



Whipple Consulting Engineers, Inc.

March 5, 2025

W.O. No. 2024-3776

Liberty Lake Planning, Engineering & Building Services
22710 E. Country Vista Drive
Liberty Lake, WA 99019
Attn: Lisa Key, Director/Planner

**Re: Legacy Ridge West – A Residential Subdivision (2014.PL0003)
Reasonable Use Exception – Development on Lands with 30% Slopes or Greater**

Dear Ms. Key:

Whipple Consulting Engineers on behalf MTK Management, LLC et al., respectfully requests a Reasonable Use Exception (RUE) for the approved preliminary plat (2014.PL0003) and approved Minor Map Modification of Legacy Ridge West. Legacy Ridge West is an approved subdivision of 281 single-family detached residential lots in the R1 zone. This RUE is necessary to develop the remainder of the originally approved plat and to implement the approved Minor Map Modification, whereby, unplatted lots were added to that portion of the plat known as Legacy F. The issue at hand is that the City of Liberty Lake's Critical Area defines slopes over 30-percent as geologically hazardous as defined below in italics. Based on the requirement to be a Geologically Hazardous area one of the above-mentioned items must be present. Responses to each item are in normal text following.

10-6B-5 Geologically Hazardous Areas

- A. *Classification Characteristics. Geologically hazardous areas shall include both erosion and landslide hazard areas and be determined by the following characteristics:*
1. *Erosion and/or landslide hazard areas in the City shall contain at least one of the following characteristics:*
 - a. *A slope of thirty percent or greater.*

In this case and on this project site as was identified in the original preliminary plat application COLL Preliminary Plat #2014.PL0003 as prepared by Taylor Engineering (now Parametrix) a majority of the Legacy F area included slopes of 30% or greater. For refence, the standard remainder slope for side slopes after construction is a 3:1 slope which is essentially a 33% slope, which is greater than the noted 30% slope.

- b. *Soils identified by Natural Resource Conservation Service as having a severe potential for erosion (see Section 10-6B-5, subsection "B" below);*

A copy of the USGS Soils Survey as referenced in Section B for Severe Erosion was reviewed to see if the constituent soil types for this site have a severe Erosion Hazard.

Based on the USGS Soils Survey, a copy attached for reference, the soils mapped on his site are as follows:

5313 – Kramer Hill Spokane Complex, 9 to 25 percent slopes
5037 – Spokane Rock Outcrop Complex, 30 to 55 percent slopes
5040 – Spokane Swakane Complex, 3 to 15 percent slopes
5041 – Spokane Swakane Complex, 15 to 30 percent slopes
5071 – Lenz Spokane Complex, 15 to 30 percent slopes

The original study was from 1994, technically none of the above NEW soil units are illustrated in the COLL Critical Area document from which used the old categories and names. 5037, Spokane Rock Outcrop Complex, 30 to 50% slopes could be the closest, however the older symbol of 2wf8 does not match Sse. Because this is a soil type wherein a layer of up to 26-inches of ashy loam, erosion by wind and water could be considered in design.

A copy of the Sse description from the original Soil Survey is attached for reference. While different, the Sse description is similar enough for this one soil type to require special care during design to limit erosion due to topping soils over the bedrock.

- c. *Hydraulic factors such as existing on-site surface and groundwater or changes in hydraulic factors, caused by proposals that create a severe potential for erosion or landslide hazard;*

We do not believe that this item applies, however, a condition outlining specific requirements that are found in the SRSM could be deemed appropriate when dealing with stormwater and erosion control, technically on soil unit 5037.

- d. *Areas that historically have been prone to land sliding (areas adjacent to lakes, streams, springs) or any one of the following geologic formations: alluvium, landslide deposit, Latah formation;*

Based on the Geotechnical report from Budinger, this site is not alluvium, landside deposit nor Latah formation.

e. *Areas of uncompacted fill;*

This area does not have uncompacted fill, other than noted in the Budinger report, which will be removed as part of the constructive effort for this project.

f. *Areas that are unstable as a result of rapid stream or stream bank erosion.*

This item does not apply to this project.

Based on a review of the above criteria, the implementation of the document as approved in the Minor Map modification does contain areas of both steep slopes and soils with erosion potential.

As can be seen by the two maps attached: the original preliminary plat and the supplemented preliminary plat from the Minor Map modification, the steep slopes and erodible slopes exist in this area are specifically contemplated in the Minor Map modification. It is our understanding that all lots associated with Valley Vista Drive that were approved as a part of the original preliminary plat are not subject to review for Critical Areas – Geologically Hazardous Areas. Based on that we have prepared a map, see attachments wherein the newly placed lots as a part of the modification, the subject of this request for consideration are only in Areas A and B.

Below are the criteria to consider for approving a Reasonable Use Exception again shown as italic with normal text as justification or argument following this section.

B.

Reasonable Use Exception.

1) *Requirements. If an applicant for a development proposal demonstrates to the satisfaction of the Zoning Administrator that application of the standards of this article would deny all reasonable use of the property, development as conditioned shall be allowed. The applicant shall pay a fee, as established in the adopted City Fee Schedule, which may cover mailing and processing and submit documentation on forms provided by the City demonstrating all of the following to the satisfaction of the Zoning Administrator:*

- a) *The application of this article would deny all reasonable use of the property; and*
- b) *There is no reasonable use with less impact on the wetland, fish and wildlife habitat, or geo-hazard area; and*
- c) *The requested use or activity will not result in any damage to other property and will not threaten the public health, safety, or welfare on or off the property; and*
- d) *Any alteration to the wetland, fish and wildlife habitat, or geo-hazard area is the minimum necessary to allow for reasonable use of the property; and*

- e) *The inability of the applicant to derive reasonable use is not the result of actions by the applicant in subdividing the property or adjusting boundary lines thereby creating the undevelopable condition after the effective date this Code.*

Based upon our review of the areas that would fall into the needed Reasonable Use Exception, we offer the following:

Supporting Statements for a Reasonable Use Exception – Construction on Slopes of 30 Percent or Greater with Bedrock Foundations, Stormwater Management, and Sustainability Features.

The site plan that was part of the Minor Map Amendment was prepared to allow for appropriate, economic and adequate design of the site. Loss of the lots under consideration will put this portion of the Legacy development in jeopardy of being able to be developed due to financial considerations. While we recognize that financial considerations alone are not a reason to “not” develop a parcel, it is true that parcels with difficult geography require extended funds to develop with a reasonable rate of return due or development will terminate, and the Legacy F project is a project with difficult geography to develop. This project has already once or twice been reviewed, bought and rejected due to development costs. Therefore, for this specific instance to be successful these lots under consideration are a must. Denial of this Reasonable Use Exception will result in the same circumstances that have already plagued this difficult site. Which would be the continued vacancy and yet desirable hill in the City of Liberty Lake, inside the Urban Growth Area with no means to reasonably develop with a reasonable rate of return as development costs continue to rise. This is true and will remain true as long as development is a private and not public endeavor.

Below you will find guidelines that would allow use of the site, would demonstrate a limitation of site grading impacts as proposed, will not damage other downstream properties, will not uniquely provide a development any different than other properties on similar slopes in the overall Legacy Ridge development and demonstrate our desire to develop this site reasonably within the bounds of the overall Legacy Ridge West subdivision COLL Preliminary Plat #2014.PL0003.

To supplement these answers, we respectfully offer the following: This proposal is supported by detailed geotechnical engineering studies and a robust stormwater management plan has been prepared complimentary to the previously approved Stormwater Management prepared by Taylor Engineers for the entirety of the Legacy Hills project. Furthermore, this project aligns with the urgent need to address the **housing emergency in the state of Washington** while providing economic, environmental, and community benefits.

Key Justifications and/or Mitigation measures:

1. Addressing Washington’s Housing Emergency

- The housing crisis in Washington demands innovative solutions to expand the housing supply while maintaining safety and environmental stewardship. We believe this project accomplishes this task.
- This proposal economically and responsibly utilizes land that would otherwise remain undevelopable, contributing to the availability of homes in a growing community like Liberty Lake.
- The project directly supports regional efforts to meet housing demands while balancing public safety and sustainability goals in a reasonable manner in a safe and orderly fashion.

○

2. Proven Stability of Bedrock Foundations

- **Geotechnical Validation:** A licensed geotechnical engineer has confirmed that the underlying bedrock provides a stable and reliable foundation for construction, minimizing risks associated with steep slopes.
- **Engineering Solutions:** The project may incorporate geotechnical recommendations for site and lot stabilization using techniques consistent with the proposal, including deep foundations, retaining walls, and rock anchors, ensuring safe and durable development.
- **Natural Slope Reinforcement:** The presence of bedrock significantly reduces the likelihood of erosion or landslides, making it an ideal foundation for sustainable construction.
- **Appropriate Erosion Control Methods:** Appropriate erosion control methods will be established in coordination with the site geotechnical engineer to ensure downstream safety during and after construction.

○

3. Stormwater Management Plan

- **Site Drainage:** Stormwater will be directed downslope into existing pond infiltration systems, generally north of Kramer Road, designed to handle runoff efficiently without impacting adjacent properties or the environment.
- **Erosion and Sediment Control:** Protective measures will prevent sediment displacement, maintaining the integrity of the slope and surrounding areas.
- **Low Impact Design:** The project will incorporate permeable surfaces, vegetative swales, and natural buffers to reduce environmental disruption and ensure long-term sustainability where practicable and warranted.

○

4. Sustainability and Eco-Friendly Design

- The homes will be designed with **energy efficiency and sustainability** in mind, incorporating features such as solar panels, energy-efficient appliances, and sustainable building materials.
- These measures not only reduce the carbon footprint of the development but also align with the City’s broader environmental goals.

- Landscaping will emphasize native and drought-tolerant vegetation to minimize water use and preserve the natural habitat.
-

5. Community and Economic Benefits

- While this project is expected to be priced, generally in the range of other homes in the Legacy development, by creating these lots and hence the future homes, this project frees up residential opportunities in other middle housing neighborhoods for middle to upper middle-income families that wish to live in the City of Liberty Lake for the type of lifestyles that it offers.
- The development will generate economic activity through job creation during construction and increased property tax revenue, which benefits the City and its residents.
- New residents will support local businesses and contribute to the vitality of the community, further integrating the development into the fabric of Liberty Lake.
- The project ensures that these steep-slope lots contribute to housing supply and economic growth rather than remaining unused.
-

6. Emergency Access and Safety Plans

- The development plan will include provisions for safe emergency access, such as widened driveways and reinforced access routes to ensure safety for residents and first responders.
- Additional safety measures, such as fire-resistant building materials and evacuation plans, will be incorporated where appropriate.
- The homes will be sprinkled as necessary and consistent with the rules and requirements of the Spokane Valley Fire Department and the IFC.
-

7. Neighborhood Compatibility

- The proposed homes will be designed to blend harmoniously with the surrounding area, maintaining the character and aesthetic of the neighborhood, consistent with some of the original Legacy homesites.
- Thoughtful landscaping and design will ensure the development enhances the community's visual appeal while preserving natural features where possible.
-

8. Commitment to Oversight and Mitigation

- The applicant is committed to maintaining all mitigation measures, including stormwater systems and slope stabilization as necessary or as recommended by the site Geotechnical Engineer, Budinger.
- Regular inspections and performance monitoring will ensure the long-term safety and effectiveness of the proposed development.

Conclusion

This Reasonable Use Exception offers a well-rounded solution to developing steep slopes, balancing safety, sustainability, and the urgent need for housing in the state of Washington. The combination of geotechnical validation, advanced stormwater management, sustainability features, and thoughtful community integration makes this project a model for responsible development.

We respectfully urge the City of Liberty Lake to approve this Exception, confident that it aligns with the City’s goals and broader regional needs. We are committed to addressing any additional conditions or requirements to ensure this development succeeds as a safe, sustainable, and community-enhancing project.

Lastly, and to reiterate, without the additional lots as noted above and the approval of this Reasonable Use Exception, this project most likely will not be viable in the foreseeable future and remain undeveloped for years to come. Especially as it has remained undeveloped since 2004 when originally considered.

We therefore request that this Reasonable Use Exception be approved as outlined above.

If you have any questions or comments regarding this letter, please feel free to contact us at (509) 893-2617.

