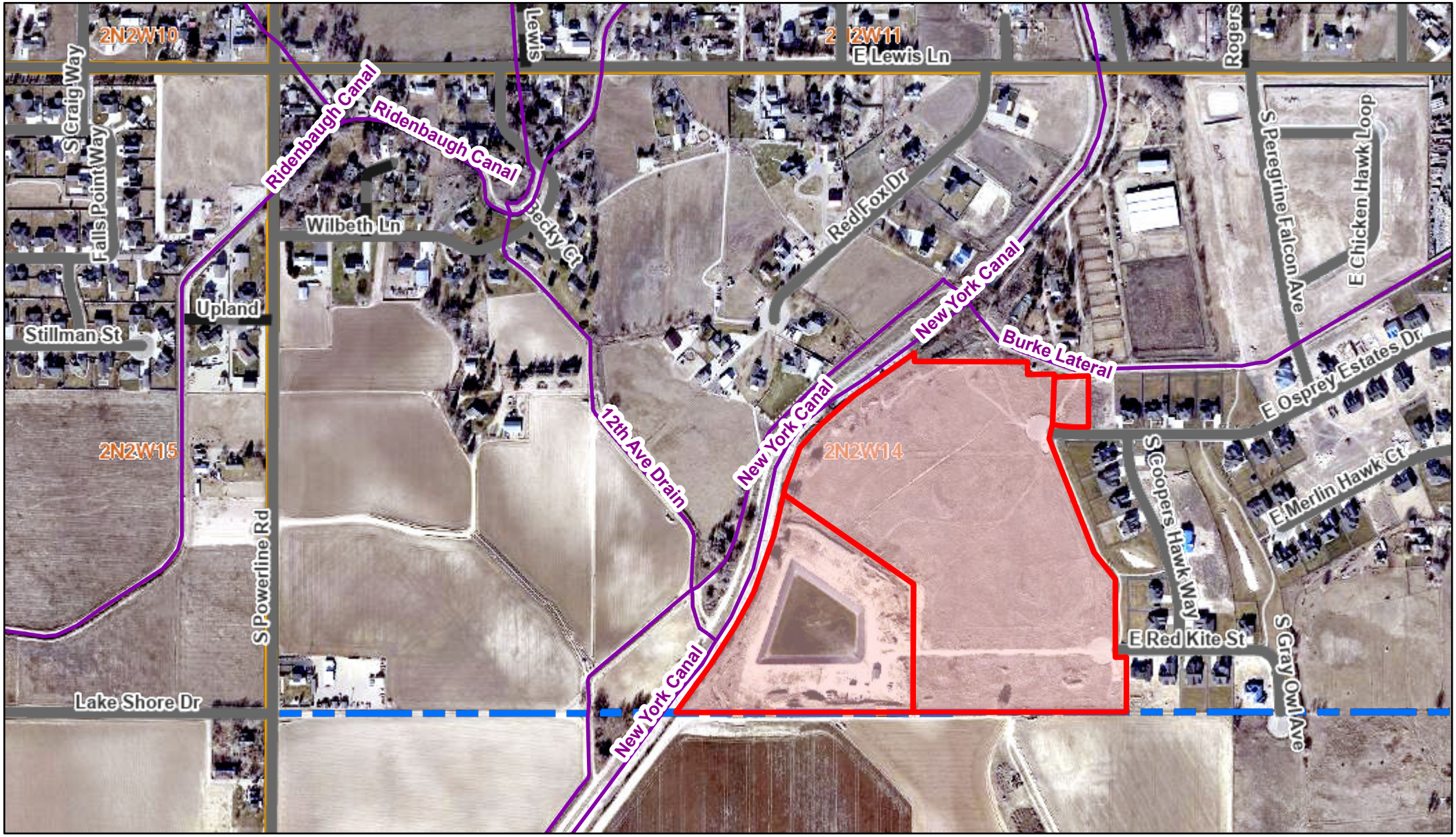
Canyon County, ID Web Map



8/20/2025, 10:43:53 AM

Multiple Parcel Search _Query result

Hydro_NHDFlowline

CanyonCountyRoads

Roads

CC_PrivateRoads

County Boundary

Current Impact Area

City Limits

Sections

Imagery_2025_3in

Red: Band_1

Green: Band_2

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Bureau of Land Management, State of Oregon, State of Oregon DOT, State of Oregon GEO, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA

Canyon County, ID

Bureau of Land Management, State of Oregon, State of Oregon DOT, State of Oregon GEO, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA | City of Nampa |

FINAL PLAT
PUBLIC HEARING - MASTER APPLICATION

PROPERTY OWNER	OWNER NAME: OE Development LLC and Wand LLC LLC (Blackwater) Lot 37	
	MAILING ADDRESS: PO Box 344, Meridian ID 83680	
	PHONE: [redacted]	EMAIL: [redacted]

I consent to this application and allow DSD staff / Commissioners to enter the property for site inspections. If the owner(s) is a business entity, please include business documents, including those that indicate the person(s) who are eligible to sign.

Signature: [signature] *Date:* 4/30/25

APPLICANT: IF DIFFERING FROM THE PROPERTY OWNER	APPLICANT NAME: Jerry Lyle	
	COMPANY NAME: Ardurra	
	MAILING ADDRESS: 332 N. Broadmore Way	
	PHONE: [redacted]	EMAIL: [redacted]

SITE INFO	STREET ADDRESS: 0 E Lewis Ln - SW of Lewis Ln/Southside Blvd intersection in Nampa, ID	
	PARCEL NUMBER: R29554010B0 / R29552 (0.68 acres) / R29554010B (12.36 ac wastetreatment)	
	PARCEL SIZE: ~~30.47~~ (30.47) acres 43.51 ac	
	NUMBER OF LOTS: ~~44~~ buildable lots and ~~3~~ (4 Common) common lots Total 48 & Waste treatment lot #37	
	PROPOSED SUBDIVISION NAME: Osprey Estates Subdivision No. 3	
	FLOOD ZONE (YES/NO) No	ZONING DISTRICT: CR-R1

FOR DSD STAFF COMPLETION ONLY:

CASE NUMBER	SD2025-0008	DATE RECEIVED:	6-16-25
RECEIVED BY:	Deb Root	APPLICATION FEE:	CK MO CC CASH

Need to include Wastewater lot as part of this plat. Received ~~preliminary~~ revised final plat 8-19-25. Need revised construction drawings.

CANYON COUNTY DEVELOPMENT SERVICES DEPARTMENT
111 North 11th Avenue, #310, Caldwell, ID 83605
zoninginfo@canyoncounty.id.gov - Phone: 208-454-7458

FINAL PLAT
PUBLIC HEARING - CHECKLIST

FINAL PLAT - CCZO Section 07-02-03

THE FOLLOWING ITEMS MUST BE SUBMITTED WITH THIS APPLICATION TO BE DEEMED COMPLETE (PLEASE CHECK OFF THE ITEMS REQUIRED):

Description	Applicant	Staff
Master Application completed and signed	✓	affidavit Var
Copy of Final Plat, 1 Hard Copy, 1 Digital	✓	
Final Drainage Plan, if applicable	✓	✓
Final Irrigation Plan, if applicable	✓	✓
Final Grading Plan, if applicable	✓	✓
Completed Final Plat Checklist	✓	✓
As-Built or Record Drawings if applicable CCZO §07-17-29(3)		N/A
Condition Compliance Proof (Conditional Rezone/D.A.)		
Proof of approval from:		
Southwest District Health	✓	✓ dr
Irrigation District	✓	✓ dr
Fire District	✓	✓ dr
Highway District/ Idaho Transportation Dept.	✓	✓ dr
City Impact Area	✓	✓ dr
Bonding Instructions	✓	your form
Deed or evidence of property interest to the subject property	✓	
Fee: $1000.00 **+$10.00/lot** **+$100.00 for Area of City Impact**	✓	
Fees are non-refundable		

