative grain-size abundances resulting from the sieve testing are also summarized in Table 1.

³ Oregon Water Resources Department, n.d. Well log query. Retrieved from http://apps.wrd.state.or.us/apps/gw/well_log/.

Table 1. Outwash Sample Intervals, Field Descriptions, and Results of Sieve Testing

Sample	Depth Below Top of Slope	Field Description	Sieve Analysis Results (percent)			
			Cobble	Gravel	Sand	Fines
S-2	20 feet	Orange-brown clayey gravel with sand and cobbles (30 percent)	5	42	37	16
S-3	50 feet	Light brown gravel with clay, sand, and cobbles (30 to 40 percent)	11	52	30	7
S-4	80 feet	Brown gravel with clay, sand, cobbles (30 to 40 percent), and boulders (5 to 10 percent)	0	55	39	6
S-5	20 feet	Brown gravel with clay, sand, cobbles (20 to 30 percent), and boulder (trace)	5	53	38	4

Based on the results of the sieve analyses, the outwash deposits are mostly gravel with sand and a variable, minor amount of silt and clay fines. Note that these results are slightly biased toward finer grain sizes due to the under-represented coarse fraction.

3.3.2 Groundwater

Based on the topography and review of well logs located in the site vicinity, we anticipate the groundwater table descends to the southeast toward the Cowlitz River. We measured water levels in the on-site wells on September 21, 2021. The water levels reported on the well logs and measured during our field work are summarized in Table 2 below, which also presents the ground surface elevation of the wells and the resulting water level elevations based on the measured water levels.

Table 2. Static Water Level Measured in On-Site Wells

Water Well Log	Approximate Surface Elevation (feet above MSL) ¹	Static Water Depth From Well Log	Measured Static Water Depth (feet BGS)	Elevation of Measured Water Level (feet above MSL) ¹
W-1	445	82	80	365
W-2	442	172	168	274

1. Based on 2017 LiDAR data

The on-site water level measurements are consistent with those reported on the water well logs and indicate a declining water table toward the Cowlitz River. The interpreted water surface underlying the site is presented on the cross sections shown on Figure 5.

4.0 AGGREGATE QUALITY TESTING

Laboratory testing was performed on two samples to test the aggregate quality of the glacial outwash deposits. Sample S-3 was selected to represent the middle of the exposed outwash in the southeastern corner of the main area. Sample S-6 was sampled from a pile of crushed aggregate that GCI produced to test a crusher on the outwash material. This sample is representative of a partially crushed product versus the raw pit run sampled in S-3, although not processed to an extent typical for a mine facility. Testing was performed by ACS Testing and included the aggregate quality tests described below. The results of the quality testing are presented in Appendix B.

- Los Angeles Abrasion (AASHTO T 96): Used to evaluate the abrasion resistance of an aggregate. This test measures the toughness of an aggregate and provides an indication of how readily a crushed aggregate may further break down through transport and handling.
- Degradation Value (WSDOT T 113): Used to determine the susceptibility of an aggregate to degrade into plastic fines when abraded in the presence of water.
- Sand Equivalent (AASHTO T 176): Used to determine the amount of plastic fines in an aggregate material. Plastic fines and dust are typically undesirable in an aggregate.

Based on the results of the testing, the pit run outwash material (sample S-3) meets WSDOT standard specifications for common borrow material but not for most other specified products.⁴ This is without any of the processing, such as crushing and washing, to remove weak material and fines from the tested product. The sample that was partially crushed and screened (sample S-6) showed improvement in quality test results. The Los Angeles abrasion results improved from 32 percent loss to 18 percent loss. Typical WSDOT specifications require materials to have no more than 30 to 35 percent loss; therefore, the test results indicate that the crushed outwash material would meet this requirement.

5.0 MINE RESOURCE ESTIMATE

The aggregate resource at the site consists mostly of gravel, sand, and cobbles with some fines representing glacial outwash deposits. Quality testing of the outwash indicates it has value as common borrow material and has potential to meet other WSDOT specifications if it is processed to remove weaker fragments and fines. Besides some use for WSDOT-specified materials, the site has potential value as a commercial fill or gravel and sand source for local developments. We understand GCI has had discussions with local developers and contractors who observed the material and indicated it could be used on their projects for general fill or embankments.

Based on our review, it is our opinion the glacial outwash has commercial value as an aggregate resource for borrow and fill material if mined as a pit run product and potentially for more durable aggregate products if fully processed. The site has the potential for economically viable production of extractive materials for the foreseeable future.

⁴ WSDOT, 2020. *Standard Specifications for Road, Bridge, and Municipal Construction*, Division 9 – Materials. Publication M 41-10.

5.1 MINE EXTRACTION LIMITS

To estimate the potential quantity of resource material, we first developed a three-dimensional model using AutoCAD-Civil3D software. The following sections discuss the mining extraction limits we incorporated into the model. The final topography and excavation limits are shown on Figure 4.

5.1.1 Setbacks

In accordance with LCC 17.142.200(2)(a)(i), the potential mineable resource observes a 50-foot excavation setback from property boundaries adjacent to other landowners.

5.1.2 Stream Buffers

As previously discussed, several streams run through the site, including a fish-bearing stream and non-fish-bearing tributary in the main site area, and other streams and wetlands in the southeastern lowland. For this analysis, we do not consider any mineable resource that may be located in the southeastern lowland area. The limits of excavation in the main area observe stream buffers in accordance with LCC 17.38.420 according to whether they are fish-bearing or not. Specifically, the potential mineable resource observes a 150-foot buffer from the fish-bearing stream and a 75-foot buffer from the non-fish-bearing stream. These buffers are conservative, since the fish-bearing stream appears to be less than 10 feet wide in the field, which would allow mining to observe only a 100-foot buffer per LCC Table 17.38-6. Also, the tributary is not mapped as a critical area on Lewis County's GIS website, but our analysis conservatively considers it to be a Type Np or Ns stream.⁵

5.1.3 Cut Slopes

DNR typically requires a maximum permanent cut slope of 2H:1V be used for surface mining unless a geotechnical report can demonstrate that steeper permanent slopes can be safely excavated. For glacial outwash gravel and sand deposits, and from a geotechnical perspective, we used permanent cut slopes at 2H:1V in our resource analysis.