Respectfully,

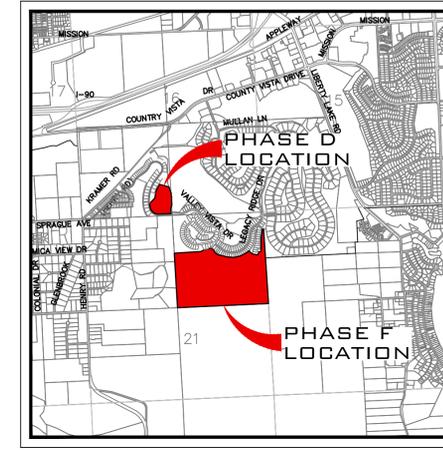


Todd R. Whipple, P.E.
Whipple Consulting Engineers, Inc.
TRW/trw

CC: File
Sponsor

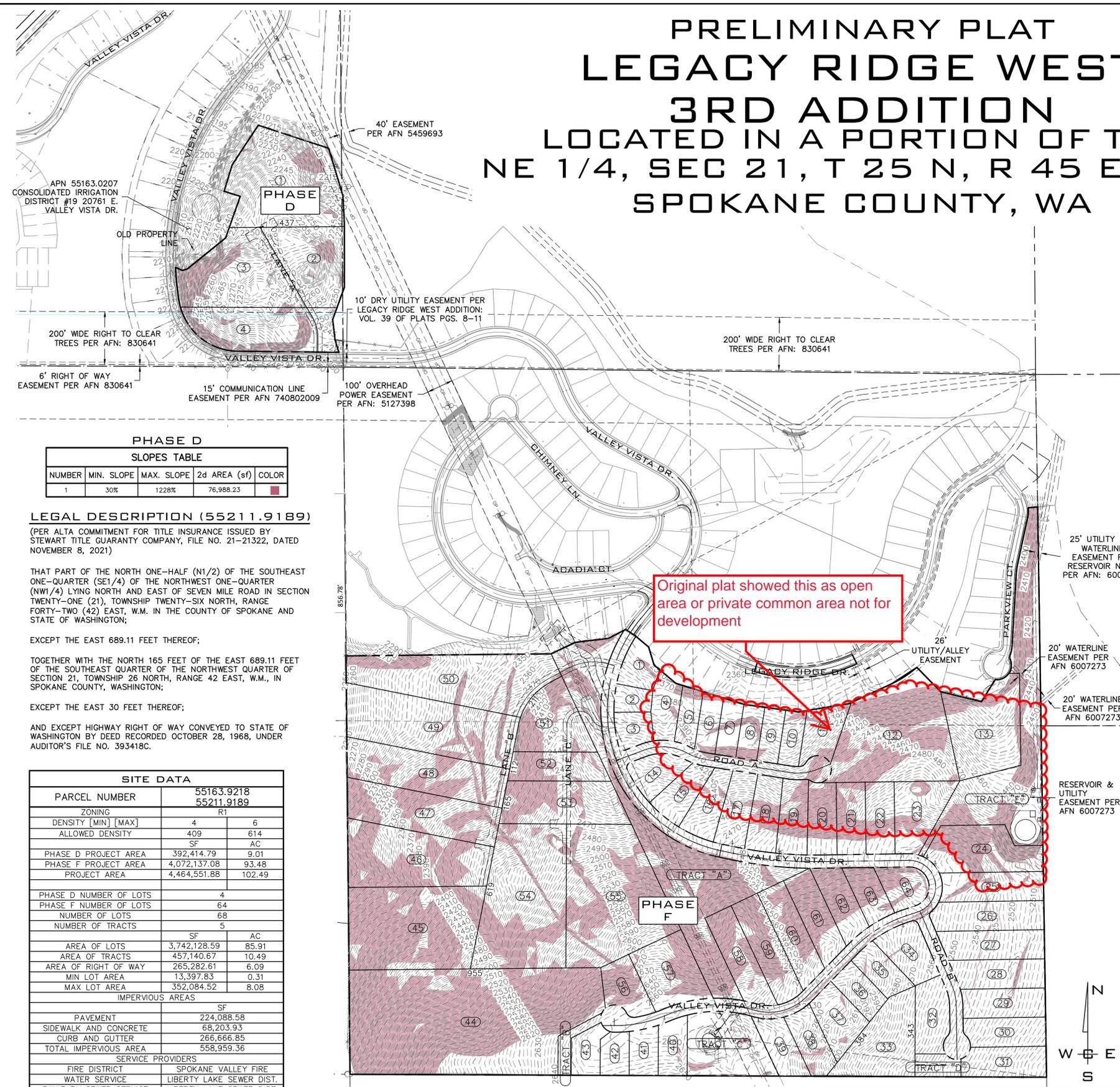
APP'D PRELIMINARY
PLAT

PRELIMINARY PLAT LEGACY RIDGE WEST 3RD ADDITION LOCATED IN A PORTION OF THE NE 1/4, SEC 21, T 25 N, R 45 E, W.M. SPOKANE COUNTY, WA



VICINITY MAP

UNDERGROUND SERVICE ALERT
ONE-CALL NUMBER
811
CALL TWO BUSINESS DAYS BEFORE YOU DIG



Original plat showed this as open area or private common area not for development

APN 55163.0207
CONSOLIDATED IRRIGATION
DISTRICT #19 20761 E
VALLEY VISTA DR.

40' EASEMENT
PER AFN 5459693

10' DRY UTILITY EASEMENT PER
LEGACY RIDGE WEST ADDITION:
VOL. 39 OF PLATS PGS. 8-11

200' WIDE RIGHT TO CLEAR
TREES PER AFN: 830641

200' WIDE RIGHT TO CLEAR
TREES PER AFN: 830641

6' RIGHT OF WAY
EASEMENT PER AFN 830641

15' COMMUNICATION LINE
EASEMENT PER AFN 740802009

100' OVERHEAD
POWER EASEMENT
PER AFN: 5127398

PHASE D SLOPES TABLE				
NUMBER	MIN. SLOPE	MAX. SLOPE	2d AREA (sf)	COLOR
1	30%	1228%	76,988.23	

LEGAL DESCRIPTION (55211.9189)
(PER ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY STEWART TITLE GUARANTY COMPANY, FILE NO. 21-21322, DATED NOVEMBER 8, 2021)

THAT PART OF THE NORTH ONE-HALF (N1/2) OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF THE NORTHWEST ONE-QUARTER (NW1/4) LYING NORTH AND EAST OF SEVEN MILE ROAD IN SECTION TWENTY-ONE (21), TOWNSHIP TWENTY-SIX NORTH, RANGE FORTY-TWO (42) EAST, W.M. IN THE COUNTY OF SPOKANE AND STATE OF WASHINGTON;

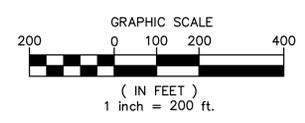
EXCEPT THE EAST 689.11 FEET THEREOF;

TOGETHER WITH THE NORTH 165 FEET OF THE EAST 689.11 FEET OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 21, TOWNSHIP 26 NORTH, RANGE 42 EAST, W.M., IN SPOKANE COUNTY, WASHINGTON;

EXCEPT THE EAST 30 FEET THEREOF;

AND EXCEPT HIGHWAY RIGHT OF WAY CONVEYED TO STATE OF WASHINGTON BY DEED RECORDED OCTOBER 28, 1968, UNDER AUDITOR'S FILE NO. 393418C.

SITE DATA	
PARCEL NUMBER	55163.9218
ZONING	R1
DENSITY [MIN] [MAX]	4 6
ALLOWED DENSITY	409 614
	SF AC
PHASE D PROJECT AREA	392,414.79 9.01
PHASE F PROJECT AREA	4,072,137.08 93.48
PROJECT AREA	4,464,551.88 102.49
PHASE D NUMBER OF LOTS	4
PHASE F NUMBER OF LOTS	64
NUMBER OF LOTS	68
NUMBER OF TRACTS	5
	SF AC
AREA OF LOTS	3,742,128.59 85.91
AREA OF TRACTS	457,140.67 10.49
AREA OF RIGHT OF WAY	265,282.61 6.09
MIN LOT AREA	13,397.83 0.31
MAX LOT AREA	352,084.52 8.08
IMPERVIOUS AREAS	
	SF
PAVEMENT	224,088.58
SIDEWALK AND CONCRETE	68,203.93
CURB AND GUTTER	266,666.85
TOTAL IMPERVIOUS AREA	558,959.36
SERVICE PROVIDERS	
FIRE DISTRICT	SPOKANE VALLEY FIRE
WATER SERVICE	LIBERTY LAKE SEWER DIST.
SANITARY SEWER SERVICE	LIBERTY LAKE SEWER DIST.



PHASE F SLOPES TABLE				
NUMBER	MIN. SLOPE	MAX. SLOPE	2d AREA (sf)	COLOR
1	30%	1228%	1,625,556.70	

SCALE:
HORIZONTAL:
1"=200'
VERTICAL:
N/A

PROJ #: 24-3776
DATE: 08/08/24
DRAWN: SLS
REVIEWED: TRW

- CIVIL
- STRUCTURAL
- SURVEYING
- TRAFFIC
- PLANNING
- LANDSCAPE
- OTHER



**LEGACY RIDGE WEST 3RD ADDITION
PRELIMINARY PLAT COVER
VALLEY VISTA DR AND LEGACY RIDGE DR
LIBERTY LAKE, WA**

**SHEET
PP1**

JOB NUMBER
24-3776

SHEET INDEX	
Sheet Title	Sheet Description
PP1	PRELIMINARY PLAT COVER
PP2	ORIGINAL LEGACY RIDGE PRELIMINARY PLAT
PP3	PHASE D PRELIMINARY PLAT
PP4	PHASE F PRELIMINARY PLAT (WEST)
PP5	PHASE F PRELIMINARY PLAT (EAST)

LEGACY RIDGE WEST PLAT DATA (SEE SHEET PP2)		
PHASING	PRELIMINARY LOT COUNT	PLATTED LOT COUNT
PHASE 1	83	83
PHASE 2	170	123
PHASE 3	28	0
TOTAL	281	206
DIFFERENCE		75
LEGACY RIDGE WEST 3RD ADD. PRELIM PLAT DATA		
PHASE D	4	
PHASE F	64	
TOTAL	68	



LEGACY RIDGE WEST PRELIMINARY PLAT PHASING OVERVIEW
SCALE: NTS

- LEGACY RIDGE WEST PRELIMINARY PLAT PHASE 1
- LEGACY RIDGE WEST PRELIMINARY PLAT PHASE 2
- LEGACY RIDGE WEST PRELIMINARY PLAT PHASE 3

ENGINEER/CONTACT
WHIPPLE CONSULTING ENGINEERS
21 SOUTH PINES
SPOKANE VALLEY, WA 99206
PHONE: 893-2617
CONTACT: TODD WHIPPLE, P.E.

SURVEYOR
WHIPPLE CONSULTING ENGINEERS 21
SOUTH PINES
SPOKANE VALLEY, WA 99206
PHONE: 893-2617
CONTACT: BRETT A. GRIFFITH, P.L.S.

OWNER/DEVELOPER
MTK MANAGEMENT, LLC ET AL
PO BOX 935,
OTIS ORCHARDS, WA, 99027

LEGAL DESCRIPTION (55163.9218)
(PER ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY STEWART TITLE GUARANTY COMPANY, FILE NO. 23-31513-VTEE, AMENDED REPORT #6, EFFECTIVE DATE: MAY 8, 2024)

PARCEL A:
THAT UNPLATTED PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 16, TOWNSHIP 25 NORTH, RANGE 45 EAST, W.M., LYING NORTHERLY AND EASTERLY OF TRACT "C" (EAST VALLEY VISTA DRIVE) OF LEGACY RIDGE WEST 1ST ADDITION, AS PER PLAT RECORDED IN VOLUME 43 OF PLATS, PAGES 16 THROUGH 19;
TOGETHER WITH THAT UNPLATTED PORTION OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 16 LYING WESTERLY OF "GREENACRES LANDFILL", ACCORDING TO THE DOCUMENTS RECORDED IN VOLUME 92 OF SURVEYS, PAGE(S) 71 THROUGH 74;
EXCEPTING THEREFROM ANY PORTION OF THE LYING WITHIN THE FINAL PLAT OF LEGACY RIDGE WEST ADDITION, AS PER PLAT RECORDED IN VOLUME 39 OF PLATS, PAGES 8 THROUGH 11;
ALSO EXCEPTING THEREFROM ANY PORTION LYING WITHIN SAID LEGACY RIDGE WEST 1ST ADDITION, AS PER PLAT RECORDED IN VOLUME 43 OF PLATS, PAGES 16 THROUGH 19;
ALSO EXCEPTING THEREFROM ANY PORTION LYING WITHIN "GREENACRES LANDFILL", ACCORDING TO THE DOCUMENTS RECORDED IN VOLUME 92 OF SURVEYS, PAGE(S) 71 THROUGH 74;
ALSO EXCEPTING THEREFROM ANY PORTION OF THE "40 FOOT CANAL RIGHT-OF-WAY";
ALSO EXCEPTING THEREFROM THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 16, TOWNSHIP 24 NORTH, RANGE 45 EAST, W.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF TRACT "E" OF SAID LEGACY RIDGE WEST 1ST ADDITION; THENCE SOUTH 11°10'13" WEST 140.00 ALONG THE EASTERLY LINE OF SAID TRACT "E"; THENCE SOUTH 46°22'23" WEST 217.10 ALONG AN EASTERLY LINE OF SAID TRACT "E" TO THE MOST SOUTHERLY CORNER OF SAID TRACT "E"; THENCE SOUTH 66°14'51" EAST 28.71 FEET; THENCE NORTH 73°36'54" EAST 18.82 FEET; THENCE NORTH 52°38'29" EAST 45.17 FEET; THENCE NORTH 50°40'48" EAST 141.9 FEET; THENCE NORTH 19°27'11" EAST 166.58 FEET TO THE EXTENDED NORTHERLY LINE OF SAID TRACT "E"; THENCE NORTH 72°49'50" WEST 64.15 FEET ALONG SAID EXTENDED NORTHERLY LINE TO THE POINT OF BEGINNING;