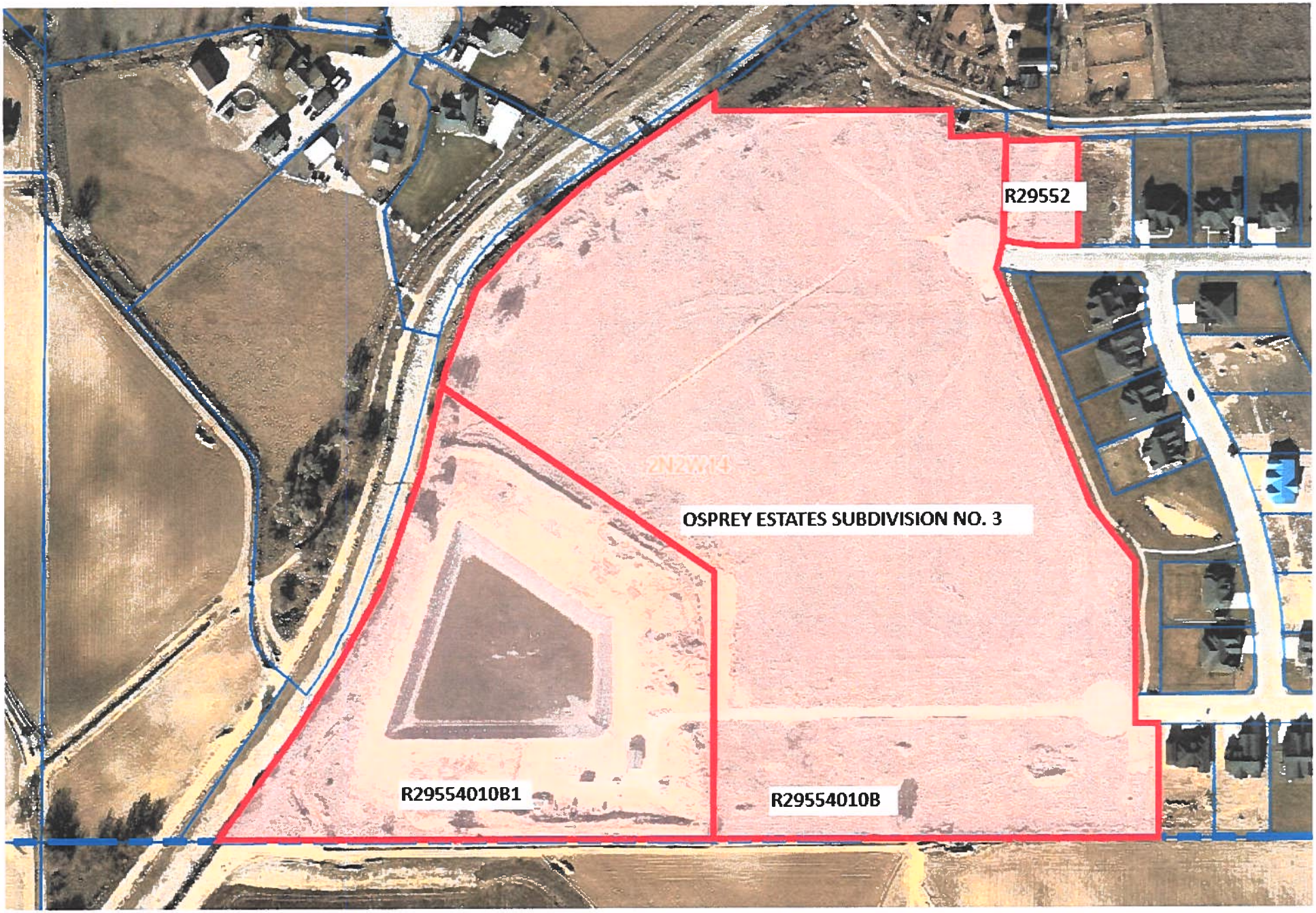
Electronic
Also Sub No. 3
Storm Drain Report

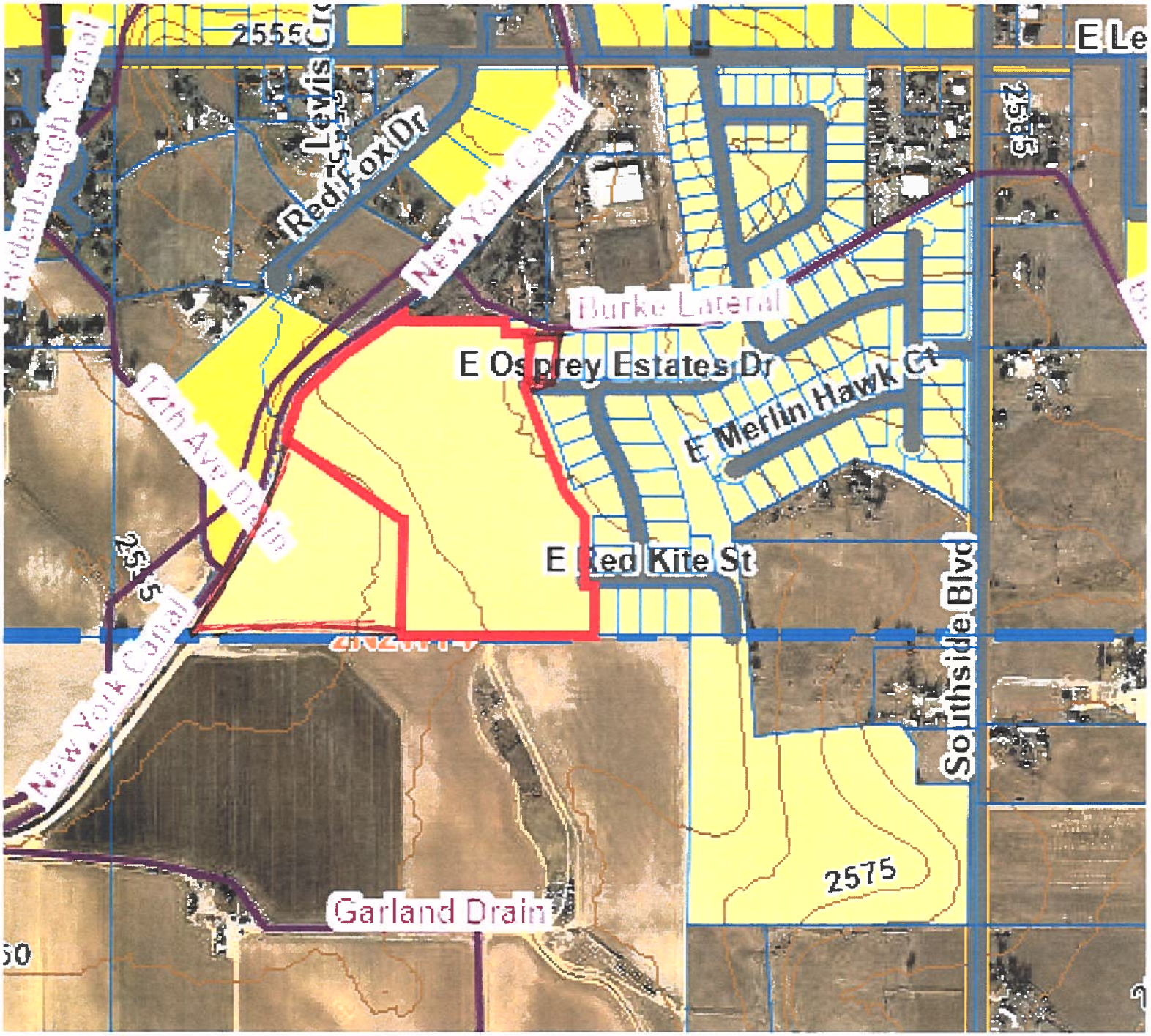
Construction Drawings

*DISCLAIMER: The subject property shall be in compliance with the public nuisance ordinance, the building code and the zoning code before the Director can accept the application.

NOTES:

1. Any conditions of approval given during the rezoning or preliminary plat process, if applicable, must be addressed as part of submittal materials to ensure condition compliance is met.
2. Evidence that all improvements have been completed or bonded per CCZO §07-17-29(4) must be submitted after construction drawing approval and before the final plat signature by the Board of County Commissioners.


R29552
OSPREY ESTATES SUBDIVISION NO. 3
R2955401OB1
R29554010B


2555
E Le
Lewis Cr
Red Fox Dr
New York Canal
Burke Lateral
E Osprey Estates Dr
E Merlin Hawk Ct
12th Ave Drain
E Red Kite St
Southside Blvd
2575
Garland Drain

CANYON COUNTY DEVELOPMENT SERVICES MAKES NO WARRANTY WITH RESPECT TO THE ACCURACY, COMPLETENESS, OR USEFULNESS OF THIS PARCEL INFORMATION TOOL.