5.1.4 Bottom of Excavation and Groundwater Table

The potential mineable resource extends to an elevation of 350 feet above MSL (Figures 4 and 5). Based on measured water levels in the two on-site wells and review of water well logs in the site vicinity, groundwater likely underlies the site at depths ranging from approximately 80 feet BGS in the northwest to greater than 170 feet BGS in the southeastern extraction area. Our interpretation of the groundwater table underlying the site is presented in the cross sections shown on Figure 5. The bottom of the potential mine resource is significantly higher than 10 feet above the water table over most of the extraction area, which is a typical requirement for DNR for surface mining. While some of the potential resource area may be below the water table in the northernmost site (i.e., the left side of cross section A-A' on Figure 5), there is significant resource volume between the model final floor and the water table that would not be mined, much more than what may be encountered below the water table. For simplicity in estimating the mineable resource volume, we used the flat mine floor at 350 feet above MSL as a conservative parameter.

⁵ Lewis County, n.d. Lewis County GIS web map. Retrieved from <https://gis.lewiscountywa.gov/webmap/>.

5.2 RECOVERABLE RESOURCE

The final cut topography resulting from these mining limits is presented on the map shown on Figure 4 and in the cross sections shown on Figure 5. The resulting gross cut volume of material is estimated at 27,056,757 cubic yards. This gross volume is reduced by non-resource materials as described below, then converted to a tonnage.

5.2.1 Overburden Thickness

Based on our observations of clay soil overlying the outwash gravel and sand, and from review of well logs, we reduced the gross cut volume by an average overburden thickness of 20 feet over the entire extraction area. This results in an overburden volume of 7,440,693 cubic yards and an outwash cut volume of 19,616,064 cubic yards, as shown in Table 3 below.

5.2.2 Reduction From Fines

Sieve testing of outwash samples resulted in a range of 4 to 16 percent fines content with an average of 8.3 percent. While the fines likely could be sold as part of the pit run material, we reduced all of the outwash volume by the average percent fines as a conservative step in estimating the potential resource volume. The resulting fines volume is 1,628,133 cubic yards, with a resulting net resource volume of 17,987,931 cubic yards, as shown in Table 3.

5.2.3 Resource Tonnage

Using an average density of 1.7 tons per cubic yard results in a resource tonnage estimate of 30,579,483 tons. This conversion is based on standard conversions provided in industry manuals, such as the Caterpillar Performance Handbook, and our experience with a variety of gravel deposits in the Northwest.⁶

Table 3. Resource Estimate Summary

Material	Estimated Quantity
Gross cut volume	27,056,757 cubic yards
Less overburden at 20 feet	-7,440,693 cubic yards
Outwash cut volume	19,616,064 cubic yards
Less fines content at 8.3 percent	-1,628,133 cubic yards
Net resource volume	17,987,931 cubic yards
Resource tonnage	30,579,483 tons

5.3 ESTIMATED VALUE OF RESOURCE

To estimate the potential value of the resource, we researched regional pricing for aggregate materials at commercial mines within an approximately 20-mile radius of the site. We contacted and received pricing from four commercial mine sites, including GCI's Goods Quarry, for common rock products used in the area. Operators provided price lists or verbal quotes of their product pricing on a per-ton basis as summarized in Table 4. Materials included the following:

⁶ Caterpillar, Inc., 2018. *Caterpillar Performance Handbook*, 48th ed.

- Pit run: Excavated material without processing; may be used as general and embankment fill.
- 1¼-inch-minus: Typical crushed product used for base rock and foundation base for road construction and other developments.
- 5/8-inch-minus: Finer crushed product; may be used for final grading in construction and asphalt concrete mixes.

Table 4. Regional Aggregate Prices

Mining Operation	Product Price (per ton)		
	Pit Run	5/8-Inch- Minus	1¼-Inch- Minus
L Rock – Foster Creek Pit	\$12.00	\$11.00	\$11.00
Wallace Rock Products – Mandy Road Pit	--	\$12.50	\$12.50
Lakeside Industries – Centralia Pit	--	\$15.00	\$15.00
GCI – Goods Quarry	\$8.75	\$11.00	\$10.75

-- : not received

The only pit run pricing we received besides Goods Quarry was from Foster Creek Pit, which apparently sells a pit run (“Coal Creek Black Rock”) priced higher than its crushed products. This is not typical; pit run is often equal to or cheaper than crushed rock products.

While there is potential to fully process the outwash to produce crushed aggregate products that meet a range of WSDOT specifications, for a conservative consideration of the site’s value, we assumed all of the resource tonnage would be sold as general fill. This corresponds to pit run material in terms of price comparison. Again, to keep our analysis conservative, we used the lowest quoted price from regional mines – the pit run price of \$8.75 per ton from Goods Quarry. The resulting estimated value for the potential mineable resource is \$267,570,476.

6.0 MRL CLASSIFICATION CRITERIA

Based on our analysis, and considering the location of the site in Lewis County, the subject property meets the classification criteria for being designated as an MRL in accordance with LCC 17.30.720(2):

- The subject property has a potential gravel and sand resource at least \$1,000,000 in value.
- The subject property has the potential for economically viable production of this resource for the foreseeable future.
- The linear frontage of the subject property does not have any abutting parcels less than 2.5 acres in size.
- The subject property is outside any designated urban growth area.

7.0 LIMITATIONS

We prepared this mine resource evaluation report for use by Alan Good and GCI for the Good/Avapollo property. Our report, conclusions, and interpretations should not be construed as warranty of the subsurface conditions and are not applicable to areas other than the subject site.

Our interpretations of the mining and geologic conditions are based on discussions with the client, review of publicly available information, exposures of soil and rock within the site area, and subsurface information obtained from others. The accuracy of outside information is beyond our control. Our interpretations do not necessarily reflect soil, rock, or water level variations that may exist at the site. If subsurface conditions differing from those described are noted during the course of excavation, re-evaluation may be necessary.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time the report was prepared. No warranty or other conditions, express or implied, should be understood.