SITUATE IN THE COUNTY OF SPOKANE, STATE OF WASHINGTON.
SITUATE IN THE CITY OF LIBERTY LAKE, COUNTY OF SPOKANE, STATE OF WASHINGTON. (55163.9216)

PARCEL B:
THAT PORTION OF THE NORTHEAST QUARTER OF SECTION 21, TOWNSHIP 25 NORTH, RANGE 45 EAST, W.M., LYING SOUTH OF THE LEGACY RIDGE WEST ADDITION, AS PER PLAT RECORDED IN VOLUME 39 OF PLATS, PAGE(S) 8 THROUGH 11 AND SOUTH OF LEGACY RIDGE PHASE IV, AS PER PLAT RECORDED IN VOLUME 36 OF PLATS, PAGE(S) 43-44; AND SOUTH OF LEGACY RIDGE PHASE III, AS PER PLAT RECORDED IN VOLUME 35 OF PLATS, PAGE(S) 75-76; AND SOUTH OF THOSE PORTIONS DESCRIBED IN DEEDS RECORDED IN 6301147, 6344178, 6357677, 6357682, 6363359, 6367372, 6511741, 6738799, AND 6995242;

SITUATE IN THE CITY OF LIBERTY LAKE, COUNTY OF SPOKANE, STATE OF WASHINGTON. (55211.9189)



Legacy Ridge West Preliminary Plat

Located in Sec. 16 and 21, T.25N., R.45E., W.M., City of Liberty Lake, WA



Legacy Ridge West Site Information

Applicant: Rian Tuttle, The Holt Group
Owner: Holt Opportunity Fund 2013, LP
 P.O. Box 87970
 Vancouver, WA 98687

Parcel Numbers: 55163.9161, as adjusted, and 55216.9166
Zoning*: R-1, Single-Family Residential and M-2 (1.8 Acres ±)
Site Area: 200.34 Acres, per Assessor
 198.64 Acres per boundary calculation (Used for density analysis)
 Attached and detached single-family dwellings within R-1 zone, as permitted by code.
 Uses as permitted within the M-2 zone. Recreation, utilities and drainage within Common Areas.

Proposed New Lots: 281
Proposed Gross Density: 1.41 du/acre
Area of Private Roads: Approx. 14.5 Acres
Area of Common Area: Approx. 89.3 Acres
Area of Slopes >30%: Approx. 38.2 Acres within proposed lots (59.6 Ac. Total)
Net Area: Approx. 56.6 Acres
Proposed Net Density:** Approx. 5.0 du/ac. (281 du/56.6 ac.)
Percent of Building Coverage: Approximately 8-10% of the total site.
Typical Lot Frontage: The minimum frontage for lots with attached single-family (townhome) units will be 30'. Frontages for detached single-family lots vary from approx. 50' to 90', with much greater frontages for the southern lots.

Lot Sizes: Lot sizes vary from 2,700 s.f. (30'x90') for attached single-family (townhome) lots to 4.8 acres for the large southern lots. Most detached single-family lots are approx. 6,000 s.f. to 9,000 s.f. Many lots, especially those within Phase 3, will be significantly larger due to slopes, water service restrictions, and to provide a greater variety of housing types.

Building Setbacks: Per Sec. 10-2B-6 for SF Structures (See below for graphic).
Phasing: The final plat will be phased. This plan shows three phases, but there will likely be more. Phasing is subject to change with administrative approval.

Roadways: Private: Extensions of existing private roads within the gated portion of the project. New roads within the northwest portion of the project, outside the gates, will be public.

Street Lighting: Street lights will be installed within this plat, per standards.

Parking: Min. Two spaces per dwelling unit, including driveways.

Easements: As shown. All utilities serving the plat are either within existing easements, new utility easements, or public rights-of-way.

Homeowners Assn.: Legacy Ridge at Liberty Lake H.O.A.

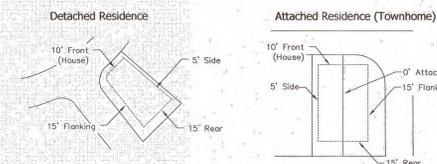
Sewer: Liberty Lake Sewer and Water District, with portion in Spokane County system

Water: Liberty Lake Sewer and Water District, except northwest portion within Consolidated Irrigation District #19

Electricity: Avista Utilities
Natural Gas: Avista Utilities
Telephone: Centurylink Communications

* Zoning is current at time of application. A request has been submitted to rezone the northwestern 13.1 acres to M-2.
 ** Net Density will be reviewed for each each phase to ensure a minimum of 4 du/ac. is maintained within the plat.

Typical Setbacks (Per Sec. 10-2B-6 for SF structures)
 Setback may be varied from with proper zoning approval.

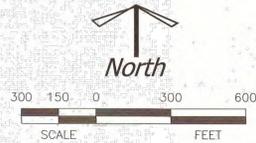


Surveyor: David M. Seese, L.C. #35991
 Note: This preliminary plat map is not a boundary survey, but rather a representation of the legal description provided by the title company. Distances and bearings shall be considered approximate only until such time as a final plat has been prepared and recorded.

REVISIONS		Taylor Engineering, Inc. Civil Design and Land Planning W. 100 Mission Ave. Spokane, Washington 99201 (509) 328-3371 FAX (509) 328-8224	SCALE: 1/8 OF 4
DWN:	DATE: 7/16/14		
CK'D:	DATE:	PP2	



SHEET PP2
 JOB NUMBER
24-3776



Y:\WCE_WORK\2024\WCE_PROJECTS\2024-3776\KINNEY - LEGACY RIDGE-FD\DWG\3776-PPLAT.DWG PLOT DATE: 08/12/24
 P:\WCE_WORK\2024\WCE_PROJECTS\2024-3776\Kinney - Legacy Ridge-FD\DWG\3776-PPLAT.dwg - 8/12/2024 12:01:53 PM, schutz, AutoCAD PDF (General Documentation).pc3

NAVD - 88
 THE MARK IS A WSDOT BRASS DISK SET IN A CONCRETE MONUMENT AT GROUND LEVEL WITH AN ELEV. 2070.160

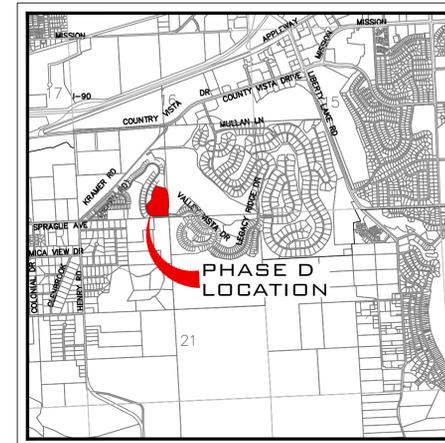
SCALE:	PROJ #: 24-3776
HORIZONTAL:	DATE: 08/08/24
VERTICAL:	DRAWN: SLS
N/A	REVIEWED: TRW

WCE
 WHIPPLE CONSULTING ENGINEERS
 21 S. PINES ROAD
 SPOKANE VALLEY, WA 99206
 PH: 509-893-2617 FAX: 509-926-0227

LEGACY RIDGE WEST 3RD ADDITION ORIGINAL LEGACY RIDGE PRELIMINARY PLAT VALLEY VISTA DR AND LEGACY RIDGE DR LIBERTY LAKE, WA

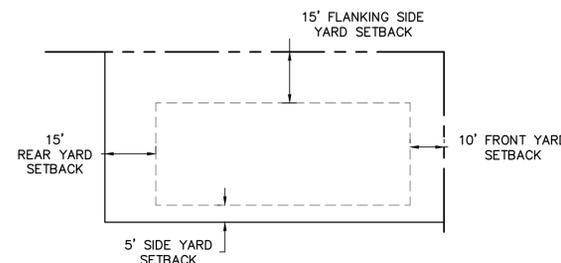
NE 1/4, SEC. 21, T. 25 N., R. 45 E., W.M.

UNDERGROUND SERVICE ALERT
ONE-CALL NUMBER
811
 CALL TWO BUSINESS DAYS BEFORE YOU DIG

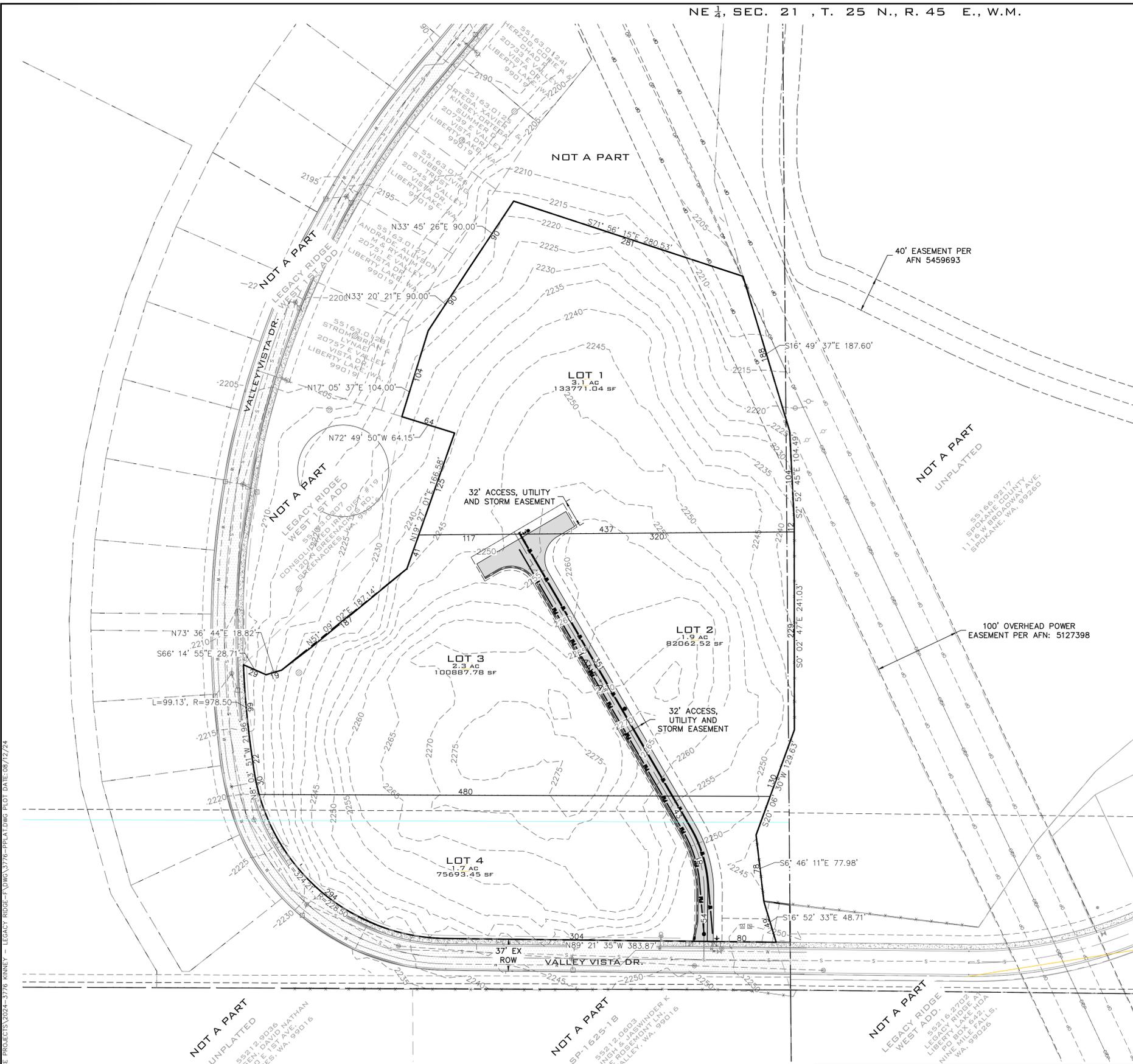


VICINITY MAP

PHASE D SITE DATA	
PARCEL NUMBER	55163.9218
ZONING	RI
DENSITY [MIN] [MAX]	4 6
ALLOWED DENSITY	36 54
	SF AC
PROJECT AREA	392,414.79 9.01
NUMBER OF LOTS	4
NUMBER OF TRACTS	0
AREA OF LOTS	392414.79 9.01
AREA OF TRACTS	0 0.00
AREA OF RIGHT OF WAY	0.00 0.00
MIN LOT AREA	75,693.45 1.74
MAX LOT AREA	133,771.04 3.07
IMPERVIOUS AREAS	
PAVEMENT	SF
	12,882.09
SERVICE PROVIDERS	
FIRE DISTRICT	SPOKANE VALLEY FIRE
WATER SERVICE	LIBERTY LAKE SEWER DIST.
SANITARY SEWER SERVICE	LIBERTY LAKE SEWER DIST.