R29552 PARCEL INFORMATION REPORT 8/19/2025 3:11:01 PM

PARCEL NUMBER: R29552
OWNER NAME: OE DEVELOPMENT LLC
CO-OWNER:
MAILING ADDRESS: PO BOX 344 MERIDIAN ID 83680
SITE ADDRESS: 0 SOUTHSIDE BLVD
TAX CODE: 1440000
TWP: 2N **RNG:** 2W **SEC:** 14 **QUARTER:** NE
ACRES: 0.68
HOME OWNERS EXEMPTION: No
AG-EXEMPT: No
DRAIN DISTRICT: NOT In Drain Dist
ZONING DESCRIPTION: CR-R1 / CONDITIONAL REZONE - SINGLE FAMILY RESIDENTIAL
HIGHWAY DISTRICT: NAMPA HWY DIST #1
FIRE DISTRICT: NAMPA FIRE
SCHOOL DISTRICT: NAMPA SCHOOL DIST #131
IMPACT AREA: NAMPA
FUTURE LAND USE 2011-2022 : Res
FLU Overlay Zone Desc 2030:
FLU RR Zone Desc 2030:
FUTURE LAND USE 2030: AG
IRRIGATION DISTRICT: BOISE PROJECT BOARD OF CONTROL \ NAMPA & MERIDIAN IRRIGATION DISTRICT
FEMA FLOOD ZONE: X **FLOODWAY:** NOT In FLOODWAY **FIRM PANEL:** 16027C0395F
WETLAND: NOT In WETLAND
NITRATE PRIORITY: ADA CANYON
FUNCTIONAL Classification: NOT In COLLECTOR
INSTRUMENT NO. : 2023023623
SCENIC BYWAY: NOT In Scenic Byway
LEGAL DESCRIPTION: 14-2N-2W NE TX 20699 IN NE LS SUB
PLATTED SUBDIVISION:
SMALL CITY ZONING:
SMALL CITY ZONING TYPE:

DISCLAIMER:

1. FEMA FLOOD ZONE REFERS TO THE DESIGNATED FEMA FLOOD AREAS. POSSIBLY ONE (1) OF SEVERAL ZONES - SEE FIRM PANEL NUMBER.
2. THIS FORM DOES NOT CALCULATE DATA FOR PARCELS INSIDE CITY LIMITS SO WATCH YOURSELVES.
3. WETLANDS CLASSIFICATION WILL POPULATE IF "ANY" PORTION OF SAID PARCEL CONTAINS A DELINEATED WETLAND.
4. COLLECTORS AND ARTERIALS ARE BASED ON THE SHERRIFS CENTERLINE WITH AN ADDITIONAL 100 FOOT BUFFER.

CANYON COUNTY ASSUMES NO LIABILITY FOR DIRECT, INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR MISUSE OF THIS PARCEL INFORMATION TOOL OR ANY OF THE INFORMATION CONTAINED HEREIN.

CANYON COUNTY DEVELOPMENT SERVICES MAKES NO WARRANTY WITH RESPECT TO THE ACCURACY, COMPLETENESS, OR USEFULNESS OF THIS PARCEL INFORMATION TOOL.

R29554010B PARCEL INFORMATION REPORT 1

8/19/2025 3:10:07 PM

PARCEL NUMBER: R29554010B1
OWNER NAME: W AND WW LLC
CO-OWNER:
MAILING ADDRESS: PO BOX 3723 NAMPA ID 83653
SITE ADDRESS: 0 E LEWIS LN
TAX CODE: 1440000
TWP: 2N **RNG:** 2W **SEC:** 14 **QUARTER:** NW
ACRES: 12.36
HOME OWNERS EXEMPTION: No
AG-EXEMPT: No
DRAIN DISTRICT: NOT In Drain Dist
ZONING DESCRIPTION: CR-R1 / CONDITIONAL REZONE - SINGLE FAMILY RESIDENTIAL
HIGHWAY DISTRICT: NAMPA HWY DIST #1
FIRE DISTRICT: NAMPA FIRE
SCHOOL DISTRICT: NAMPA SCHOOL DIST #131
IMPACT AREA: NAMPA
FUTURE LAND USE 2011-2022 : Res
FLU Overlay Zone Desc 2030:
FLU RR Zone Desc 2030:
FUTURE LAND USE 2030: AG
IRRIGATION DISTRICT: BOISE PROJECT BOARD OF CONTROL \ NAMPA & MERIDIAN IRRIGATION DISTRICT
FEMA FLOOD ZONE: X **FLOODWAY:** NOT In FLOODWAY **FIRM PANEL:** 16027C0395F
WETLAND: Riverine
NITRATE PRIORITY: ADA CANYON
FUNCTIONAL Classification: PROPOSED COLLECTOR
INSTRUMENT NO. : 2021068040
SCENIC BYWAY: NOT In Scenic Byway
LEGAL DESCRIPTION: 14-2N-2W NW TX 21597 IN SENW
PLATTED SUBDIVISION:
SMALL CITY ZONING:
SMALL CITY ZONING TYPE:

DISCLAIMER:

1. FEMA FLOOD ZONE REFERS TO THE DESIGNATED FEMA FLOOD AREAS. POSSIBLY ONE (1) OF SEVERAL ZONES - SEE FIRM PANEL NUMBER.
2. THIS FORM DOES NOT CALCULATE DATA FOR PARCELS INSIDE CITY LIMITS SO WATCH YOURSELVES.
3. WETLANDS CLASSIFICATION WILL POPULATE IF "ANY" PORTION OF SAID PARCEL CONTAINS A DELINEATED WETLAND.
4. COLLECTORS AND ARTERIALS ARE BASED ON THE SHERRIFS CENTERLINE WITH AN ADDITIONAL 100 FOOT BUFFER.

CANYON COUNTY ASSUMES NO LIABILITY FOR DIRECT, INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR MISUSE OF THIS PARCEL INFORMATION TOOL OR ANY OF THE INFORMATION CONTAINED HEREIN.

CANYON COUNTY DEVELOPMENT SERVICES MAKES NO WARRANTY WITH RESPECT TO THE ACCURACY, COMPLETENESS, OR USEFULNESS OF THIS PARCEL INFORMATION TOOL.

R29554010B PARCEL INFORMATION REPORT

8/20/2025 7:42:29 AM

PARCEL NUMBER: R29554010B
OWNER NAME: OE DEVELOPMENT LLC
CO-OWNER:
MAILING ADDRESS: PO BOX 344 MERIDIAN ID 83680
SITE ADDRESS: 0 E LEWIS LN
TAX CODE: 1440000
TWP: 2N **RNG:** 2W **SEC:** 14 **QUARTER:** NE
ACRES: 30.47
HOME OWNERS EXEMPTION: No
AG-EXEMPT: No
DRAIN DISTRICT: NOT In Drain Dist
ZONING DESCRIPTION: CR-R1 / CONDITIONAL REZONE - SINGLE FAMILY RESIDENTIAL
HIGHWAY DISTRICT: NAMPA HWY DIST #1
FIRE DISTRICT: NAMPA FIRE
SCHOOL DISTRICT: NAMPA SCHOOL DIST #131
IMPACT AREA: NAMPA
FUTURE LAND USE 2011-2022 : Res
FLU Overlay Zone Desc 2030:
FLU RR Zone Desc 2030:
FUTURE LAND USE 2030: AG
IRRIGATION DISTRICT: BOISE PROJECT BOARD OF CONTROL \ NAMPA & MERIDIAN IRRIGATION DISTRICT
FEMA FLOOD ZONE: X **FLOODWAY:** NOT In FLOODWAY **FIRM PANEL:** 16027C0395F
WETLAND: Riverine
NITRATE PRIORITY: ADA CANYON
FUNCTIONAL Classification: NOT In COLLECTOR
INSTRUMENT NO. : 2023023623
SCENIC BYWAY: NOT In Scenic Byway
LEGAL DESCRIPTION: 14-2N-2W NE TX 21596 LYING W OF TX 20699 LS TX 21597 IN NWNE & SUB
PLATTED SUBDIVISION:
SMALL CITY ZONING:
SMALL CITY ZONING TYPE:

DISCLAIMER:

1. FEMA FLOOD ZONE REFERS TO THE DESIGNATED FEMA FLOOD AREAS. POSSIBLY ONE (1) OF SEVERAL ZONES - SEE FIRM PANEL NUMBER.
2. THIS FORM DOES NOT CALCULATE DATA FOR PARCELS INSIDE CITY LIMITS SO WATCH YOURSELVES.
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Osprey Estates Subdivision No. 3

Storm Drainage Report

Nampa, Idaho
May 23, 2025

Presented For:
The WestPark Company, Inc.
PO Box 344
Meridian, ID 83680
P: 208.888.9940

PROFESSIONAL ENGINEER
LICENSED
23296
05/27/2025
STATE OF IDAHO
JERRY D. LYLE

Prepared By:
Grant Gehring
Ardurra
332 North Broadmore Way
Nampa, ID 83687
P: [redacted]

ARDURRA

STORM DRAINAGE SUMMARY

The following is a summary of the storm drainage design for the proposed Osprey Estates Subdivision No. 3. The proposed development occupies a portion of the NE 1/4 of the SE 1/4 of Section 14, Township 2N and Range 2W, Boise Meridian, Canyon County, Idaho. The project is the third phase of the Osprey Estates residential subdivision. The project area consists of approximately 31 acres. The project is bordered by the existing Osprey Estates Phase 1 to the east, the Burke Lateral to the north, the New York Canal and wastewater treatment facility to the west, and agriculture land to the south. See Figure 1 for a Vicinity Map.