We appreciate the opportunity to be of service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

NV5



Erick J. Staley, L.G., L.E.G.
Principal Engineering Geologist



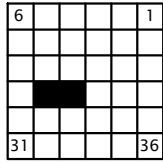
Erick J. Staley



Signed 12/21/2021

FIGURES

T 12 N



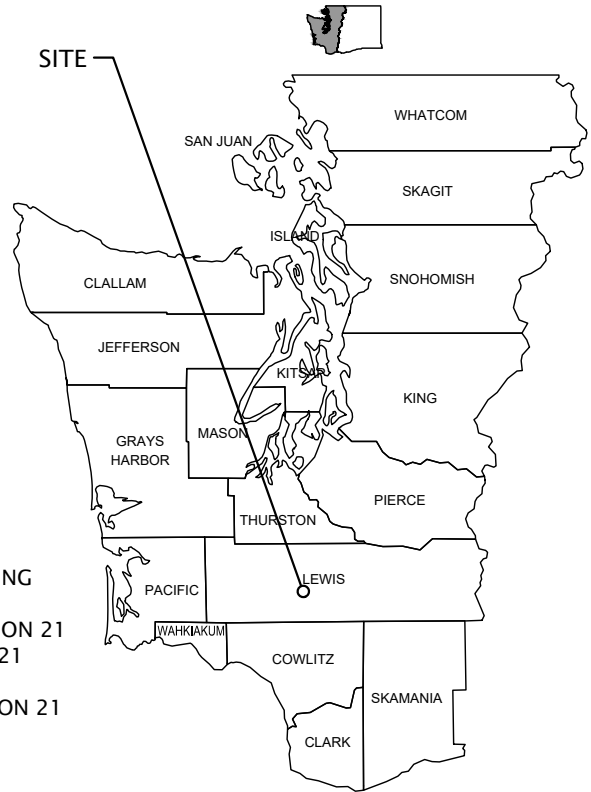
R 1 E

SITE COORDINATES:

LATITUDE: 46° 30' 34" N

LONGITUDE: 122° 41' 33" W

WESTERN WASHINGTON



DIRECTIONS TO SITE

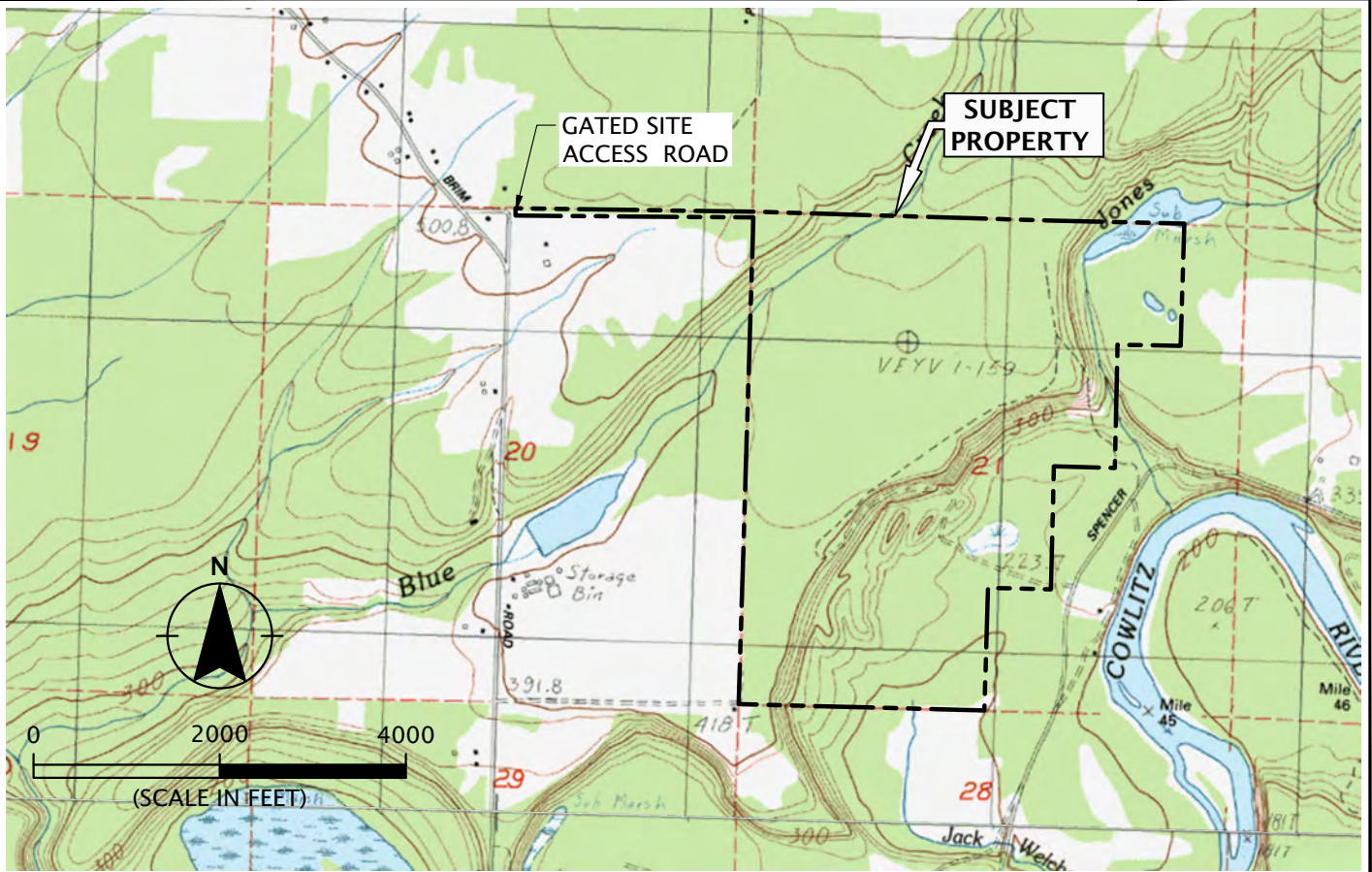
GOOD/AVAPOLLO PROPERTY IS LOCATED JUST OVER 2 MILES EAST-SOUTHEAST OF ETHEL, WA. FROM ETHEL, DRIVE EASTBOUND ON HIGHWAY 12 FOR APPROXIMATELY 1 MILE. TURN RIGHT (SOUTH) ONTO BRIM ROAD. DRIVE SOUTH ON BRIM ROAD FOR APPROXIMATELY 1.1 MILES. TURN LEFT (EAST) ONTO GRIFFIS ROAD. GATED SITE ACCESS ROAD (UNIMPROVED) TO THE QUARRY IS DIRECTLY AHEAD, APPROXIMATELY 500 FEET FROM THE INTERSECTION OF BRIM ROAD AND GRIFFIS ROAD.

LEGAL DESCRIPTION

THE SUBJECT PROPERTY IS LOCATED IN PORTIONS OF THE FOLLOWING QUARTER-QUARTER SECTIONS:

- NW, NE, SE, AND SW QUARTERS OF THE NW QUARTER OF SECTION 21
- NW, NE, AND SW QUARTERS OF THE NE QUARTER OF SECTION 21
- NW QUARTER OF THE SE QUARTER OF SECTION 21
- NW, NE, SE, AND SW QUARTERS OF THE SW QUARTER OF SECTION 21
- NW AND NE QUARTERS OF THE NE QUARTER OF SECTION 20

NOTE: USGS TOPOGRAPHIC QUADRANGLE MAPS REPRODUCED USING MAPTECH TERRAIN NAVIGATOR PRO®.