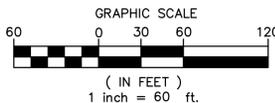
TYPICAL LOT SETBACK DETAIL
 SCALE: NOT TO SCALE



NOT A PART
 UNPLATTED
 5521 2 9036
 RABHUBSEN, DAVID W
 GREENACRES, WA, 99016

NOT A PART
 SP-1625-1B
 BANS, BINGH J
 17209 E ROBERTSON LN,
 SPOKANE VALLEY, WA, 99016

NOT A PART
 LEGACY RIDGE
 WEST ADD.
 5521 2 9036
 LEGACY RIDGE WEST
 LIBERTY LAKE, WA, 99016



SCALE:	PROJ #: 24-3776
HORIZONTAL:	DATE: 08/08/24
1"=60'	DRAWN: SLS
VERTICAL:	REVIEWED: TRW
N/A	

- CIVIL
- STRUCTURAL
- SURVEYING
- TRAFFIC
- PLANNING
- LANDSCAPE
- OTHER

WCE
 WHIPPLE CONSULTING ENGINEERS
 21 S. PINES ROAD
 SPOKANE VALLEY, WA 99206
 PH: 509-893-2617 FAX: 509-926-0227

LEGACY RIDGE WEST 3RD ADDITION
PHASE D PRELIMINARY PLAT
VALLEY VISTA DR AND LEGACY RIDGE DR
LIBERTY LAKE, WA

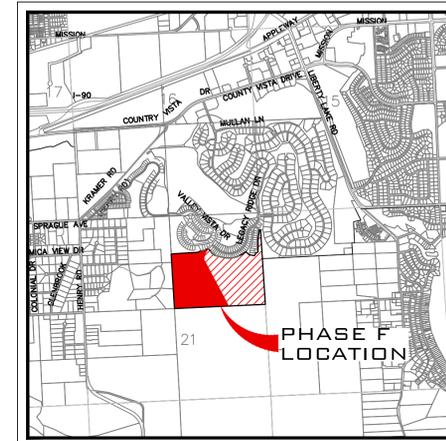


SHEET
PP3
JOB NUMBER
24-3776

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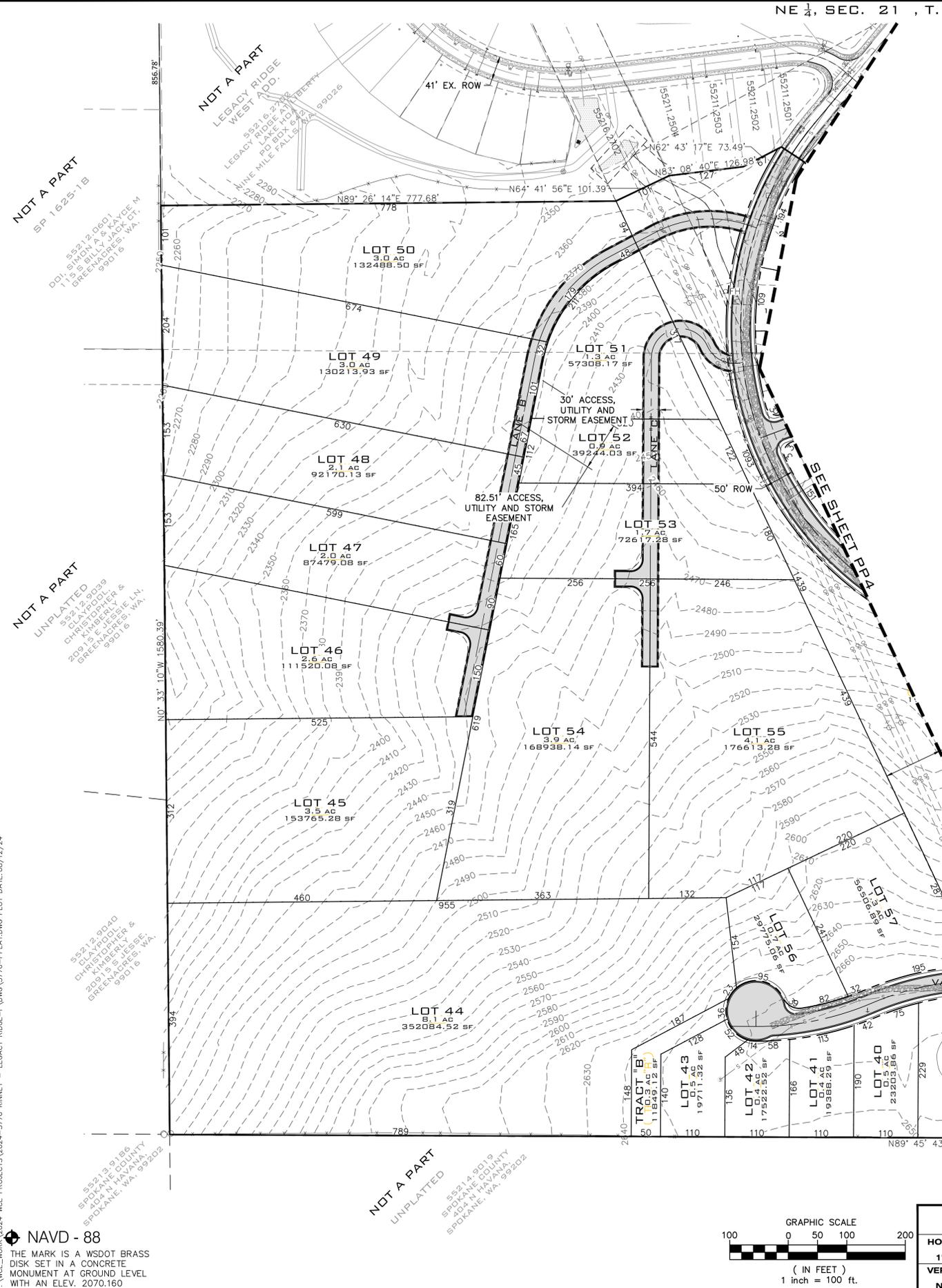
NE 1/4, SEC. 21, T. 25 N., R. 45 E., W.M.

UNDERGROUND SERVICE ALERT
ONE-CALL NUMBER
811
 CALL TWO BUSINESS DAYS BEFORE YOU DIG



VICINITY MAP

ADJACENT PROPERTY DATA		
PARCEL #	OWNER	PLAT DATA
55216.2702	LEGACY RIDGE AT LIBERTY LAKE HOA PO BOX 642, NINE MILE FALLS, WA, 99026	LEGACY RIDGE WEST ADDITION
55211.2504	CLEVINGER, TRAVIS THOMAS JAMES & RACHAEL ELIZABETH 256 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE WEST ADDITION
55211.2503	ALLEN-ELSER LIVING TRUST 254 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE WEST ADDITION
55211.2502	BITTINGER, ROBERT DOUGLAS & TERESA JANE 252 S LEGACY DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE WEST ADDITION
55211.2501	MOORE, KELLIE S & JOHN M 250 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE WEST ADDITION

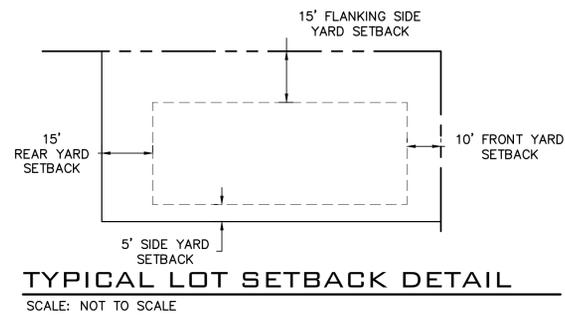


NOT A PART
SP 1825-1B

NOT A PART
UNPLATTED
55212.0001
55212.0009
CHRISTOPHER &
KIMBERLY
20911 E JEFFERSON
GREENACRES, WA,
99016

NOT A PART
UNPLATTED
55212.0010
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CHRISTOPHER &
KIMBERLY
20911 E JEFFERSON
GREENACRES, WA,
99016

NOT A PART
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CHRISTOPHER &
KIMBERLY
20911 E JEFFERSON
GREENACRES, WA,
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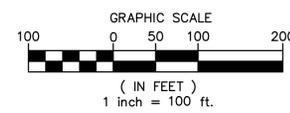
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PARCEL NUMBER	55211.9189
ZONING	R1
DENSITY [MIN] [MAX]	4 6
ALLOWED DENSITY	373 560
PROJECT AREA	SF AC
	4,072,137.08 93.48
NUMBER OF LOTS	64
NUMBER OF TRACTS	5
AREA OF LOTS	3,349,713.80 76.90
AREA OF TRACTS	457,140.67 10.49
AREA OF RIGHT OF WAY	265,282.61 6.09
MIN LOT AREA	13,397.83 0.31
MAX LOT AREA	352,084.52 8.08
IMPERVIOUS AREAS	SF
PAVEMENT	211,206.49
SIDEWALK/CURB AND GUTTER	68,203.93
TOTAL IMPERVIOUS AREA	279,410.42
SERVICE PROVIDERS	
FIRE DISTRICT	SPOKANE VALLEY FIRE
WATER SERVICE	LIBERTY LAKE SEWER DIST.
SANITARY SEWER SERVICE	LIBERTY LAKE SEWER DIST.

SCALE:	PROJ #: 24-3776
HORIZONTAL:	DATE: 08/08/24
1"=100'	DRAWN: SLS
VERTICAL:	REVIEWED: TRW
N/A	

WCE
 WHIPPLE CONSULTING ENGINEERS
 21 S. PINES ROAD
 SPOKANE VALLEY, WA 99206
 PH: 509-893-2617 FAX: 509-926-0227

LEGACY RIDGE WEST 3RD ADDITION
PHASE F PRELIMINARY PLAT (WEST)
VALLEY VISTA DR AND LEGACY RIDGE DR
LIBERTY LAKE, WA

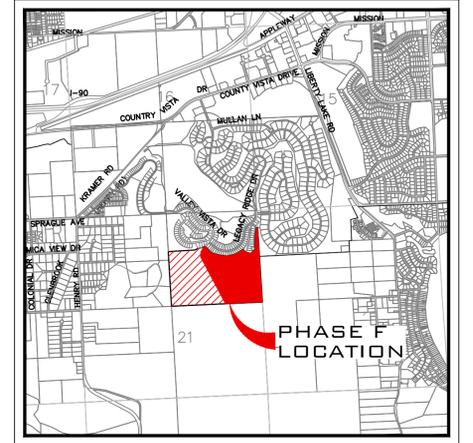
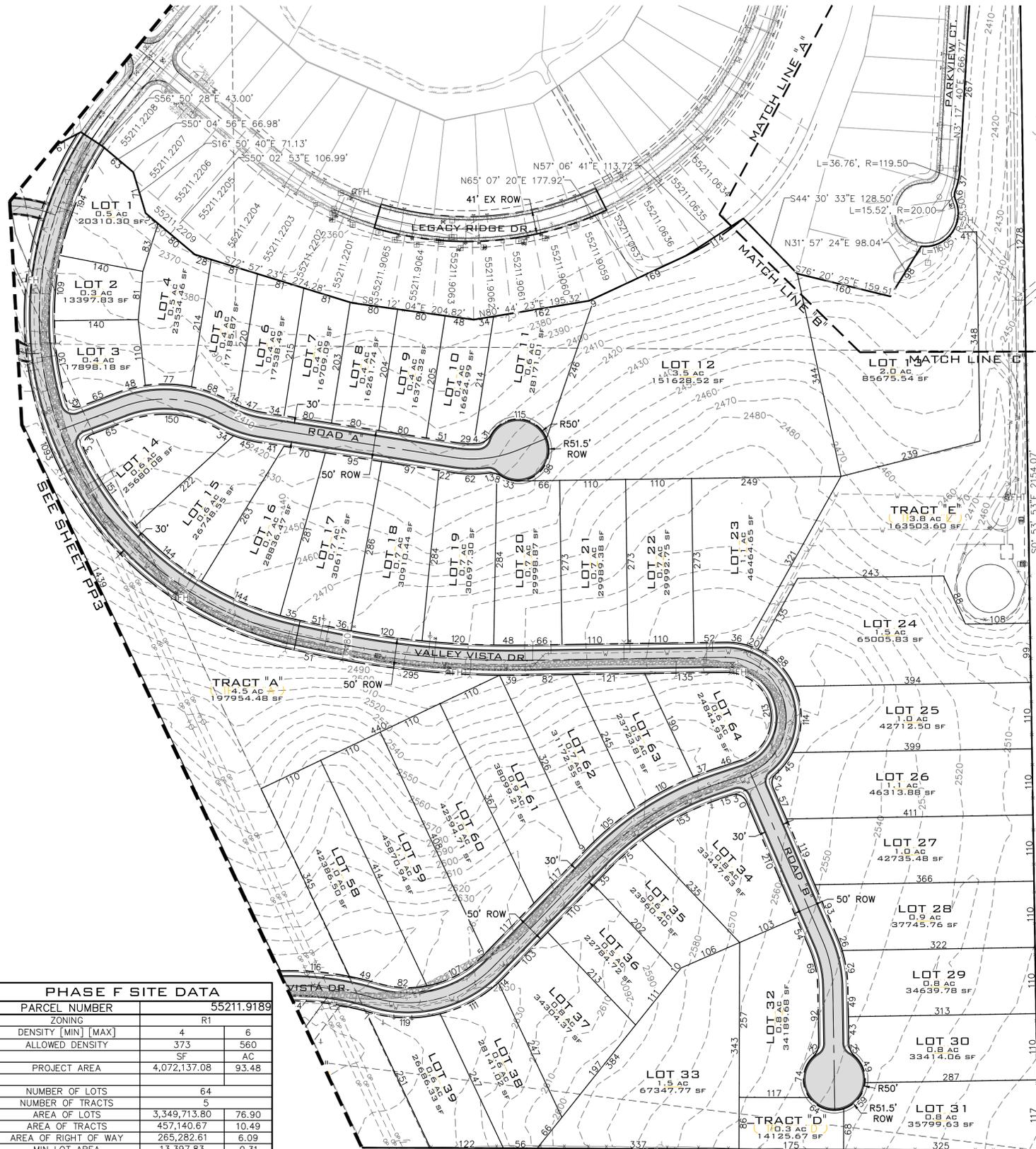
SHEET
PP4
JOB NUMBER
24-3776