The site is currently undeveloped and has historically been used for agriculture. Current access to the site is through existing phase 1, via Red Kite Street and Osprey Estates Drive. Topographically, the site slopes generally from the northeast to the southwest towards the New York Canal. There is a large spoils pile from the New York Canal that directs runoff to the southwest corner of the site. Historical irrigation water for the site has been provided via Burke Lateral from north of the site. Surface irrigation has not been utilized for this site since development began.

The project is subject to the stormwater management requirements of the City of Nampa (City) and is designed to the City of Nampa's 2023 Engineering Development and Policy Manual, Section 106-Drainage and Stormwater Design Policy. The site is divided into four (4) drainage basins: Basin A, B, D and E. See Figure 2 for Proposed Basin Map. Basins D and E were accounted for during the design and construction of Phase 1 and have existing facilities to handle the runoff from these basins. See Appendix E for the approved storm drainage report for Osprey Estates Subdivision No. 1.

Storm runoff from Basin A and B will be contained on site in two (2) new storage facilities consisting of two (2) Seepage Beds (Seepage Bed A and B). The proposed locations of all stormwater retention facilities, as well as their contributing basins, can be seen in Figure 2. Runoff will be collected via overland flow directly into the facility or catch basin/sand and grease trap inlets and conveyed through a storm piping system. Basin A will treat runoff through two (2) 1,500-gallon sand and grease traps prior to entering Seepage Bed A. Basin B will treat runoff through a 1,000-gallon sand and grease trap prior to entering Seepage Bed B. Primary conveyance systems, such as pipes, inlets and sand & grease traps, have been sized to convey the 50-year design storm. See Appendix B for pipe conveyance, inlet, and sand & grease trap calculations.

Facility volumes were calculated using the modified rational method with seepage bed volumes being increased by 15% per the City of Nampa's Stormwater Design Standards. Secondary conveyance systems, such as seepage beds, have been sized to convey and infiltrate the 100-year design storm within 48 hours. See Appendix A for storage facility volume calculations.

A geotechnical investigation was prepared by GeoTek, Inc. dated August 27, 2019, to evaluate the subsurface soil and groundwater conditions. This was a supplement to the original geotechnical report conducted by MTI in November 2018. During GeoTek's investigation, groundwater was not encountered. Ten total infiltration tests were performed throughout the project location. The recorded infiltration rates varied between 0.6-3.3 in/hr. Excerpts from the project Geotechnical Report are provided in Appendix D for reference.

All drainage facilities are designed such that the bottom of the imported free draining materials is at or below the bedrock elevation. It is expected that infiltration rates within the bedrock will be near free draining. Percolation tests shall be coordinated by the contractor with the geotechnical engineer to confirm a design infiltration rates at time of construction. If infiltration rates are deemed unsatisfactory, fracturing bedrock may be necessary to achieve acceptable infiltration rates.

Based on design and construction of Phase 1 and Phase 2, a design infiltration rate of 4 in/hr. was found to be reasonable onsite, after excavation to the facilities bottom and infiltration testing prior to construction. The recorded infiltration rates recorded during construction, at facility bottom, varied between 4.8-24+ in/hr. See Appendix C for percolation test results performed on Phase 1 facilities.

As each lot is developed, a drainage plan will be required to ensure drainage issues are not created on adjacent lots. The drainage plan may include an onsite swale or series of drywells to prevent runoff onto neighboring lots. This report assumes that the builder or homeowner will construct and grade the lot so the roof, driveway, and front yard drainage will runoff into the public right of way and be conveyed/treated by this storm drainage system.

DESIGN CRITERIA

- Rational method is used for calculating peak runoff flows: Q = C*I*A
  - C = runoff coefficient
  - I = rainfall intensity (in/hr)
  - A = area (AC)
- Manning's Equation is used for calculating pipe capacity. 12" minimum pipe diameter is assumed to be adequate based on design flows
- Runoff coefficients based on land use from the City of Nampa's 2023 Engineering Development and Policy Manual, Section 106-Drainage and Stormwater Design Policy.
- Design infiltration rates are 67% of field-measured percolation rates. Maximum design infiltration rate of 4 in/hr.

FIGURES

1. Vicinity Map
2. Proposed Basin Map

APPENDICES

A. Storage Facility Volume Calculations
B. Conveyance Pipe, Inlet, and Sand & Grease Trap Calculations
C. Phase 1 Construction Percolation Test Results
D. Project Geotechnical Report
E. Approved Storm Drainage Report for Osprey Estates Subdivision No. 1

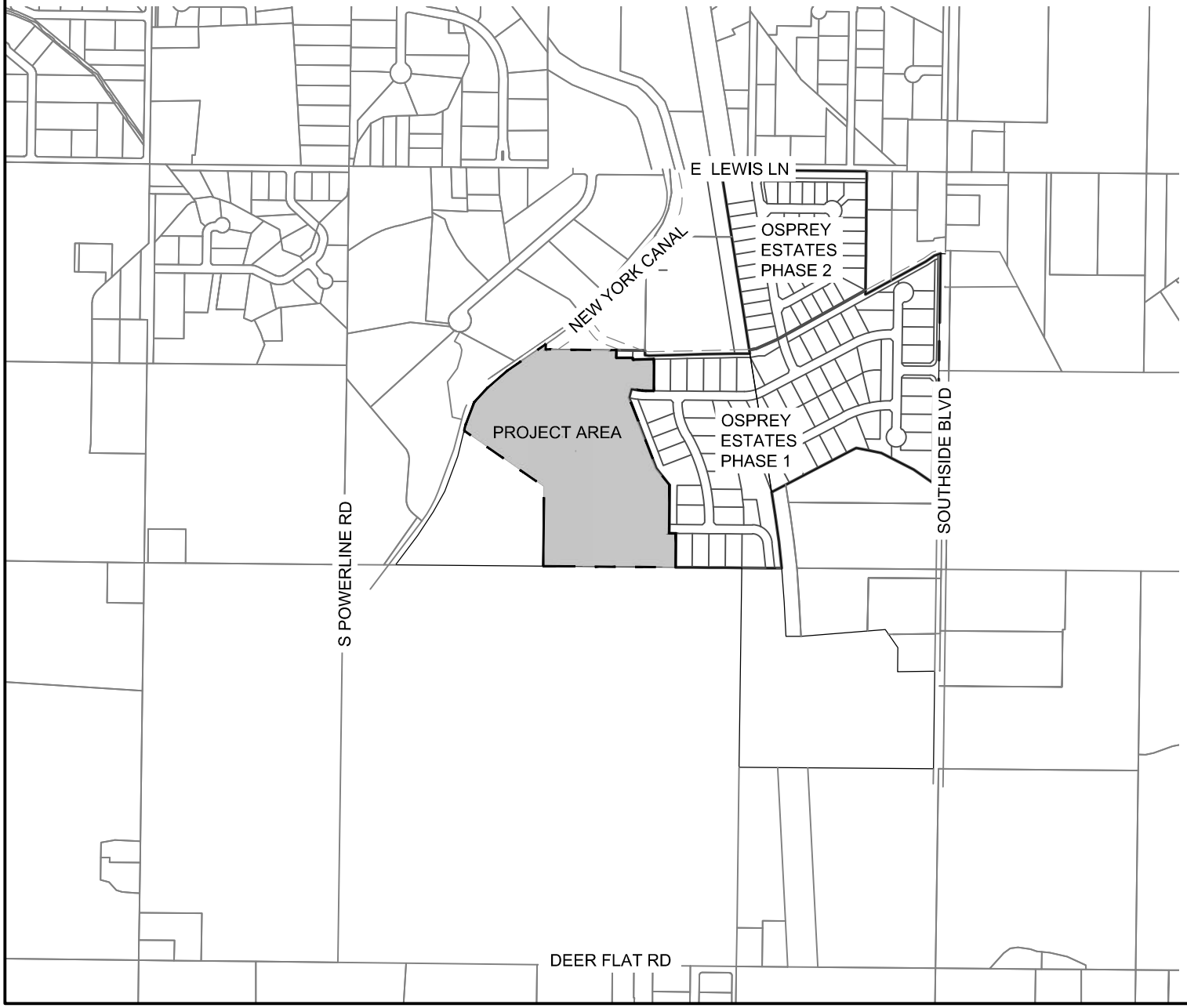
FIGURE 1

VICINITY MAP

L:\240360\03_CAD\Model\240360-VICINITY MAP.dwg, 12/18/2024 4:57:18 PM, Grant Gehring, DWG To PDF.pc3