GOOD CRUSHING, INC.

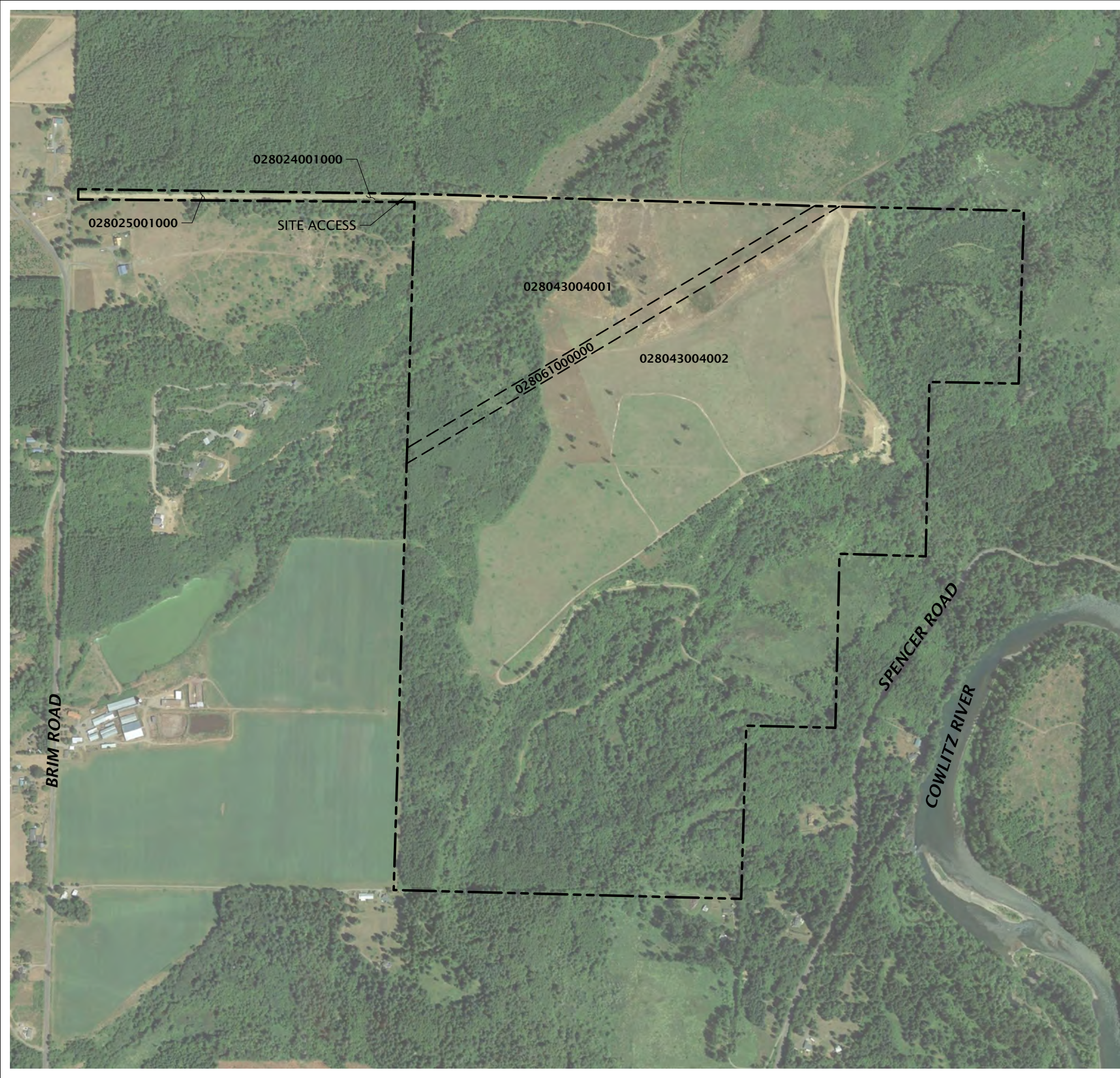
VICINITY MAP
GOOD/AVAPOLLO PROPERTY

GOODCRUSH-4-01
DECEMBER 2021

LEWIS COUNTY, WA
SECTIONS 20 AND 21, TOWNSHIP 12N, RANGE 1E, W.M.

FIGURE 1

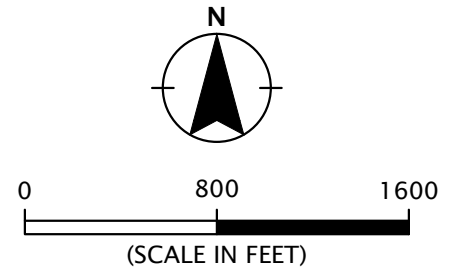
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LEGEND:

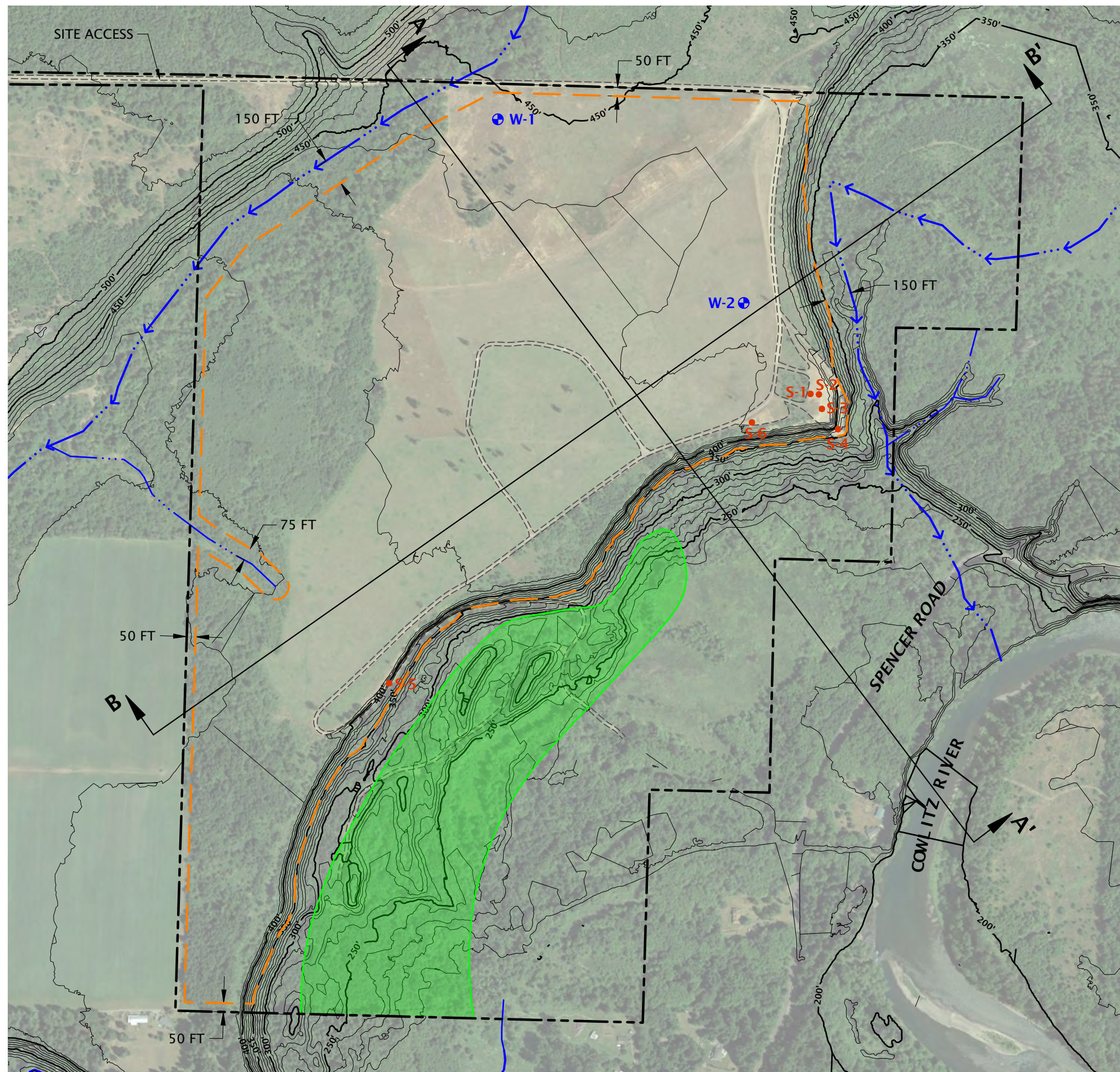
- SUBJECT PROPERTY BOUNDARY (443.5 ACRES)
- - - - -** PROPERTY PARCEL BOUNDARY
- 028043004000** ASSESSOR PARCEL NUMBER (SEE TABLE BELOW)

SUBJECT PROPERTY INFORMATION TABLE		
PARCEL NUMBER	OWNER NAME	OWNER ADDRESS
028043004000 028043004001	ALAN AND PAMELA GOOD	265 RUPP ROAD TOLEDO, WA 98591
028061000000 028024001000 028025001000	AVAPOLLO LAND CORPORATION	10552 BONCHESTER HILL STREET LAS VEGAS, NV 89141



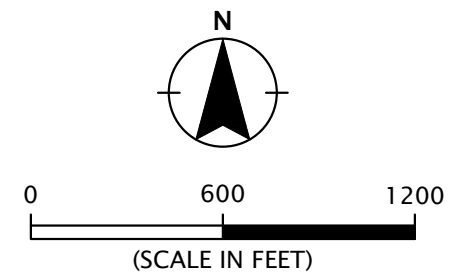
- NOTES:**
- PROPERTY PARCEL BOUNDARIES AND OWNERSHIP INFORMATION OBTAINED FROM LEWIS COUNTY GIS WEB MAP.
 - AERIAL PHOTOGRAPH (JULY 15, 2018) OBTAINED FROM GOOGLE EARTH PRO.

NVI5	GOOD CRUSHING, INC.	PROPERTY OWNERSHIP MAP GOOD/AVAPOLLO PROPERTY
	GOODCRUSH-4-01 DECEMBER 2021	LEWIS COUNTY, WA SECTIONS 20 AND 21, TOWNSHIP 12N, RANGE 1E, W.M.



LEGEND:

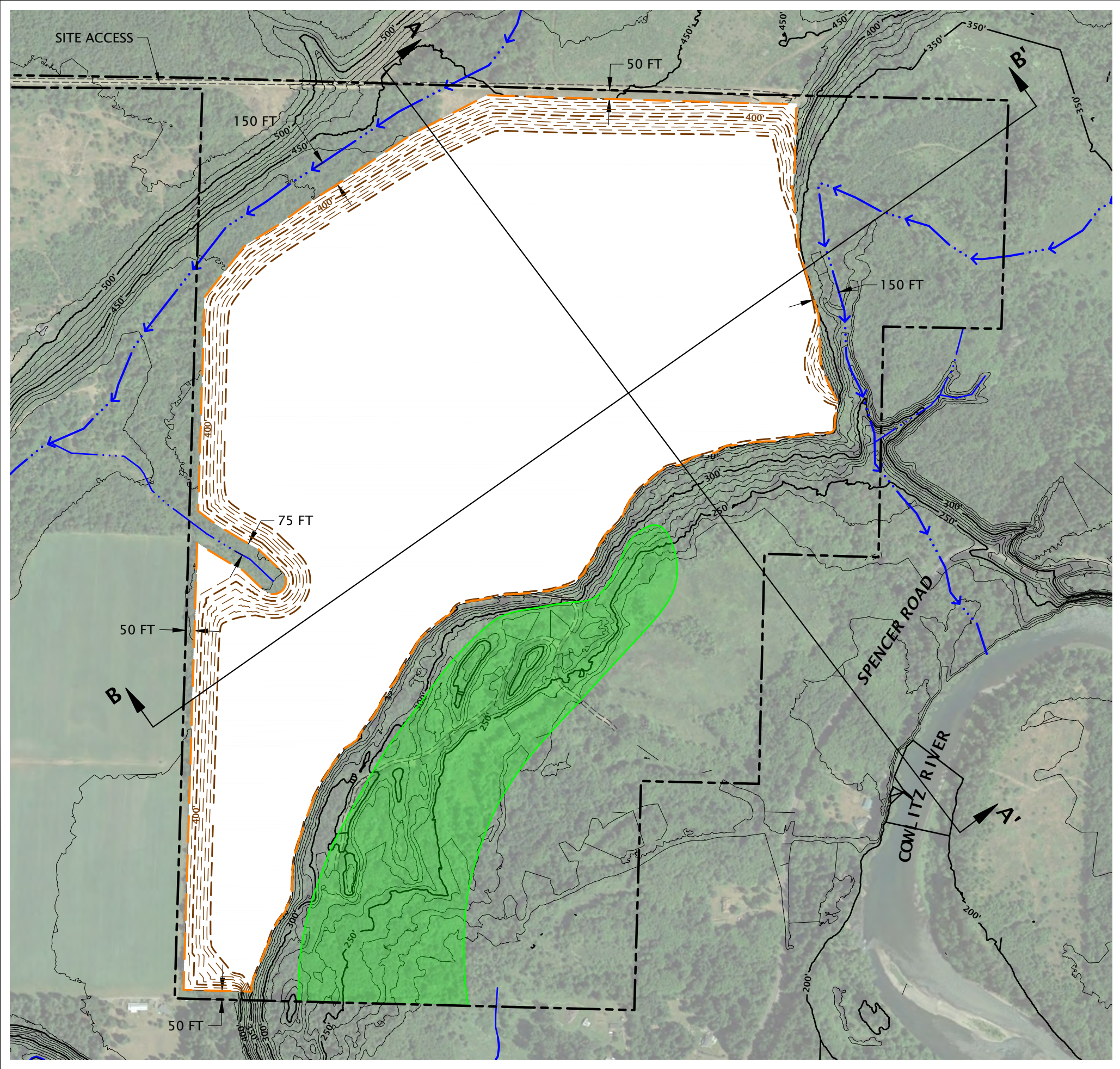
- SUBJECT PROPERTY BOUNDARY (443.5 ACRES)
- LIMITS OF EXCAVATION (230.6 ACRES)
- SITE ROAD
- EXISTING TOPOGRAPHY (10-FOOT INTERVALS; 50-FOOT INDEX CONTOURS)
- FISH-BEARING STREAM (DNR FPARS)
- NON-FISH-BEARING STREAM (DNR FPARS)
- LANDSLIDE DNR 100K
- W-1 • WELL
- S-1 • SAMPLE