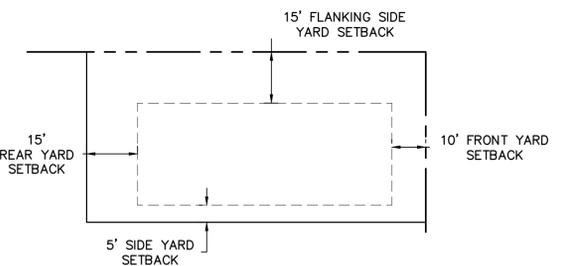
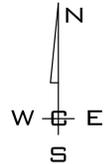
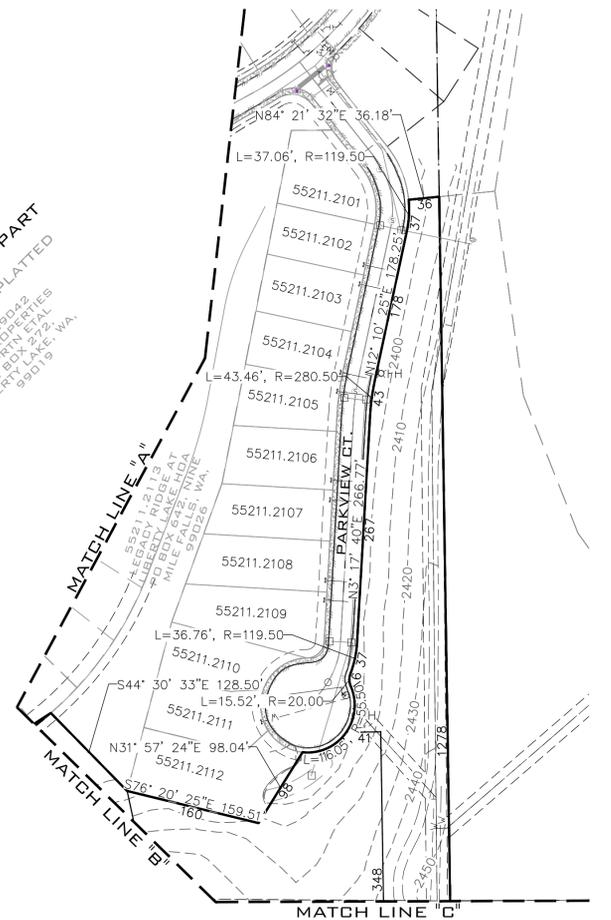
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ADJACENT PROPERTY DATA		
PARCEL #	OWNER	PLAT DATA
55211.2208	STUECKLE, NATHAN D & REBEKAH S 244 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2209	LEGACY RIDGE AT LIBERTY LAKE HOA PO BOX 642, NINE MILE FALLS, WA, 99026	LEGACY RIDGE PHASE IV
55211.2207	KING, BRADY 234 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2206	COGHLAN, JACK G & JEANINE M PO BOX 701, OTIS ORCHARDS, WA, 99027	LEGACY RIDGE PHASE IV
55211.2205	HEMMINGSON, JOSHUA A 218 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2204	HANEY, LAURA JO 210 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2203	HERRON, GARY L 204 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2202	NIEMI, JEREMY R & JENNIFER S 198 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2201	SUNDELL, GERALD D & VICKIE L 192 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.9065	HICKS, RYAN 184 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.9064	KLAUS, ROBERT & DIANE 176 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.9063	PRICHARD, CHARLES M & CATHY A 168 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.9062	MATHEWS, JANET M 160 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.9061	WEBB, KATHLEEN M & MICHAEL W 154 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.9060	STICE, ROBERT W & SANDRA C 150 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.9059	KELLER, KEVIN R & ERIN M 144 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.0637	KNOB, JERRY L & LOUISE K 138 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.0636	STEWART, KAYLA D 595 W ROLLING HILLS LN, WENATCHEE, WA, 98801	LEGACY RIDGE PHASE III
55211.0635	MURNION, ZACHARY J & GRACE A 124 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.0634	BURR, DEBRA D 118 S LEGACY RIDGE DR, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE III
55211.2101	ROMERO-DEES, NICOLE/DEES, SCOTT D 35 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2102	HARBIN, CHARLES D & LINDA K 43 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2103	ROBBINS, DALE R 51 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2104	GROOME, JOHN T & CAROLYN B 59 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2105	BROWNING, JAMES E & CORINNE M 67 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2106	PERRY, DAVID C & BONNIE J 75 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2107	DOUGALL, ROD PO BOX 650, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2108	DARROCH, MARK J 91 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2109	BYERS, TIMOTHY & EVELINE 99 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2110	RYAN, DENNIS D & PATRICIA A 107 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2111	FISHER, KIRK J & CHRISTINE M 115 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV
55211.2112	JENCKS, CHARLES G & ILSA MITCHELL 123 S PARKVIEW CT, LIBERTY LAKE, WA, 99019	LEGACY RIDGE PHASE IV



VICINITY MAP



TYPICAL LOT SETBACK DETAIL
SCALE: NOT TO SCALE

PHASE F SITE DATA	
PARCEL NUMBER	55211.9189
ZONING	R1
DENSITY [MIN] [MAX]	4 6
ALLOWED DENSITY	373 560
PROJECT AREA	4,072,137.08 93.48
NUMBER OF LOTS	64
NUMBER OF TRACTS	5
AREA OF LOTS	3,349,713.80 76.90
AREA OF TRACTS	457,140.67 10.49
AREA OF RIGHT OF WAY	265,282.61 6.09
MIN LOT AREA	13,397.83 0.31
MAX LOT AREA	352,084.52 8.08
IMPERVIOUS AREAS	
PAVEMENT	211,206.49
SIDEWALK/CURB AND GUTTER	68,203.93
TOTAL IMPERVIOUS AREA	279,410.42
SERVICE PROVIDERS	
FIRE DISTRICT	SPOKANE VALLEY FIRE
WATER SERVICE	LIBERTY LAKE SEWER DIST.
SANITARY SEWER SERVICE	LIBERTY LAKE SEWER DIST.

SCALE:	PROJ #: 24-3776
HORIZONTAL: 1" = 100'	DATE: 08/08/24
VERTICAL: N/A	DRAWN: SLS
	REVIEWED: TRW

WCE
WHIPPLE CONSULTING ENGINEERS
21 S PINES ROAD
SPOKANE VALLEY, WA 99206
PH: 509-893-2617 FAX: 509-926-0227

**LEGACY RIDGE WEST 3RD ADDITION
PHASE F PRELIMINARY PLAT (EAST)
VALLEY VISTA DR AND LEGACY RIDGE DR
LIBERTY LAKE, WA**

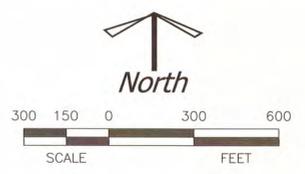
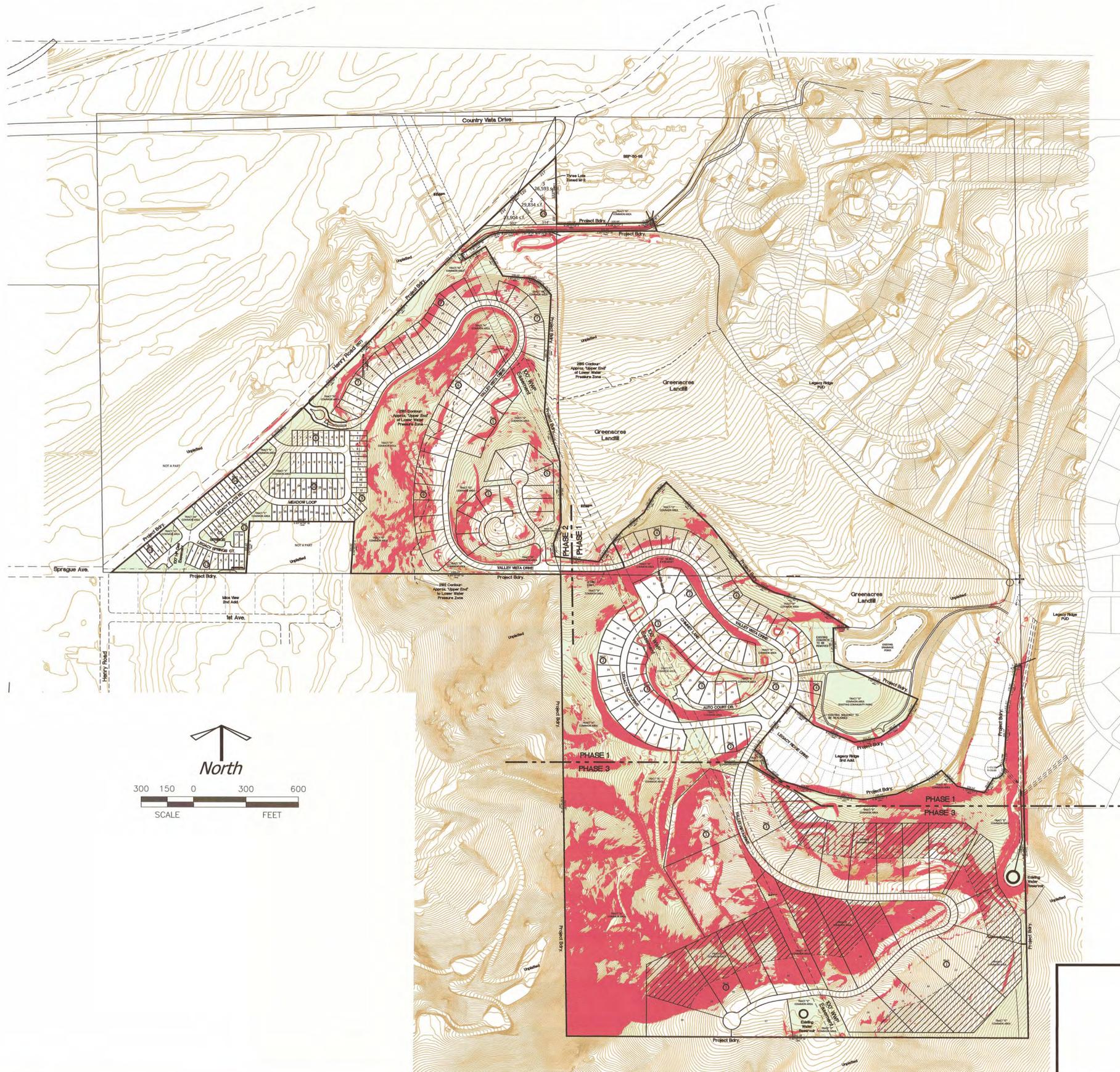


**SHEET
PP5**
JOB NUMBER
24-3776

ORIG LEGACY WEST
APP'D PRELIM PLAT

Legacy Ridge West Preliminary Plat

Located in Sec. 16 and 21, T.25N., R.45E., W.M., City of Liberty Lake, WA



Legacy Ridge West Site Information

Applicant: Rian Tuttle, The Holt Group

Owner: Holt Opportunity Fund 2013, LP
P.O. Box 87970
Vancouver, WA 98687

Parcel Numbers: 55163.9161, as adjusted, and 55216.9166

Zoning*: R-1, Single-Family Residential and M-2 (1.8 Acres ±)

Site Area: 200.34 Acres, per Assessor
198.64 Acres per boundary calculation (Used for density analysis)

Proposed Uses: Attached and detached single-family dwellings within R-1 zone, as permitted by code. Uses as permitted within the M-2 zone. Recreation, utilities and drainage within Common Areas.