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OSPREY ESTATES SUBDIVISION
PHASE 3
VICINITY MAP



N

500 0 500 1000

DATE: 12/18/24 JOB: 240360

ARDURRA
332 N. BROADMORE WAY
NAMPA, IDAHO 83687
208-442-6300 | WWW.ARDURRA.COM

FIGURE 2

PROPOSED BASIN MAP

L:\240360\003_CAD\Sheets\Exhibits\240360-Proposed Basin Map.dwg, 1/8/2025 1:30:00 PM, Grant Gehring, DWG To PDF.pc3
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NEW YORK CANAL
TOB
EG
PHASE 1 BASIN D
±0.67 ACRES ACCOUNTED FOR
DRAINAGE FROM PHASE 3
PHASE 3 BOUNDARY
E OSPREY ESTATES DR
PHASE 3 BASIN B
±3.96 ACRES
S SWAINSONS HAWK WAY
S SNOWY OWL WAY
PHASE 1 BASIN D
EXISTING POND D
S COOPERS HAWK WAY
SEEPAGE BED B
AD-02
SDMH-07
SDMH-06
SGT-02
CB-05
CB-06
PHASE 1 BASIN E
EXISTING
SEEPAGE BED E
CB-03
SDMH-01
CB-04
PHASE 3 BASIN A
±15.05 ACRES
CB-01
SDMH-03
E RED KITE ST
CB-02
SGT-01
SDMH-04
AD-01
SEEPAGE BED A
SDMH-05
SDMH-02
PHASE 1 BASIN E
±1.34 ACRES ACCOUNTED FOR
DRAINAGE FROM PHASE 3
PHASE 3 BOUNDARY
SD
IR
TOB

N

75 0 75 150

LEGEND

- PHASE 1 BASIN D ±0.67 AC
- PHASE 1 BASIN E ±1.34 AC
- PHASE 3 BASIN A ±15.05 AC
- PHASE 3 BASIN B ±3.96 AC

DATE: 1/8/25 JOB: 240360

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NAMPA, IDAHO 83687
208-442-6300 | WWW.ARDURRA.COM

APPENDIX A

STORAGE FACILITY VOLUME CALCULATIONS

C Source	Basin	A		B	
Nampa	**TOTAL SF**	**655578**		**172497.6**	
	Acres	**15.05**		**3.96**	
General Areas	C	SF	Weighted	SF	Weighted
Roofs	0.95	124000	**117800**	32000	**30400**
Asphalt/Concrete	0.9	133835	**120451.5**	25402	**22861.8**
Gravel	0.4	0	**0**	0	**0**
Lanscaped	0.2	397743	**79548.6**	115095.6	**23019.12**
Turf Grass	0.1	0	**0**	0	**0**
Typical Undeveloped	0.15	0	**0**	0	**0**
Clay-Loam & Clay 0-2%	0.13	0	**0**	0	**0**
Clay-Loam & Clay 2-7%	0.18	0	**0**	0	**0**
Clay-Loam & Clay >7%	0.25	0	**0**	0	**0**
Sandy & Sandy Loam 0-2%	0.05	0	**0**	0	**0**
Sandy & Sandy Loam 2-7%	0.1	0	**0**	0	**0**
Sandy & Sandy Loam >7%	0.15	0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
		0	**0**	0	**0**
	Weighted Area Total		**317800.1**		**76280.92**
	Cavg		**0.48**		**0.44**

*Roof footprint assumed to be 4,000 s.f. on average
**A 20'x20' Concrete driveway is assumed for each lot.

C Average Total	**0.48**
ACERAGE TOTAL	**19.01**

Zone: Nampa

Storm Frequency Table

Duration (minutes)	2-year Intensity (in/hr)	5-year Intensity (in/hr)	10-year Intensity (in/hr)	25-year Intensity (in/hr)	50-year Intensity (in/hr)	100-year Intensity (in/hr)
10	0.94	1.50	1.80	2.30	2.60	3.10
15	0.83	1.30	1.50	1.90	2.10	2.60
20	0.73	1.10	1.30	1.60	1.80	2.20
30	0.59	0.84	1.00	1.20	1.40	1.80
40	0.50	0.69	0.85	1.00	1.20	1.50
50	0.44	0.61	0.74	0.87	1.00	1.30
60	0.40	0.54	0.66	0.77	0.88	1.10
120	0.26	0.35	0.43	0.48	0.54	0.63
180	0.20	0.27	0.31	0.35	0.40	0.46
240	0.16	0.22	0.25	0.28	0.32	0.36
300	0.14	0.19	0.21	0.24	0.27	0.3
360	0.12	0.16	0.18	0.2	0.23	0.26
480	0.098	0.13	0.15	0.16	0.18	0.2
600	0.083	0.11	0.13	0.14	0.15	0.17
720	0.073	0.092	0.11	0.12	0.13	0.15
1080	0.053	0.066	0.075	0.083	0.092	0.11
1440	0.043	0.053	0.06	0.066	0.074	0.084

Storm Frequency Table						
Duration (minutes)	2-year Intensity (in/hr)	5-year Intensity (in/hr)	10-year Intensity (in/hr)	25-year Intensity (in/hr)	50-year Intensity (in/hr)	100-year Intensity (in/hr)
10	0.94	1.50	1.80	2.30	2.60	3.10
15	0.83	1.30	1.50	1.90	2.10	2.60
20	0.73	1.10	1.30	1.60	1.80	2.20
30	0.59	0.84	1.00	1.20	1.40	1.80
40	0.50	0.69	0.85	1.00	1.20	1.50
50	0.44	0.61	0.74	0.87	1.00	1.30
60	0.40	0.54	0.66	0.77	0.88	1.10
120	0.26	0.35	0.43	0.48	0.54	0.63
180	0.20	0.27	0.31	0.35	0.40	0.46
240	0.16	0.22	0.25	0.28	0.32	0.36
300	0.14	0.19	0.21	0.24	0.27	0.30
360	0.12	0.16	0.18	0.20	0.23	0.26
480	0.10	0.13	0.15	0.16	0.18	0.20
600	0.08	0.11	0.13	0.14	0.15	0.17
720	0.07	0.09	0.11	0.12	0.13	0.15
1080	0.053	0.066	0.075	0.083	0.092	0.11
1440	0.04	0.05	0.06	0.07	0.07	0.08

Runoff Coefficients	
General Areas	*C*
Roofs	*0.95*
Asphalt/Concrete	*0.9*
Gravel	*0.4*
Lanscaped	*0.2*
Turf Grass	*0.1*
Typical Undeveloped	*0.15*
Clay-Loam & Clay 0-2%	*0.13*
Clay-Loam & Clay 2-7%	*0.18*
Clay-Loam & Clay >7%	*0.25*
Sandy & Sandy Loam 0-2%	*0.05*
Sandy & Sandy Loam 2-7%	*0.1*
Sandy & Sandy Loam >7%	*0.15*

Seepage Bed A

Total Area (A)=	15.05	Acres	Effective rock Height=	6	ft	Pipe Size=	1.5 ft
Run-off Coeffecient (C)=	0.48		Width=	65	ft	Percent for sediment storage=	15%
Percolation Rate=	4	in/hr	Length=	185	ft	Percolation Area (Ar)=	12025 SF
Perc Flow Rate (QR)=	1.11	cfs	Sand Height=	1	ft	Storage Volume=	28860 CF

Duration (min)	100-year Intensity (in/hr)	Flow Rate Q = CIA (cfs)	Net Flow Rate (cfs)	Runoff Volume (V_R) (cf)	Vol plus Req'd for Sediment Storage (cf)	Available Storage (cf)	Req'd Storage (cf)	Time to Percolate (T_p) (hr)
10	3.10	22.39	21.28	12769	14684	28860	-14176	3
15	2.60	18.78	17.67	15902	18287	28860	-10573	4
20	2.20	15.89	14.78	17735	20396	28860	-8464	4
30	1.80	13.00	11.89	21402	24612	28860	-4248	5
40	1.50	10.84	9.72	23334	26834	28860	-2026	6
50	1.30	9.39	8.28	24833	28558	28860	-302	6
60	1.10	7.95	6.83	24599	28289	28860	-571	6
120	0.63	4.55	3.44	24751	28464	28860	-396	6
180	0.46	3.32	2.21	23864	27443	28860	-1417	6
240	0.36	2.60	1.49	21416	24628	28860	-4232	5
300	0.30	2.17	1.05	18968	21813	28860	-7047	5
360	0.26	1.88	0.76	16520	18998	28860	-9862	4
480	0.20	1.44	0.33	9544	10975	28860	-17885	2
600	0.17	1.23	0.11	4128	4747	28860	-24113	1
720	0.15	1.08	-0.03	-1288	-1482	28860	-30342	0
1080	0.11	0.79	-0.32	-20657	-23756	28860	-52616	-5
1440	0.08	0.61	-0.51	-43771	-50337	28860	-79197	-11