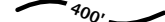



NOTES:

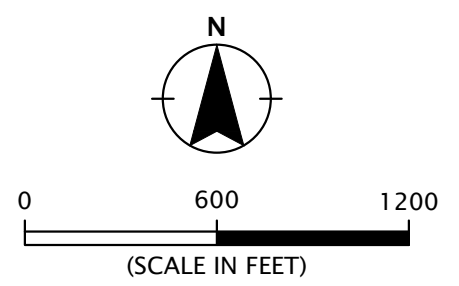
1. PROPERTY PARCEL BOUNDARY AND LANDSLIDE AREA OBTAINED FROM LEWIS COUNTY GIS WEB MAP.
2. AERIAL PHOTOGRAPH (JULY 15, 2018) OBTAINED FROM GOOGLE EARTH PRO.
3. ELEVATION DATA OBTAINED FROM DNR LIDAR PORTAL, COLLECTED 2017.

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 File Name: C:\E-L\GoodCrush\GoodCrush-4\GoodCrush-4-01\Figures\CAD\GoodCrush-4-01-SP05.dwg | Layout: FIGURE 4




LEGEND:

-  SUBJECT PROPERTY BOUNDARY (443.5 ACRES)
-  LIMITS OF EXCAVATION (230.6 ACRES)
-  SITE ROAD
-  FINAL TOPOGRAPHY (10-FOOT INTERVALS; 50-FOOT INDEX CONTOURS)
-  EXISTING TOPOGRAPHY (10-FOOT INTERVALS; 50-FOOT INDEX CONTOURS)
-  FISH-BEARING STREAM (DNR FPARS)
-  NON-FISH-BEARING STREAM (DNR FPARS)
-  LANDSLIDE DNR 100K

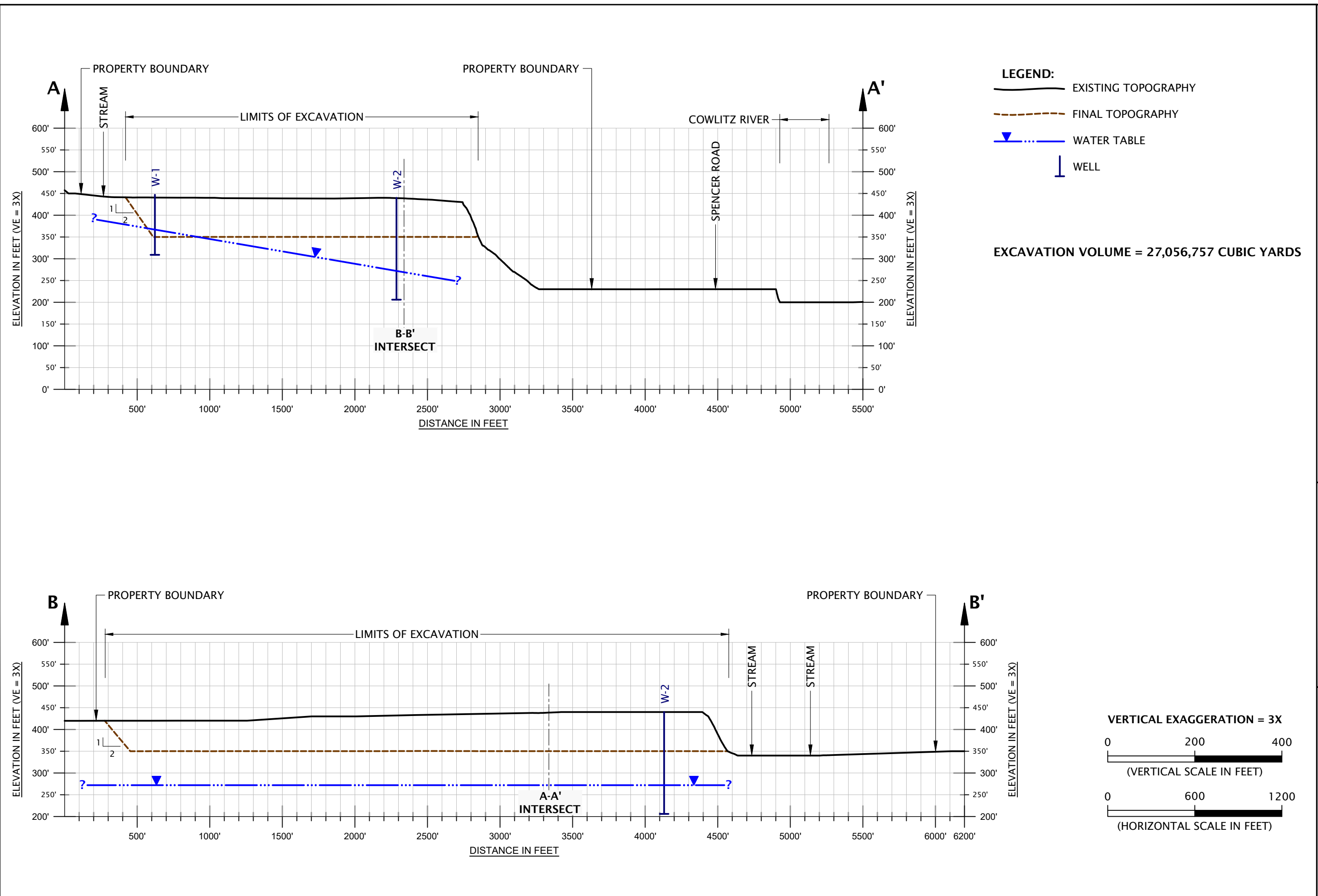


NOTES:

1. PROPERTY PARCEL BOUNDARY AND LANDSLIDE AREA OBTAINED FROM LEWIS COUNTY GIS WEB MAP.
2. AERIAL PHOTOGRAPH (JULY 15, 2018) OBTAINED FROM GOOGLE EARTH PRO.
3. ELEVATION DATA OBTAINED FROM DNR LIDAR PORTAL, COLLECTED 2017.

	GOOD CRUSHING, INC. GOODCRUSH-4-01 DECEMBER 2021	FINAL TOPOGRAPHY MAP GOOD/AVAPOLLO PROPERTY LEWIS COUNTY, WA SECTIONS 20 AND 21, TOWNSHIP 12N, RANGE 1E, W.M.	FIGURE 4
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APPENDIX A

APPENDIX A

WATER WELL LOGS

Water well logs available from the Washington State Department of Ecology were reviewed in the site vicinity. Logs that informed our analysis are presented in this appendix.

1-800-842-4835

PUMPCO

PUMPCO DISTRIBUTORS, INC.

16334 S.W. 72ND AVE./PORTLAND, OR 97224/(503) 639-8494/FAX # (503) 684-6517

P. U.C. From -6 to 160'

2-20 slot screens P. U.C.

from 120 to 160

~~30~~ Bags of #20 Silica Sand

37 Colorado 8x12 sand
from 160 - 101 sand pak.

57' casing

Bentonite 55' chips

10-8-18

10-12-18

Best in the West

Finished

10-8-18 ALAN Good WELL # 2

0-2 Topsoil

2-9 Clay yellow sandy

9-92 Cemented yellow clay w/ gravel

92-98 Blue sand & gravel

98-135 Sandstone Blue w/ wood soft

135-138 Sandrock Brown hard

138-210 Sandrock Blue w/ wood soft

210-234 Blue sand & gravel w/ B

234- shale Brown

TOTAL Depth

6" ~~1~~ 2" ~~20~~ CASING

Perforations 210-225

Surface seal 23'

30 gpm Air test

172'



RECEIVED

MAY 02 2019

WATER WELL REPORT



Notice of Intent No. WE34725 WA State Department of Ecology (SWRO)

Type of Work:

Construction, Decommission, Original installation NOI No.

Proposed Use: Domestic, Industrial, Municipal, Dewatering, Irrigation, Test Well, Other

Construction Type: New well, Alteration, Deepening, Method: Driven, Jetted, Cable Tool, Dug, Air, Mud-Rotary

Dimensions: Diameter of boring 6 in., to 240 ft. Depth of completed well 218 ft.

Construction Details table with columns for Casing, Liner, Diameter, From, To, Thickness, Steel, PVC, Welded, Thread

Perforations: Yes, No, Type of perforator used Star Wheel, No. of perforations 100, Size of perforations 1 in. by 7/8 in.

Screens: Yes, No, K-Packer, Depth, Manufacturer's Name, Type, Model No., Diameter, Slot size

Sand/Filter pack: Yes, No, Size of pack material, Materials placed from ft. to ft.

Surface Seal: Yes, No, To what depth? 18 ft., Material used in seal Bentonite Grout, Did any strata contain unusable water?

Pump: Manufacturer's Name N/A, Type, H.P., Pump intake depth, Designed flow rate, gpm

Water Levels: Land-surface elevation above mean sea level, Stick-up of top of well casing +2 ft. above ground surface, Static water level 113 ft. below top of well casing, Date 4/16/2019

Well Tests: Was a pumping test performed? No, Yes, Yield gpm with ft. drawdown after hrs.

Recovery data table with columns for Time, Water Level

Date of pumping test, Bailer test, Air test, Artesian flow, Temperature of water, Was a chemical analysis made?

Water Right Permit/Certificate No.

Property Owner Name John Moore

Well Street Address 423 Brim Rd

City Onalaska County Lewis

Tax Parcel No. 028024021001

Was a variance approved for this well? Yes, No

If yes, what was the variance for?

Location (see instructions on page 2): WWM or EWM

SW 1/4-1/4 of the NE 1/4; Section 20 Township 12N Range 01

Latitude (Example: 47.12345) 46.51280

Longitude (Example: -120.12345) -122.70741

Driller's Log/Construction or Decommission Procedure

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Driller's Log table with columns for Material, From, To

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

Driller, Trainee, PE - Print Name Chris Jones, Signature, License No. 2253, IF TRAINEE: Sponsor's License No., Sponsor's Signature

Drilling Company Moerke & Sons Pump and Drilling, Address 1162 NW State Avenue, City, State, Zip Chehalis, WA 98532, Contractor's, Registration No. MOERKSP072N5, Date 4/16/2019

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

APPENDIX B

APPENDIX B

LABORATORY TEST REPORTS

Laboratory tests were conducted by ACS Testing of Tigard, Oregon, to perform sieve analyses and test the resource quality potential of select samples. Test reports from the laboratory are presented in this appendix.



NV5 - PORTLAND
9450 SW COMMERCE CIRCLE-STE 300
WILSONVILLE, OR

7409 SW Tech Center Drive - Suite 145
Tigard, OR 97223
Phone: (503) 443-3799 Fax: (503) 620-2748

PROJECT: GOODCRUSH - 4 - 01
LOCATION:
MATERIAL: SILTY SAND WITH GRAVEL
SAMPLE SOURCE: NATIVE - S-02

JOB NO: 21-L001
WORK ORDER NO:
LAB NO: 13614
DATE RECEIVED: 10/5/2021

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C136/C117)

MECHANICAL ANALYSIS

SIEVE SIZE	% PASSING
6 in / 152mm	100
4 in / 100mm	100
3 in / 75mm	95
2 in / 50mm	89
1 1/2 in / 37.5mm	83
1 1/4 in / 32 mm	77
1 in / 25 mm	72
3/4 in / 19 mm	68
1/2 in / 12.5 mm	62
3/8 in / 9.5 mm	59
1/4 in / 6.4 mm	55
#4, 4.75mm	53
#8, 2.36mm	50
#10, 2.00mm	49
#16, 1.18mm	45
#30, 0.60mm	35
#40, .425mm	30
#50, .300mm	26
#100, .150mm	21
#200, .075mm	15.8