Proposed New Lots: 281

Proposed Gross Density: 1.41 du/acre

Area of Private Roads.: Approx. 14.5 Acres

Area of Common Area: Approx. 89.3 Acres

Area of Slopes >30%: Approx. 38.2 Acres within proposed lots (59.6 Ac. Total)

Net Area: Approx. 56.6 Acres

Proposed Net Density**: Approx. 5.0 du/ac. (281 du/56.6 ac.)

Percent of Building Coverage: Approximately 8-10% of the total site.

Typical Lot Frontage: The minimum frontage for lots with attached single-family (townhome) units will be 30'. Frontages for detached single-family lots vary from approx. 50' to 90', with much greater frontages for the southern lots.

Lot Sizes: Lot sizes vary from 2,700 s.f. (30'x90') for attached single-family (townhome) lots to 4.8 acres for the large southern lots. Most detached single-family lots are approx. 6,000 s.f. to 9,000 s.f. Many lots, especially those within Phase 3, will be significantly larger due to slopes, water service restrictions, and to provide a greater variety of housing types.

Building Setbacks: Per Sec. 10-2B-6 for SF Structures (See below for graphic).

Phasing: The final plat will be phased. This plan shows three phases, but there will likely be more. Phasing is subject to change with administrative approval.

Roadways: Private: Extensions of existing private roads within the gated portion of the project. New roads within the northwest portion of the project, outside the gates, will be public.

Street Lighting: Street lights will be installed within this plat, per standards.

Parking: Min. Two spaces per dwelling unit, including driveways.

Easements: As shown. All utilities serving the plat are either within existing easements, new utility easements, or public rights-of-way.

Homeowners Assn.: Legacy Ridge at Liberty Lake H.O.A.

Sewer: Liberty Lake Sewer and Water District, with portion in Spokane County system

Water: Liberty Lake Sewer and Water District, except northwest portion within Consolidated Irrigation District #19

Electricity: Avista Utilities

Natural Gas: Avista Utilities

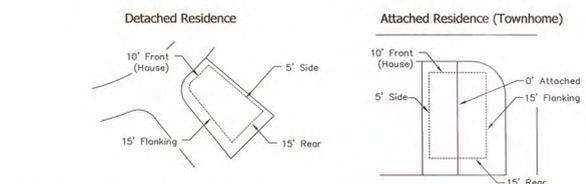
Telephone: Centurylink Communications

* Zoning is current at time of application. A request has been submitted to rezone the northwestern 13.1 acres to M-2.

** Net Density will be reviewed for each phase to ensure a minimum of 4 du/ac. is maintained within the plat.

Approximate areas within the proposed plat containing slopes greater than 30%: 59.6 Acres, approximately 30% of the project area.

Typical Setbacks (Per Sec. 10-2B-6 for SF structures)
Setback may be varied from with proper zoning approval.



Surveyor: David M. Seese, Lic. #35991
Note: This preliminary plat map is not a boundary survey, but rather a representation of the legal description provided by the title company. Distances and bearings shall be considered approximate only until such time as a final plat has been prepared and recorded.

REVISIONS		<p>Taylor Engineering, Inc. Civil Design and Land Planning W. 106 Mission Ave. Spokane, Washington 99201 (509) 328-3371 FAX (509) 328-8224</p>	SCALE:	SHEET
				1A
DWN: _____ DATE: 7/16/14		<p>Legacy Ridge West Preliminary Plat</p>		OF
CK'D: _____ DATE: _____				4

CADD FILE

NRCS
SOIL REPORT



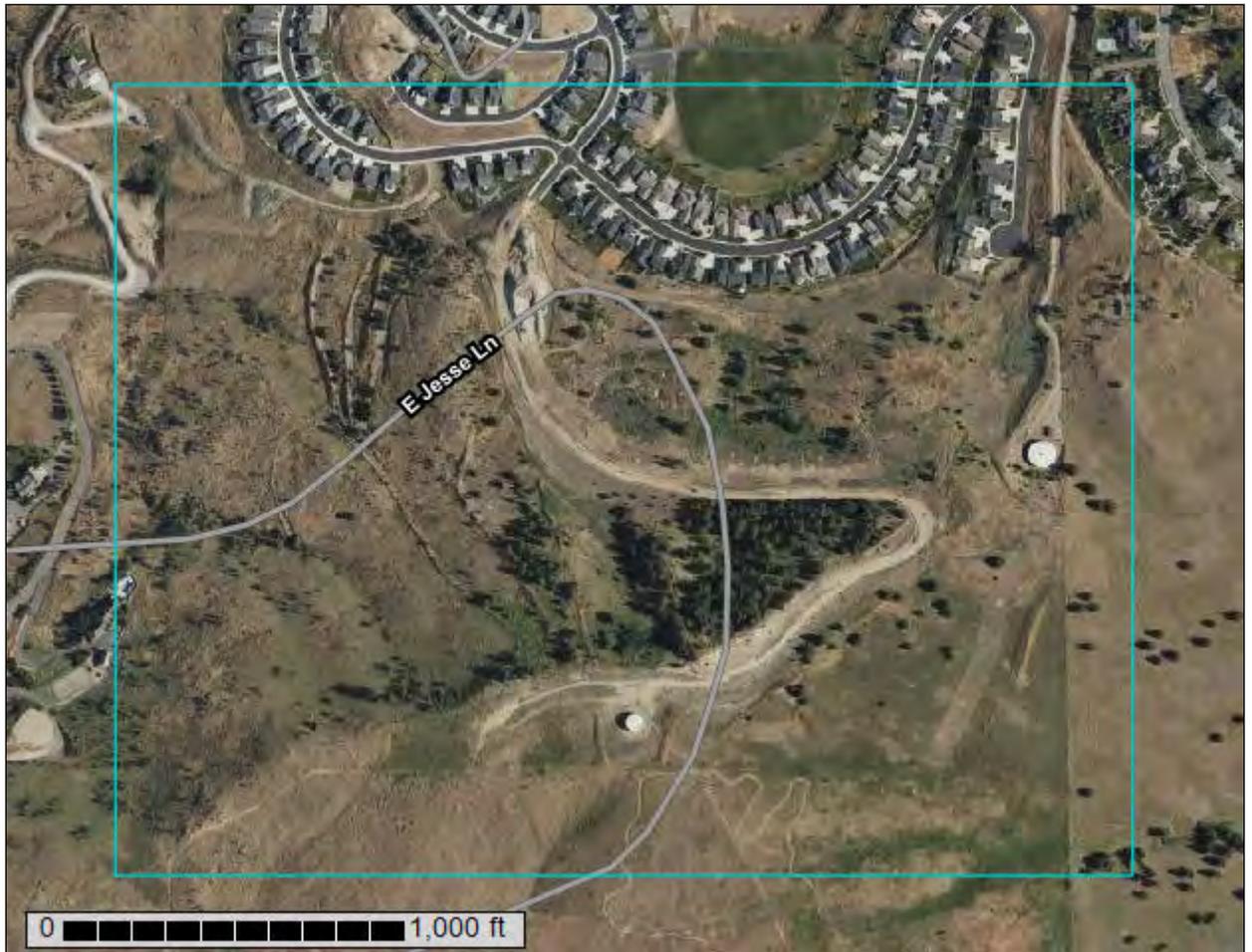
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Spokane County, Washington**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

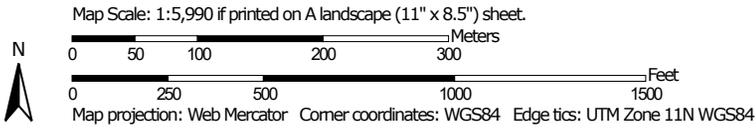
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Spokane County, Washington
 Survey Area Data: Version 16, Aug 26, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 9, 2022—Aug 15, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3024	Phoebe-Battleplain, moist, complex, 0 to 8 percent slopes	17.1	10.7%
3025	Battleplain ashy sandy loam, moist, 15 to 30 percent slopes	6.6	4.1%
3132	Battleplain, moist-Phoebe complex, 8 to 15 percent slopes	9.0	5.6%
5037	Spokane-Rock outcrop complex, 30 to 55 percent slopes	27.2	17.0%
5040	Spokane-Swakane complex, 3 to 15 percent slopes	21.2	13.3%
5041	Spokane-Swakane complex, 15 to 30 percent slopes	22.9	14.3%
5071	Lenz-Spokane complex, 15 to 30 percent slopes	40.1	25.1%
5073	Lenz-Rock outcrop complex, 15 to 30 percent slopes	1.6	1.0%
5313	Kramerhill-Spokane complex, 8 to 25 percent slopes	14.3	9.0%
Totals for Area of Interest		160.1	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a

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particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

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Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Spokane County, Washington

3024—Phoebe-Battleplain, moist, complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: nv4f
Elevation: 1,800 to 2,500 feet
Mean annual precipitation: 18 to 22 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 100 to 130 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Phoebe and similar soils: 45 percent
Battleplain, moist, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Phoebe

Setting

Landform: Outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits with minor amounts of volcanic ash and loess in the upper part

Typical profile

Ap - 0 to 8 inches: ashy sandy loam
A - 8 to 16 inches: ashy sandy loam
Bw1 - 16 to 25 inches: fine sandy loam
Bw2 - 25 to 34 inches: sandy loam
C1 - 34 to 44 inches: loamy sand
C2 - 44 to 60 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F009XY001WA - Mesic Xeric Loamy Hills and Canyons
Ponderosa Pine Moderately Warm Dry Shrub
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Description of Battleplain, Moist

Setting

Landform: Outwash plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy glaciofluvial deposits with minor amounts of volcanic ash and loess in the upper part

Typical profile

Ap - 0 to 11 inches: ashy sandy loam

Bw - 11 to 22 inches: sandy loam

BC - 22 to 28 inches: gravelly coarse sandy loam

C - 28 to 60 inches: coarse sand

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: A

Ecological site: F009XY003WA - Warm Dry Ridges Hills and Canyons Ponderosa Pine Dry Shrub and Grass

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Minor Components

Marble

Percent of map unit: 10 percent

Landform: Outwash plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F043AY509WA - Warm, Xeric, Sandy, Outwash Terraces and Plains (Ponderosa Pine/Dry Grass) *Pinus ponderosa* / *Pseudoroegneria spicata* , *Pinus ponderosa* / *Festuca idahoensis*

Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Hydric soil rating: No

Hardesty

Percent of map unit: 5 percent

Landform: Drainageways, depressions

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

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Ecological site: F043AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces, High Water Table (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos albus, Pinus Ponderosa / Physocarpus malvaceus
Other vegetative classification: ponderosa pine/ninebark (CN190)
Hydric soil rating: No

3025—Battleplain ashy sandy loam, moist, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: nv4g
Elevation: 2,050 to 2,360 feet
Mean annual precipitation: 18 to 21 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 100 to 140 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Battleplain, moist, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Battleplain, Moist

Setting

Landform: Outwash plains
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits with minor amounts of volcanic ash and loess in the upper part

Typical profile

Ap - 0 to 11 inches: ashy sandy loam
Bw - 11 to 22 inches: sandy loam
BC - 22 to 28 inches: gravelly coarse sandy loam
C - 28 to 60 inches: coarse sand

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

*Ecological site: F009XY003WA - Warm Dry Ridges Hills and Canyons Ponderosa
Pine Dry Shrub and Grass*

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Minor Components

Marble

Percent of map unit: 14 percent

Landform: Outwash plains

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Linear

Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Hydric soil rating: No

Phoebe

Percent of map unit: 5 percent

Landform: Outwash plains

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Linear

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Spens

Percent of map unit: 5 percent

Landform: Outwash terraces

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Convex

Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Hydric soil rating: No

Hardesty

Percent of map unit: 1 percent

Landform: Drainageways

Down-slope shape: Linear

Across-slope shape: Linear

Other vegetative classification: ponderosa pine/ninebark (CN190)

Hydric soil rating: No

3132—Battleplain, moist-Phoebe complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: nvb8

Elevation: 1,800 to 2,400 feet

Mean annual precipitation: 18 to 22 inches

Mean annual air temperature: 45 to 50 degrees F

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Frost-free period: 100 to 130 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Battleplain, moist, and similar soils: 45 percent

Phoebe and similar soils: 40 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Battleplain, Moist

Setting

Landform: Outwash plains

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy glaciofluvial deposits with minor amounts of volcanic ash and loess in the upper part

Typical profile

Ap - 0 to 11 inches: ashy sandy loam

Bw - 11 to 22 inches: sandy loam

BC - 22 to 28 inches: gravelly coarse sandy loam

C - 28 to 60 inches: coarse sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A

Ecological site: F009XY003WA - Warm Dry Ridges Hills and Canyons Ponderosa Pine Dry Shrub and Grass

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Description of Phoebe

Setting

Landform: Outwash plains

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy glaciofluvial deposits with minor amounts of volcanic ash and loess in the upper part

Typical profile

Ap - 0 to 8 inches: ashy sandy loam

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A - 8 to 16 inches: ashy sandy loam
Bw1 - 16 to 25 inches: fine sandy loam
Bw2 - 25 to 34 inches: sandy loam
C1 - 34 to 44 inches: loamy sand
C2 - 44 to 60 inches: sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F009XY001WA - Mesic Xeric Loamy Hills and Canyons
Ponderosa Pine Moderately Warm Dry Shrub
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Minor Components