Storm Frequency Table						
Duration (minutes)	2-year Intensity (in/hr)	5-year Intensity (in/hr)	10-year Intensity (in/hr)	25-year Intensity (in/hr)	50-year Intensity (in/hr)	100-year Intensity (in/hr)
10	0.94	1.50	1.80	2.30	2.60	3.10
15	0.83	1.30	1.50	1.90	2.10	2.60
20	0.73	1.10	1.30	1.60	1.80	2.20
30	0.59	0.84	1.00	1.20	1.40	1.80
40	0.50	0.69	0.85	1.00	1.20	1.50
50	0.44	0.61	0.74	0.87	1.00	1.30
60	0.40	0.54	0.66	0.77	0.88	1.10
120	0.26	0.35	0.43	0.48	0.54	0.63
180	0.20	0.27	0.31	0.35	0.40	0.46
240	0.16	0.22	0.25	0.28	0.32	0.36
300	0.14	0.19	0.21	0.24	0.27	0.30
360	0.12	0.16	0.18	0.20	0.23	0.26
480	0.10	0.13	0.15	0.16	0.18	0.20
600	0.08	0.11	0.13	0.14	0.15	0.17
720	0.07	0.09	0.11	0.12	0.13	0.15
1080	0.053	0.066	0.075	0.083	0.092	0.11
1440	0.04	0.05	0.06	0.07	0.07	0.08

Runoff Coefficients	
General Areas	*C*
Roofs	*0.95*
Asphalt/Concrete	*0.9*
Gravel	*0.4*
Lanscaped	*0.2*
Turf Grass	*0.1*
Typical Undeveloped	*0.15*
Clay-Loam & Clay 0-2%	*0.13*
Clay-Loam & Clay 2-7%	*0.18*
Clay-Loam & Clay >7%	*0.25*
Sandy & Sandy Loam 0-2%	*0.05*
Sandy & Sandy Loam 2-7%	*0.1*
Sandy & Sandy Loam >7%	*0.15*

Seepage Bed B

Total Area (A)=	3.96	Acres	Effective rock Height=	4	ft	Pipe Size=	1 ft
Run-off Coeffecient (C)=	0.44		Width=	30	ft	Percent for sediment storage=	15%
Percolation Rate=	4	in/hr	Length=	140	ft	Percolation Area (Ar)=	4200 SF
Perc Flow Rate (QR)=	0.39	cfs	Sand Height=	1	ft	Storage Volume=	6720 CF

Duration (min)	100-year Intensity (in/hr)	Flow Rate Q = CIA (cfs)	Net Flow Rate (cfs)	Runoff Volume (V_R) (cf)	Vol plus Req'd for Sediment Storage (cf)	Available Storage (cf)	Req'd Storage (cf)	Time to Percolate (T_p) (hr)
10	3.10	5.40	5.01	3008	3459	6720	-3261	2
15	2.60	4.53	4.14	3727	4286	6720	-2434	3
20	2.20	3.83	3.44	4133	4753	6720	-1967	3
30	1.80	3.14	2.75	4945	5687	6720	-1033	4
40	1.50	2.61	2.22	5339	6140	6720	-580	4
50	1.30	2.27	1.88	5629	6473	6720	-247	4
60	1.10	1.92	1.53	5500	6325	6720	-395	4
120	0.63	1.10	0.71	5104	5869	6720	-851	4
180	0.46	0.80	0.41	4456	5125	6720	-1595	3
240	0.36	0.63	0.24	3433	3947	6720	-2773	2
300	0.30	0.52	0.13	2409	2770	6720	-3950	2
360	0.26	0.45	0.06	1385	1593	6720	-5127	1
480	0.20	0.35	-0.04	-1164	-1338	6720	-8058	-1
600	0.17	0.30	-0.09	-3337	-3837	6720	-10557	-2
720	0.15	0.26	-0.13	-5509	-6336	6720	-13056	-4
1080	0.11	0.19	-0.20	-12780	-14697	6720	-21417	-9
1440	0.08	0.15	-0.24	-20954	-24098	6720	-30818	-15

APPENDIX B

CONVEYANCE PIPE, INLET, AND SAND & GREASE TRAP CALCULATIONS

Pipes

Design Criteria

Max velocity	=	8	ft/s	Min. diameter	=	12	in
Min. slope	=	0.002	ft/ft	Max length	=	400	ft
Max slope	=	0.05	ft/ft	Min. cover	=	1	ft

Conveyance pipe calculations

Pipe ID	Dia. (in)	Mat.	Manning's *n*	Design Storm	Slope (ft/ft)	Length (ft)	Trib. Area (acres)	ToC (min)	Runoff Coeff.	Q_{Full} Full-Flow Capacity (cfs)	Q_0 Design Flow (cfs)	Q_0/Q_{Full}	Full-Flow Vel. (ft/s)	Up Node	Down Node	Up Inv.	Down Inv.	Up Cover	Down Cover
PIPE 1	12	PVC	0.009	50	0.0040	22	0.1	10.00	0.76	*3.25*	*0.21*	*0.06*	4.14	CB-01	SDMH-03	2551.20	2551.11	2.07	2.35
PIPE 2	12	PVC	0.009	50	0.0040	8	4.1	45.30	0.59	*3.25*	*2.77*	*0.85*	4.14	CB-03	SDMH-01	2551.19	2551.16	2.28	2.50
PIPE 3	15	PVC	0.009	50	0.0040	21	9.1	43.80	0.42	*5.90*	*4.47*	*0.76*	4.81	CB-04	SDMH-01	2551.24	2551.16	1.98	2.25
PIPE 4	18	PVC	0.009	50	0.0027	124	13.2	45.33	0.47	*7.88*	*7.10*	*0.90*	4.46	SDMH-01	SDMH-02	2551.16	2550.83	2.00	3.03
PIPE 5	15	PVC	0.009	50	0.0070	125	13.2	45.80	0.47	*7.81*	*7.05*	*0.90*	6.36	SDMH-02	SDMH-03	2550.83	2549.96	3.28	3.25
PIPE 6	15	PVC	0.009	50	0.0070	8	13.3	46.12	0.47	*7.81*	*7.07*	*0.91*	6.36	SDMH-03	CB-02	2549.96	2549.90	3.25	3.12
PIPE 7	18	PVC	0.009	50	0.0045	25	15.0	41.60	0.49	*10.18*	*8.87*	*0.87*	5.76	CB-02	SGT-01	2549.90	2549.79	2.87	3.30
PIPE 8	12	PVC	0.009	50	0.0040	33	1.1	32.10	0.63	*3.25*	*0.95*	*0.29*	4.14	CB-05	CB-06	2563.39	2563.26	1.99	2.12
PIPE 9	12	PVC	0.009	50	0.0040	24	3.9	39.00	0.44	*3.25*	*2.15*	*0.66*	4.14	CB-06	SGT-02	2563.26	2563.16	2.12	2.54
PIPE 10	18	PVC	0.009	50	0.0045	10	15.1	41.67	0.49	*10.18*	*8.92*	*0.88*	5.76	SGT-01	SDMH-04	2549.59	2549.55	3.50	3.45
PIPE 11	12	PVC	0.009	50	0.0100	10	3.9	39.10	0.49	*5.15*	*2.39*	*0.46*	6.56	SGT-02	SDMH-05	2562.85	2562.75	2.85	2.91

Sand & Grease Traps

Design Criteria

Max throat velocity	=	0.5	ft/s
Min. baffle spacing	=	20	in

Sand and grease trap calculations

SGT ID	No. of SGTs	Size (gal)	Baffle Width (in)	Baffle Spacing (in)	Throat Area (sf)	Inflow (cfs)	Throat Velocity (ft/s)
SGT-01	2	1500	63	24	21.0	8.9	0.42
SGT-02	1	1000	51	20	7.1	2.2	0.31

Worksheet for Combination Inlet In Sag - CB-01

Project Description	
Solve For	Spread

Input Data		
Discharge	0.21	cfs
Gutter Width	18.00	in
Gutter Cross Slope	8.000	%
Road Cross Slope	2.000	%
Local Depression	2.00	in
Local Depression Width	29.75	in
Grate Width	16.75	in
Grate Length	2.5	ft
Grate Type	P-50 mm (P-1 -7/8")	
Clogging	25.0	%
Curb Opening Length	2.0	ft
Opening Height	0.3	ft
Curb Throat Type	Vertical	
Throat Incline Angle	0.00	degrees

Options	
Calculation Option	Use Both

Results		
Spread	1.3	ft
Depth	0.2	in
Gutter Depression	1.08	in
Total Depression	3.08	in
Open Grate Area	2.4	ft^2
Active Grate Weir Length	4.6	ft

Worksheet for Combination Inlet In Sag - CB-01

Notes:

From Subbasin A1, Q = 0.21 cfs

Worksheet for Combination Inlet In Sag - CB-02

Project Description	
Solve For	Spread

Input Data		
Discharge	1.47	cfs
Gutter Width	18.00	in
Gutter Cross Slope	8.000	%
Road Cross Slope	2.000	%
Local Depression	2.00	in
Local Depression Width	29.75	in
Grate Width	16.75	in
Grate Length	2.5	ft
Grate Type	P-50 mm (P-1 -7/8")	
Clogging	25.0	%
Curb Opening Length	2.0	ft
Opening Height	0.3	ft
Curb Throat Type	Vertical	
Throat Incline Angle	0.00	degrees

Options	
Calculation Option	Use Both

Results		
Spread	2.3	ft
Depth	2.1	in
Gutter Depression	1.08	in
Total Depression	3.08	in
Open Grate Area	2.4	ft^2
Active Grate Weir Length	4.6	ft

Worksheet for Combination Inlet In Sag - CB-02

Notes:

From Subbasin A2, Q = 1.47 cfs

Worksheet for Combination Inlet In Sag - CB-03

Project Description	
Solve For	Spread

Input Data		
Discharge	2.77	cfs
Gutter Width	18.00	in
Gutter Cross Slope	8.000	%
Road Cross Slope	2.000	%
Local Depression	2.00	in
Local Depression Width	29.75	in
Grate Width	16.75	in
Grate Length	2.5	ft
Grate Type	P-50 mm (P-1 -7/8")	
Clogging	25.0	%
Curb Opening Length	2.0	ft
Opening Height	0.3	ft
Curb Throat Type	Vertical	
Throat Incline Angle	0.00	degrees

Options	
Calculation Option	Use Both

Results		
Spread	8.6	ft
Depth	3.1	in
Gutter Depression	1.08	in
Total Depression	3.08	in
Open Grate Area	2.4	ft^2
Active Grate Weir Length	4.6	ft

Worksheet for Combination Inlet In Sag - CB-03

Notes:

From Subbasin A3, Q = 2.77 cfs

Worksheet for Combination Inlet In Sag - CB-04

Project Description	
Solve For	Spread

Input Data		
Discharge	4.49	cfs
Gutter Width	18.00	in
Gutter Cross Slope	8.000	%
Road Cross Slope	2.000	%
Local Depression	2.00	in
Local Depression Width	54.00	in
Grate Width	16.75	in
Grate Length	4.5	ft
Grate Type	P-50 mm (P-1 -7/8")	
Clogging	25.0	%
Curb Opening Length	4.0	ft
Opening Height	0.3	ft
Curb Throat Type	Vertical	
Throat Incline Angle	0.00	degrees

Options	
Calculation Option	Use Both

Results		
Spread	3.6	ft
Depth	3.1	in
Gutter Depression	1.08	in
Total Depression	3.08	in
Open Grate Area	4.2	ft^2
Active Grate Weir Length	6.6	ft

Worksheet for Combination Inlet In Sag - CB-04

Notes:

From Subbasin A4, Q = 4.49 cfs
Local Depreesion Width, Grate Length, and Curb Opening Length are doubled in size to model 2 catch basins.

Worksheet for Combination Inlet On Grade - CB-05A

Project Description	
Solve For	Efficiency

Input Data	
Discharge	0.95 cfs
Slope	0.450 %
Gutter Width	18.00 in
Gutter Cross Slope	8.000 %
Road Cross Slope	2.000 %
Roughness Coefficient	0.012
Local Depression	2.00 in
Local Depression Width	29.75 in
Grate Width	16.75 in
Grate Length	2.5 ft
Grate Type	P-50 mm (P-1 -7/8")
Clogging	25.0 %
Curb Opening Length	2.0 ft

Options	
Calculation Option	Use Both
Grate Flow Option	Exclude None

Results	
Efficiency	68.53 %
Intercepted Flow	0.65 cfs
Bypass Flow	0.30 cfs
Spread	6.5 ft
Depth	2.6 in
Flow Area	0.5 ft²
Gutter Depression	1.08 in
Total Depression	3.08 in
Velocity	1.92 ft/s
Splash Over Velocity	7.86 ft/s
Frontal Flow Factor	1.000
Side Flow Factor	0.149
Grate Flow Ratio	0.610
Equivalent Cross Slope	8.619 %
Active Grate Length	1.9 ft
Length Factor	0.017
Total Interception Length	7.2 ft

Worksheet for Combination Inlet On Grade - CB-05A

Notes:

From Subbasin B1, Q = 0.95 cfs

Worksheet for Combination Inlet On Grade - CB-05B

Project Description	
Solve For	Efficiency

Input Data	
Discharge	0.30 cfs
Slope	0.450 %
Gutter Width	18.00 in
Gutter Cross Slope	8.000 %
Road Cross Slope	2.000 %
Roughness Coefficient	0.012
Local Depression	2.00 in
Local Depression Width	29.75 in
Grate Width	16.75 in
Grate Length	2.5 ft
Grate Type	P-50 mm (P-1 -7/8")
Clogging	25.0 %
Curb Opening Length	2.0 ft

Options	
Calculation Option	Use Both
Grate Flow Option	Exclude None

Results	
Efficiency	92.66 %
Intercepted Flow	0.28 cfs
Bypass Flow	0.02 cfs
Spread	3.4 ft
Depth	1.9 in
Flow Area	0.2 ft²
Gutter Depression	1.08 in
Total Depression	3.08 in
Velocity	1.65 ft/s
Splash Over Velocity	7.86 ft/s
Frontal Flow Factor	1.000
Side Flow Factor	0.187
Grate Flow Ratio	0.891
Equivalent Cross Slope	11.504 %
Active Grate Length	1.9 ft
Length Factor	0.034
Total Interception Length	3.7 ft

Worksheet for Combination Inlet On Grade - CB-05B

Notes:

From by-pass flow of upstream inlet CB-05A, Q = 0.3 cfs

Worksheet for Combination Inlet On Grade - CB-06A

Project Description	
Solve For	Efficiency

Input Data	
Discharge	1.31 cfs
Slope	0.450 %
Gutter Width	18.00 in
Gutter Cross Slope	8.000 %
Road Cross Slope	2.000 %
Roughness Coefficient	0.012
Local Depression	2.00 in
Local Depression Width	29.75 in
Grate Width	16.75 in
Grate Length	2.5 ft
Grate Type	P-50 mm (P-1 -7/8")
Clogging	25.0 %
Curb Opening Length	2.0 ft

Options	
Calculation Option	Use Both
Grate Flow Option	Exclude None

Results	
Efficiency	61.72 %
Intercepted Flow	0.81 cfs
Bypass Flow	0.50 cfs
Spread	7.6 ft
Depth	2.9 in
Flow Area	0.6 ft²
Gutter Depression	1.08 in
Total Depression	3.08 in
Velocity	2.03 ft/s
Splash Over Velocity	7.86 ft/s
Frontal Flow Factor	1.000
Side Flow Factor	0.136
Grate Flow Ratio	0.539
Equivalent Cross Slope	7.862 %
Active Grate Length	1.9 ft
Length Factor	0.014
Total Interception Length	8.7 ft

Worksheet for Combination Inlet On Grade - CB-06A

Notes:

From Subbasin B2, Q = 1.31 cfs

Worksheet for Combination Inlet On Grade - CB-06B

Project Description	
Solve For	Efficiency

Input Data		
Discharge	0.50	cfs
Slope	0.450	%
Gutter Width	18.00	in
Gutter Cross Slope	8.000	%
Road Cross Slope	2.000	%
Roughness Coefficient	0.012	
Local Depression	2.00	in
Local Depression Width	29.75	in
Grate Width	16.75	in
Grate Length	2.5	ft
Grate Type	P-50 mm (P-1 -7/8")	
Clogging	25.0	%
Curb Opening Length	2.0	ft

Options	
Calculation Option	Use Both
Grate Flow Option	Exclude None

Results		
Efficiency	82.61	%
Intercepted Flow	0.41	cfs
Bypass Flow	0.09	cfs
Spread	4.7	ft
Depth	2.2	in
Flow Area	0.3	ft^2
Gutter Depression	1.08	in
Total Depression	3.08	in
Velocity	1.74	ft/s
Splash Over Velocity	7.86	ft/s
Frontal Flow Factor	1.000	
Side Flow Factor	0.173	
Grate Flow Ratio	0.768	
Equivalent Cross Slope	10.265	%
Active Grate Length	1.9	ft
Length Factor	0.025	
Total Interception Length	4.9	ft

Worksheet for Combination Inlet On Grade - CB-06B

Notes:

From by-pass flow of upstream inlet CB-06A, Q = 0.5 cfs

APPENDIX C

PHASE 1 & PHASE 2 CONSTRUCTION PERCOLATION TEST RESULTS

GeoTek, Inc.
320 E. Corporate Dr., Suite 300, Meridian, Idaho 83642
(208) 888-7010 Office
(208) 888-7924 Fax
www.geotekusa.com