Reviewed by: *Ravis Ce*



NV5 - PORTLAND
9450 SW COMMERCE CIRCLE-STE 300
WILSONVILLE, OR

7409 SW Tech Center Drive - Suite 145
Tigard, OR 97223
Phone: (503) 443-3799 Fax: (503) 620-2748

PROJECT: GOODCRUSH - 4 - 01
LOCATION:
MATERIAL: GRAVEL WITH SILT AND SAND
SAMPLE SOURCE: NATIVE - S-03

JOB NO: 21-L001
WORK ORDER NO:
LAB NO: 13615
DATE RECEIVED: 10/5/2021

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C136/C117)

MECHANICAL ANALYSIS

SIEVE SIZE	% PASSING
6 in / 152mm	100
4 in / 100mm	100
3 in / 75mm	89
2 in / 50mm	66
1 1/2 in / 37.5mm	59
1 1/4 in / 32 mm	55
1 in / 25 mm	52
3/4 in / 19 mm	50
1/2 in / 12.5 mm	46
3/8 in / 9.5 mm	43
1/4 in / 6.4 mm	39
#4, 4.75mm	37
#8, 2.36mm	30
#10, 2.00mm	28
#16, 1.18mm	23
#30, 0.60mm	16
#40, .425mm	14
#50, .300mm	12
#100, .150mm	9
#200, .075mm	7.2

Reviewed by: *Aavis Co*



NV5 - PORTLAND
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WILSONVILLE, OR

7409 SW Tech Center Drive - Suite 145
Tigard, OR 97223
Phone: (503) 443-3799 Fax: (503) 620-2748

PROJECT: GOODCRUSH - 4 - 01
LOCATION:
MATERIAL: GRAVEL WITH SILT AND SAND
SAMPLE SOURCE: NATIVE - S-04

JOB NO: 21-L001
WORK ORDER NO:
LAB NO: 13616
DATE RECEIVED: 10/5/2021

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C136/C117)

MECHANICAL ANALYSIS

SIEVE SIZE	% PASSING
6 in / 152mm	100
4 in / 100mm	100
3 in / 75mm	100
2 in / 50mm	94
1 1/2 in / 37.5mm	85
1 1/4 in / 32 mm	79
1 in / 25 mm	75
3/4 in / 19 mm	68
1/2 in / 12.5 mm	59
3/8 in / 9.5 mm	54
1/4 in / 6.4 mm	48
#4, 4.75mm	45
#8, 2.36mm	39
#10, 2.00mm	37
#16, 1.18mm	31
#30, 0.60mm	19
#40, .425mm	14
#50, .300mm	11
#100, .150mm	8
#200, .075mm	6.4

Reviewed by: *Aavis Co*



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7409 SW Tech Center Drive - Suite 145
Tigard, OR 97223
Phone: (503) 443-3799 Fax: (503) 620-2748

PROJECT: GOODCRUSH - 4 - 01
LOCATION:
MATERIAL: GRAVEL WITH SAND
SAMPLE SOURCE: NATIVE - S-05

JOB NO: 21-L001
WORK ORDER NO:
LAB NO: 13617
DATE RECEIVED: 10/5/2021

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C136/C117)

MECHANICAL ANALYSIS

SIEVE SIZE	% PASSING
6 in / 152mm	100
4 in / 100mm	100
3 in / 75mm	95
2 in / 50mm	87
1 1/2 in / 37.5mm	81
1 1/4 in / 32 mm	74
1 in / 25 mm	71
3/4 in / 19 mm	64
1/2 in / 12.5 mm	56
3/8 in / 9.5 mm	51
1/4 in / 6.4 mm	45
#4, 4.75mm	42
#8, 2.36mm	36
#10, 2.00mm	34
#16, 1.18mm	28
#30, 0.60mm	15
#40, .425mm	10
#50, .300mm	8
#100, .150mm	6
#200, .075mm	3.9

Reviewed by: *Paris C.*



NV5 - PORTLAND
9450 SW COMMERCE CIRCLE-STE 300
WILSONVILLE, OR

7409 SW Tech Center Drive
Suite 145
Tigard, OR 97223
Phone: 503-443-3799
Fax: 503-620-2748

PROJECT: GOODCRUSH - 4 - 01
LOCATION:
MATERIAL: GRAVEL WITH SILT AND SAND
SAMPLE SOURCE: NATIVE - S-03

JOB NO: 21-L001
WORK ORDER NO:
LAB NO: 13684
DATE RECEIVED: 10/5/21

**RESISTANCE TO DEGRADATION OF SMALL-SIZE COARSE AGGREGATE BY ABRASION AND IMPACT IN
THE LOS ANGELES MACHINE (ASTM C131)**

RESULT: 32% LOSS

**TEST FOR DETERMINATION OF DEGRADATION VALUE
WSDOT TEST METHOD T113**

SEDIMENT HEIGHT (TRIAL 1):	14.8"	DEG. VALUE = 0
SEDIMENT HEIGHT (TRIAL 2):	14.7"	DEG. VALUE = 1

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NV5 - PORTLAND
9450 SW COMMERCE CIRCLE-STE 300
WILSONVILLE, OR

7409 SW Tech Center Drive
Suite 145
Tigard, OR 97223
Phone: 503-443-3799
Fax: 503-620-2748

PROJECT: GOODCRUSH - 4 - 01
LOCATION:
MATERIAL: SAND WITH GRAVEL
SAMPLE SOURCE: NATIVE - S-06

JOB NO: 21-L001
WORK ORDER NO:
LAB NO: 13683
DATE RECEIVED: 10/27/21

**RESISTANCE TO DEGRADATION OF SMALL-SIZE COARSE AGGREGATE BY ABRASION AND IMPACT IN
THE LOS ANGELES MACHINE (ASTM C131)**

RESULT: 18% LOSS

**TEST FOR DETERMINATION OF DEGRADATION VALUE
WSDOT TEST METHOD T113**

SEDIMENT HEIGHT (TRIAL 1): 14.2" DEG. VALUE = 2
SEDIMENT HEIGHT (TRIAL 2): 13.9" DEG. VALUE = 3

TEST FOR SAND EQUIVALENT VALUE (ASTM D2419)

RESULT (TRIAL 1): 22
RESULT (TRIAL 2): 23

REVIEWED BY