Marble

Percent of map unit: 10 percent
Landform: Outwash plains
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)
Hydric soil rating: No

Hardesty

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: ponderosa pine/ninebark (CN190)
Hydric soil rating: No

5037—Spokane-Rock outcrop complex, 30 to 55 percent slopes

Map Unit Setting

National map unit symbol: 2wf8

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Elevation: 1,700 to 3,000 feet
Mean annual precipitation: 17 to 22 inches
Mean annual air temperature: 42 to 50 degrees F
Frost-free period: 90 to 140 days
Farmland classification: Not prime farmland

Map Unit Composition

Spokane and similar soils: 45 percent
Rock outcrop: 25 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Spokane

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granite, gneiss or schist

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material
A₁ - 1 to 4 inches: ashy loam
A₂ - 4 to 10 inches: ashy sandy loam
B_t - 10 to 18 inches: gravelly coarse sandy loam
BC_t - 18 to 26 inches: gravelly coarse sandy loam
Cr - 26 to 36 inches: bedrock

Properties and qualities

Slope: 30 to 55 percent
Depth to restrictive feature: 21 to 41 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces, low AWC subsoils (Ponderosa Pine/Shrub) *Pinus Ponderosa /Symphoricarpos albus, Pinus Ponderosa / Physocarpus malvaceus*
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

R - 0 to 60 inches: bedrock

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Properties and qualities

Slope: 30 to 55 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

Minor Components

Lenz

Percent of map unit: 10 percent

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces, low

AWC subsoils (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos

albus, Pinus Ponderosa / Physocarpus malvaceus

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Kramerhill

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: F043AY502WA - Warm Mesic Xeric Loamy Foothills, Terraces,

mixed ash surface (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos

albus, Pinus Ponderosa / Physocarpus malvaceus

Other vegetative classification: ponderosa pine/ninebark (CN190)

Hydric soil rating: No

Brevco

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F043AY519WA - Warm-Frigid, Xeric, Loamy Slopes, low AWC

subsoils (Douglas-Fir/Warm Dry Shrub) Pseudotsuga menziesii / Physocarpus

malvaceus - Symphoricarpos albus

Other vegetative classification: Douglas-fir/ninebark (CN260)

Hydric soil rating: No

Micapeak

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

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Across-slope shape: Convex

Ecological site: F043AY518WA - Warm-Frigid, Xeric, Loamy Slopes, mixed ash surface (Douglas-Fir/Warm Dry Shrub) *Pseudotsuga menziesii* / *Physocarpus malvaceus* - *Symphoricarpos albus*

Other vegetative classification: Douglas-fir/ninebark (CN260)

Hydric soil rating: No

Spens

Percent of map unit: 5 percent

Landform: Outwash terraces

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: F043AY509WA - Warm, Xeric, Sandy, Outwash Terraces and Plains (Ponderosa Pine/Dry Grass) *Pinus ponderosa* / *Pseudoroegneria spicata* , *Pinus ponderosa* / *Festuca idahoensis*

Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Hydric soil rating: No

5040—Spokane-Swakane complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: qv9j

Elevation: 1,900 to 3,300 feet

Mean annual precipitation: 17 to 23 inches

Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 100 to 130 days

Farmland classification: Not prime farmland

Map Unit Composition

Spokane and similar soils: 40 percent

Swakane and similar soils: 35 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Spokane

Setting

Landform: Hills, ridges on mountains

Landform position (two-dimensional): Shoulder, backslope, summit

Landform position (three-dimensional): Nose slope, side slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granite, gneiss or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A1 - 1 to 4 inches: ashy loam

Custom Soil Resource Report

A2 - 4 to 10 inches: ashy sandy loam
Bt - 10 to 18 inches: gravelly coarse sandy loam
BCt - 18 to 26 inches: gravelly coarse sandy loam
Cr - 26 to 36 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 21 to 41 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces, low AWC subsoils (Ponderosa Pine/Shrub) *Pinus Ponderosa / Symphoricarpos albus, Pinus Ponderosa / Physocarpus malvaceus*
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Description of Swakane

Setting

Landform: Hills, ridges on mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granite, schist or gneiss

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: gravelly ashy loam
AB - 3 to 9 inches: gravelly ashy loam
Bw - 9 to 13 inches: very cobbly ashy sandy loam
C1 - 13 to 17 inches: very gravelly sandy loam
C2 - 17 to 19 inches: very gravelly loamy sand
R - 19 to 29 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F043AY510WA - Warm, Xeric, Loamy Hillsides, Low Available
Water Capacity (Ponderosa Pine/Dry Grass) Pinus ponderosa /
Pseudoroegneria spicata , Pinus ponderosa / Festuca idahoensis
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)
Hydric soil rating: No

Minor Components

Kramerhill

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F043AY502WA - Warm Mesic Xeric Loamy Foothills, Terraces,
mixed ash surface (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos
albus, Pinus Ponderosa / Physocarpus malvaceus
Other vegetative classification: ponderosa pine/ninebark (CN190)
Hydric soil rating: No

Lenz

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces, low
AWC subsoils (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos
albus, Pinus Ponderosa / Physocarpus malvaceus
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Battleplain, moist

Percent of map unit: 5 percent
Landform: Outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F043AY502WA - Warm Mesic Xeric Loamy Foothills, Terraces,
mixed ash surface (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos
albus, Pinus Ponderosa / Physocarpus malvaceus
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

5041—Spokane-Swakane complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2wcb
Elevation: 1,900 to 3,400 feet
Mean annual precipitation: 17 to 23 inches
Mean annual air temperature: 42 to 50 degrees F
Frost-free period: 90 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Spokane and similar soils: 40 percent
Swakane and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Spokane

Setting

Landform: Hills, ridges on mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granite, gneiss or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A1 - 1 to 4 inches: ashy loam
A2 - 4 to 10 inches: ashy sandy loam
Bt - 10 to 18 inches: gravelly coarse sandy loam
BCt - 18 to 26 inches: gravelly coarse sandy loam
Cr - 26 to 36 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 21 to 41 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e

Custom Soil Resource Report

Hydrologic Soil Group: C

Ecological site: F043AY537ID - Mesic, Xeric, Unglaciaded Hills and Canyons, Low Available Water (Ponderosa pine/Shrub) Ponderosa pine/common snowberry-ninebark

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Description of Swakane

Setting

Landform: Hills, ridges on mountains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granite, schist or gneiss

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 3 inches: gravelly ashy loam

AB - 3 to 9 inches: gravelly ashy loam

B_w - 9 to 13 inches: very cobbly ashy sandy loam

C₁ - 13 to 17 inches: very gravelly sandy loam

C₂ - 17 to 19 inches: very gravelly loamy sand

R - 19 to 29 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (K_{sat}): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: F043AY536ID - Warm-Mesic, Xeric, Unglaciaded, Loamy Hillsides and Canyons, Low Available Water (Ponderosa Pine) Ponderosa pine/bluebush wheatgrass-Idaho fescue

Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Hydric soil rating: No

Minor Components

Kramerhill

Percent of map unit: 10 percent

Landform: Hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Custom Soil Resource Report

Other vegetative classification: ponderosa pine/ninebark (CN190)
Hydric soil rating: No

Lenz

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Micapeak

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Douglas-fir/ninebark (CN260)
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

5071—Lenz-Spokane complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2wbx
Elevation: 1,700 to 3,600 feet
Mean annual precipitation: 18 to 28 inches
Mean annual air temperature: 42 to 50 degrees F
Frost-free period: 90 to 130 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lenz and similar soils: 45 percent
Spokane and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lenz

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Convex

Custom Soil Resource Report

Across-slope shape: Convex

Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granitic and metamorphic rocks

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A1 - 1 to 4 inches: very gravelly ashy sandy loam

A2 - 4 to 9 inches: very gravelly ashy sandy loam

Bw1 - 9 to 14 inches: very gravelly ashy sandy loam

Bw2 - 14 to 26 inches: very cobbly sandy loam

C - 26 to 38 inches: extremely stony sandy loam

R - 38 to 48 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: 21 to 41 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces, low AWC subsoils (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos albus, Pinus Ponderosa / Physocarpus malvaceus

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Description of Spokane

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granite, gneiss or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A1 - 1 to 4 inches: ashy loam

A2 - 4 to 10 inches: ashy sandy loam

Bt - 10 to 18 inches: gravelly coarse sandy loam

BCt - 18 to 26 inches: gravelly coarse sandy loam

Cr - 26 to 36 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: 21 to 41 inches to paralithic bedrock

Drainage class: Well drained

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Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces,
low AWC subsoils (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos
albus, Pinus Ponderosa / Physocarpus malvaceus

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Minor Components

Brevco

Percent of map unit: 8 percent

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Mountaintop, interfluve, nose slope, crest

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: F043AY519WA - Warm-Frigid, Xeric, Loamy Slopes, low AWC
subsoils (Douglas-Fir/Warm Dry Shrub) Pseudotsuga menziesii / Physocarpus
malvaceus - Symphoricarpos albus

Other vegetative classification: Douglas-fir/ninebark (CN260)

Hydric soil rating: No

Kramerhill

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, base slope

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: F043AY502WA - Warm Mesic Xeric Loamy Foothills, Terraces,
mixed ash surface (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos
albus, Pinus Ponderosa / Physocarpus malvaceus

Other vegetative classification: ponderosa pine/ninebark (CN190)

Hydric soil rating: No

Swakane

Percent of map unit: 5 percent

Landform: Hills, ridges on mountains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F043AY510WA - Warm, Xeric, Loamy Hillsides, Low Available
Water Capacity (Ponderosa Pine/Dry Grass) Pinus ponderosa /
Pseudoroegneria spicata, Pinus ponderosa / Festuca idahoensis

Other vegetative classification: ponderosa pine/Idaho fescue (CN140)

Custom Soil Resource Report

Hydric soil rating: No

Micapeak

Percent of map unit: 5 percent

Landform: Hills, ridges

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F043AY518WA - Warm-Frigid, Xeric, Loamy Slopes, mixed ash surface (Douglas-Fir/Warm Dry Shrub) *Pseudotsuga menziesii* / *Physocarpus malvaceus* - *Symphoricarpos albus*

Other vegetative classification: Douglas-fir/ninebark (CN260)

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Hydric soil rating: No

5073—Lenz-Rock outcrop complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2wbz

Elevation: 1,700 to 3,600 feet

Mean annual precipitation: 18 to 24 inches

Mean annual air temperature: 42 to 50 degrees F

Frost-free period: 100 to 130 days

Farmland classification: Not prime farmland

Map Unit Composition

Lenz and similar soils: 50 percent

Rock outcrop: 20 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lenz

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granitic and metamorphic rocks

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A1 - 1 to 4 inches: very gravelly ashy sandy loam

A2 - 4 to 9 inches: very gravelly ashy sandy loam

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Bw1 - 9 to 14 inches: very gravelly ashy sandy loam
Bw2 - 14 to 26 inches: very cobbly sandy loam
C - 26 to 38 inches: extremely stony sandy loam
R - 38 to 48 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 21 to 41 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F043AY537ID - Mesic, Xeric, Unglaciaded Hills and Canyons, Low Available Water (Ponderosa pine/Shrub) Ponderosa pine/common snowberry-ninebark
Other vegetative classification: ponderosa pine/common snowberry (CN170)
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

R - 0 to 60 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Swakane

Percent of map unit: 14 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F043AY510WA - Warm, Xeric, Loamy Hillsides, Low Available Water Capacity (Ponderosa Pine/Dry Grass) *Pinus ponderosa* / *Pseudotsuga spicata*, *Pinus ponderosa* / *Festuca idahoensis*
Other vegetative classification: ponderosa pine/Idaho fescue (CN140)
Hydric soil rating: No

Spokane

Percent of map unit: 10 percent

Custom Soil Resource Report

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces, low

AWC subsoils (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos
albus, Pinus Ponderosa / Physocarpus malvaceus

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Micapeak

Percent of map unit: 6 percent

Landform: Hills, ridges

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F043AY518WA - Warm-Frigid, Xeric, Loamy Slopes, mixed ash

surface (Douglas-Fir/Warm Dry Shrub) Pseudotsuga menziesii / Physocarpus
malvaceus - Symphoricarpos albus

Other vegetative classification: Douglas-fir/ninebark (CN260)

Hydric soil rating: No

5313—Kramerhill-Spokane complex, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2wdz

Elevation: 2,000 to 3,100 feet

Mean annual precipitation: 15 to 25 inches

Mean annual air temperature: 42 to 50 degrees F

Frost-free period: 90 to 130 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Kramerhill and similar soils: 45 percent

Spokane and similar soils: 30 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kramerhill

Setting

Landform: Hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, base slope

Down-slope shape: Linear

Across-slope shape: Convex

Custom Soil Resource Report

Parent material: Residuum and colluvium weathered from saprolitic gneiss, quartzite, latak formation mixed with loess and volcanic ash in the upper part

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A1 - 1 to 5 inches: ashy loam
A2 - 5 to 9 inches: ashy loam
BE - 9 to 19 inches: gravelly loam
Bt1 - 19 to 30 inches: gravelly sandy clay loam
Bt2 - 30 to 46 inches: gravelly sandy clay loam
Cr - 46 to 56 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: 41 to 60 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F043AY502WA - Warm Mesic Xeric Loamy Foothills, Terraces, mixed ash surface (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos albus, Pinus Ponderosa / Physocarpus malvaceus
Other vegetative classification: ponderosa pine/ninebark (CN190)
Hydric soil rating: No

Description of Spokane

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess mixed with minor amounts of volcanic ash over residuum and/or colluvium derived from granite, gneiss or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A1 - 1 to 4 inches: ashy loam
A2 - 4 to 10 inches: ashy sandy loam
Bt - 10 to 18 inches: gravelly coarse sandy loam
BCt - 18 to 26 inches: gravelly coarse sandy loam
Cr - 26 to 36 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: 21 to 41 inches to paralithic bedrock
Drainage class: Well drained

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F044AY501WA - Warm Mesic Xeric Loamy Foothills, Terraces,
low AWC subsoils (Ponderosa Pine/Shrub) Pinus Ponderosa /Symphoricarpos
albus, Pinus Ponderosa / Physocarpus malvaceus

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Minor Components

Skalan

Percent of map unit: 10 percent

Landform: Hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Lenz

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Clayton

Percent of map unit: 3 percent

Landform: Terraces

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Linear

Other vegetative classification: ponderosa pine/common snowberry (CN170)

Hydric soil rating: No

Micapeak

Percent of map unit: 3 percent

Landform: Hills, ridges

Landform position (two-dimensional): Shoulder, backslope, summit

Landform position (three-dimensional): Side slope, interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Other vegetative classification: Douglas-fir/ninebark (CN260)

Hydric soil rating: No

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Kruse

Percent of map unit: 2 percent

Landform: Hills

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Concave

Other vegetative classification: grand fir/ninebark (CN506)

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Hydric soil rating: No

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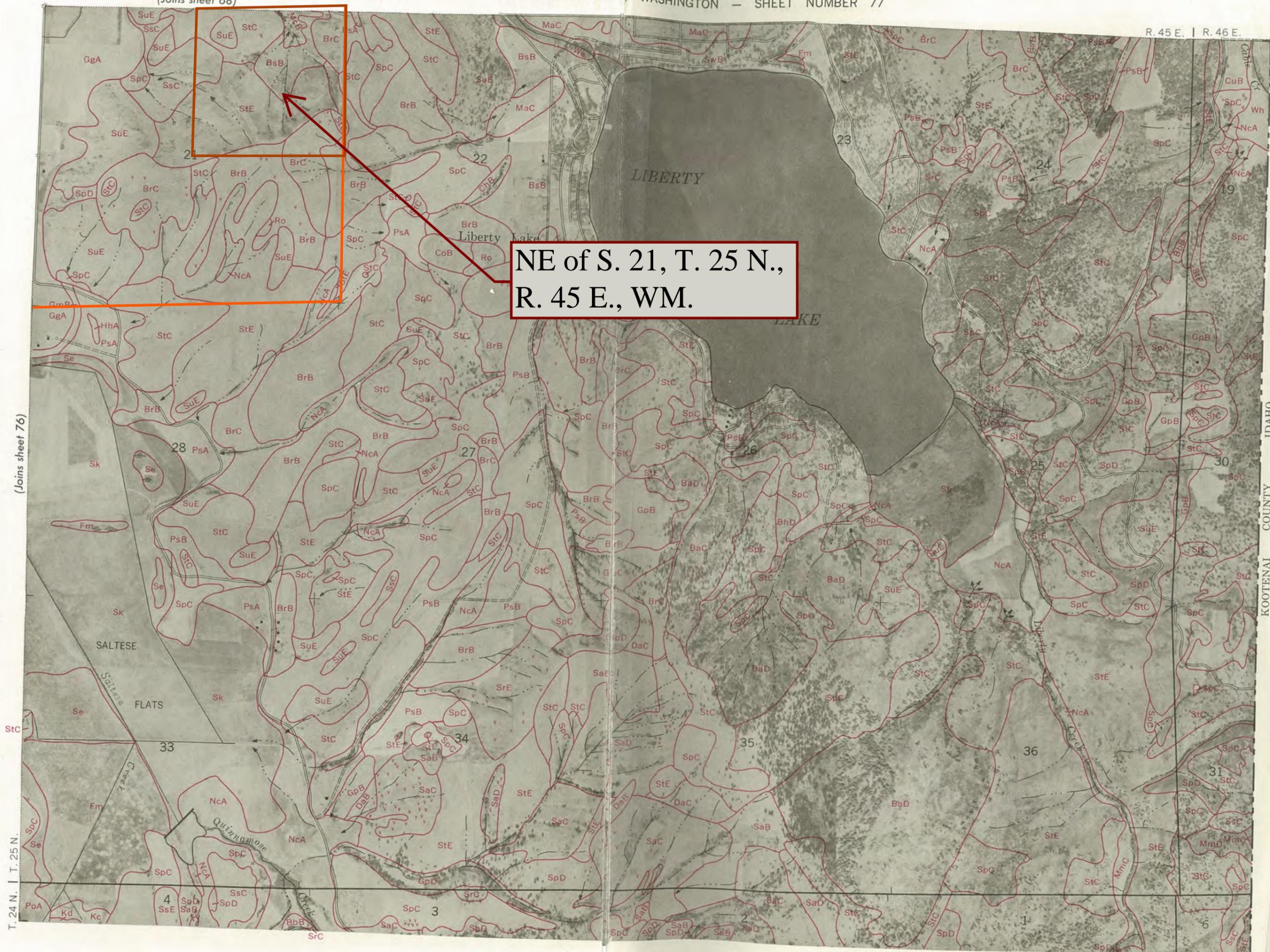
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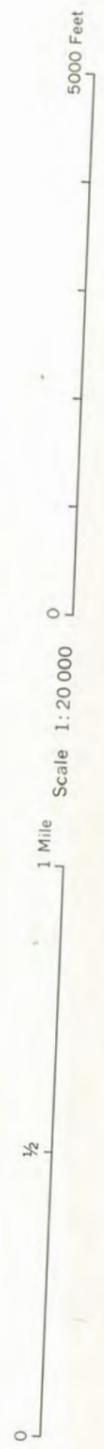
USGS SPOKANE
COUNTY SOIL
SURVEY - MAP

(Joins sheet 68)

2125 ds



NE of S. 21, T. 25 N.,
R. 45 E., WM.



(Joins sheet 76)

(Joins sheet 86)

This map is one of a set compiled in 1964, as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the Washington Agricultural Experiment Station.

Range, township, and section corners shown on this map are indefinite.

USGS SPOKANE
COUNTY SOIL
SURVEY - DEF.

TABLE 6.—Brief descriptions of soils and their

Map symbol	Soil name	Description of soil and site	Depth from surface	Classification
				USDA texture
SoE	Speigle very stony silt loam, 30 to 70 percent slopes.	Very deep, well-drained, medium-textured very stony soil; parent material consists of loess, volcanic ash, and local colluvium.	In. 0 to 60	Very stony silt loam to very cobbly loam.
SpC	Spokane loam, 0 to 30 percent slopes.	Well-drained, moderately coarse textured soils formed from granite, gneiss, schist, or acid igneous glacial till; depth to bedrock ranges from 30 to 60 inches.	0 to 17	Loam to gravelly sandy loam.
SpD	Spokane loam, 30 to 55 percent slopes.		17 to 25	Gravelly coarse loamy sand.
SrC	Spokane stony loam, 0 to 30 percent slopes.	Similar to Spokane loam soils, except that the surface layer is 20 to 50 percent stones.		
SrE	Spokane stony loam, 30 to 70 percent slopes.			
SsC	Spokane complex, 0 to 30 percent slopes.	Spokane loam, moderately shallow, part similar to Spokane loam soils, except that the depth to bedrock is between 20 and 30 inches. Spokane loam part is similar to Spokane loam soils.		
SsE	Spokane complex, 30 to 70 percent slopes.			
StC	Spokane very rocky complex, 0 to 30 percent slopes.	Spokane loam, moderately shallow, part similar to Spokane loam soils, except that the depth to bedrock is between 20 and 30 inches. Rock outcrop included in these very rocky complexes.		
StE	Spokane very rocky complex, 30 to 70 percent slopes.			
SuE	Spokane extremely rocky complex, 20 to 70 percent slopes.			
SwB	Springdale gravelly sandy loam, 0 to 20 percent slopes.	Somewhat excessively drained, gravelly, moderately coarse textured soil developed from glacial outwash of acid igneous origin; occurs on nearly level to gently sloping glacial outwash terraces.	0 to 12	Gravelly coarse sandy loam.
			12 to 46	Gravelly coarse sand.
SxB	Springdale gravelly sandy loam, deep, 0 to 20 percent slopes.	Similar to Springdale gravelly sandy loam, 0 to 20 percent slopes, except that the depth to gravel and coarse sand is more than 36 inches.		
SyB	Springdale cobbly sandy loam, 0 to 20 percent slopes.	Similar to Springdale gravelly sandy loam, 0 to 20 percent slopes, except that the surface layer is cobbly.		
SzE	Springdale gravelly loamy sand, 30 to 70 percent slopes.	Somewhat excessively drained, gravelly, coarse-textured soil on terrace breaks and steep slopes of major drainageways; parent material dominantly acid igneous rock.	0 to 17	Gravelly loamy sand.
			17 to 60	Very gravelly coarse sand.
TeB	Tekoa gravelly silt loam, 5 to 20 percent slopes.	Moderately deep, medium-textured, well-drained, gravelly soils developed from sandstone, quartzite, schist, or shale on hilly to mountainous uplands; depth to sandstone bedrock ranges from 24 to 50 inches.	0 to 20	Gravelly silt loam.
TeC	Tekoa gravelly silt loam, 20 to 30 percent slopes.		20 to 38	Very gravelly loam.
TeD	Tekoa gravelly silt loam, 30 to 55 percent slopes.			
TkD	Tekoa very rocky complex, 25 to 55 percent slopes.	Tekoa part similar to Tekoa gravelly silt loam soils. Rock outcrop included in this complex.		
UhA	Uhlig silt loam, 0 to 5 percent slopes.	Deep, medium-textured, well-drained soils formed from glacial till mixed with loess and volcanic ash in the upper parts. Data also applies to Uhlig part of Cheney and Uhlig silt loams (CnB) and of Cheney-Uhlig complex (CoB).	0 to 60	Silt loam to very fine sandy loam.
UhB	Uhlig silt loam, 5 to 20 percent slopes.			
UmC	Uhlig silt loam, moderately shallow, 5 to 30 percent slopes.	Similar to Uhlig silt loam, 5 to 20 percent slopes, except that depth to bedrock ranges from 30 to 40 inches.		

estimated physical and chemical properties—Continued

Classification—Continued		Percentage passing sieve—			Permeability	Available water capacity	Reaction (1:5 dilution)	Dispersion	Shrink-swell potential
Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)					
GM-----	A-2-----	30 to 60	20 to 50	10 to 25	In. per hr. 0.8 to 2.5	In. per in. of soil 0.08 to 0.10	pH 6.6 to 7.3	Moderate---	Low.
GM-SM----	A-2-----	85 to 95	50 to 80	15 to 20	0.8 to 2.5	0.08 to 0.10	6.1 to 6.5	High-----	Low.
GM-GP----	A-1-----	70 to 80	50 to 80	5 to 10	5.0 to 10.0	0.04 to 0.07	6.6 to 7.3	High-----	Low.
SM-----	A-1-----	70 to 80	50 to 80	10 to 20	5.0 to 10.0	0.07 to 0.10	5.6 to 6.0	High-----	Low.
GM-GP----	A-1-----	65 to 75	50 to 80	5 to 10	>10	0.04 to 0.07	6.1 to 6.5	High-----	Low.
SM-----	A-1-----	70 to 80	50 to 80	10 to 20	>10	0.05 to 0.07	6.6 to 7.3	High-----	Low.
GM-GP----	A-1-----	40 to 60	30 to 50	0 to 10	>10	0.02 to 0.04	6.6 to 7.3	High-----	Low.
ML-SM----	A-4-----	65 to 90	50 to 80	40 to 60	0.8 to 2.5	0.12 to 0.14	5.6 to 7.3	Moderate---	Low.
GM-----	A-2-----	30 to 60	20 to 50	10 to 20	5.0 to 10.0	0.08 to 0.10	5.6 to 6.0	High-----	Low.
ML to CL--	A-4-----	90 to 100	80 to 95	55 to 80	0.8 to 2.5	0.17 to 0.20	6.6 to 7.3	Moderate---	Low to moderate.

BUDINGER GEOTECH REPORT

PLEASE NOTE:

THE BUDINGER REPORT IS
ATTACHED AS A SEPERATE
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