PERCOLATION TEST RESULTS

TEST NUMBER(S) A-E

PROJECT NAME	Osprey Estates	PROJECT NUMBER	2054-ID
PROJECT LOCATION	Nampa, ID	DATE	8/18/2021
TEST LOCATION	Storage Facilities A-E	REVIEWED BY	Luke J. Landriani, PE
TEST PERFORMED BY	Steven Huber, EI	DESIGN PERC RATE	4.0 in/hr

TEST DATA

Test*	Test Pit Location*	Test Pit Size	Test Depth	Depth of Water @ Start	Infiltration Rate (in/hr)
SW-A	Storage Facility A	~20' x 12'	~5.0' below EG	~24"	6.6
SW-B	Storage Facility B	~25' x 25'	~6.0' below EG	~24"	4.8
SB-C	Storage Facility C	~60' x 12'	~8.0' below EG	N/A	24+
SW-D	Storage Facility D	~21' x 14'	~5.0' below EG	N/A	24+
SB-E	Storage Facility E	~35' x 8'	~6.0' below EG	~24"	4.8

*SW indicates "sand window" facility, SB indicates "seepage bed" facility

**See attached figure for locations

"N/A" indicates that test pit was draining faster than it could be filled to maintain constant head

COMMENTS:

Per request of T-O Engineers, arrived onsite approx. 9:00am to conduct percolation testing at test pits for Storage Facilities A-E.. Superior Blasting had excavated and presoaked test pits prior to arrival. Test pit locations were taken from Storage Facility locations shown on plans from T-O Engineers, dated 6-11-2021 (see Sheet 2.00). Facilities consist of a combination of "sand windows" and "seepage beds".

All of the locations tested met the design infiltration rate of 4.0 in/hr provided in the Seepage Bed Details on Sheet C4.10. See the table above for percolation testing results.

Note that the test pits were primarily founded on blasted basalt and sand silt/silty sand soils.

Tested by:
Steven Huber, EI
Staff Professional

Reviewed by:
Luke J. Landriani, PE
Senior Engineer

GeoTek, Inc.
320 E. Corporate Dr., Suite 300, Meridian, Idaho 83642
(208) 888-7010 Office
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PERCOLATION TEST RESULTS

TEST NUMBER(S)	A-E		
PROJECT NAME	Osprey Estates	PROJECT NUMBER	2054-ID
PROJECT LOCATION	Nampa, ID	DATE	8/18/2021
TEST LOCATION	Storage Facilities A-E	REVIEWED BY	Luke J. Landriani, PE
TEST PERFORMED BY	Steven Huber, EI	DESIGN PERC RATE	4.0 in/hr

TEST PIT PHOTOS


Storage Facility A (SW-A)


Storage Facility B (SW-B)


Storage Facility C (SB-C)


Storage Facility D (SW-D)

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PERCOLATION TEST RESULTS

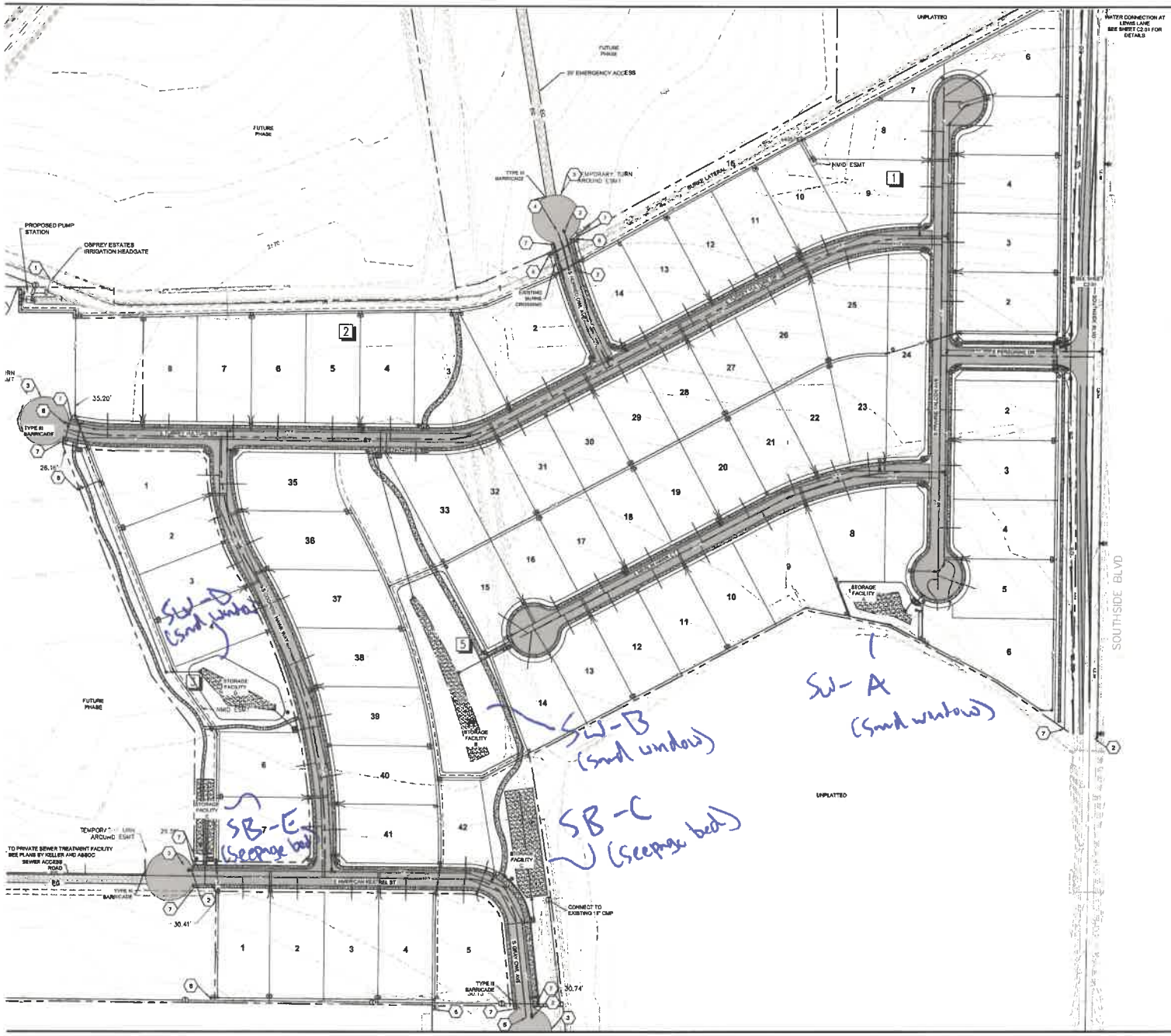
TEST NUMBER(S) A-E

PROJECT NAME	Osprey Estates	PROJECT NUMBER	2054-ID
PROJECT LOCATION	Nampa, ID	DATE	8/18/2021
TEST LOCATION	Storage Facilities A-E	REVIEWED BY	Luke J. Landriani, PE
TEST PERFORMED BY	Steven Huber, EI	DESIGN PERC RATE	4.0 in/hr

TEST PIT PHOTOS



Storage Facility E (SB-E)



KEY NOTES

1. CONNECT TO EXISTING 12" GRAVITY IRRIGATION STUB, SEE SHEET C4.00 FOR MORE INFORMATION.
2. INSTALL TEMPORARY BLOW-OFF ON WATER LINE PER CITY OF NAMPA STANDARD DRAWING NO. W-405A
3. TEMPORARY TURNAROUND TO MEET SECTION 3030.030 AND ACCHD-104 DETAIL STANDARDS. SEE SHEETS C4.00-C4.07 FOR DESIGN INFORMATION.
4. INSTALL TEMPORARY AIR RELEASE VALVE ON PRESSURE SEWER LINE FOR FUTURE EXTENSION.
5. INSTALL TEMPORARY BLOW-OFF ON PRESSURE SEWER LINE FOR FUTURE EXTENSION.
6. STUB OUT PRESSURE IRRIGATION FOR FUTURE EXTENSION.
7. TYPE II BARRICADE
8. STUB WITH 8" BLIND FLANGE AND MARK FOR FUTURE EXTENSION.

0 50 100 200 300

PROFESSIONAL ENGINEER REGISTERED 8856 6/11/2021 STATE OF IDAHO JOHN G. CARPENTER

BORDER SIZE	22"x34"
DESIGNED	K.ERICKS, L.PICK
DRAWN	L. PICK
CHECKED	J. FRY
APPROVED	J. CARPENTER

NO.	REVISIONS DESCRIPTION	DATE

T-O ENGINEERS
CONSULTING ENGINEERS, SURVEYORS & PLANNERS
332 N. BROADMOOR WAY
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BOISE • COEUR D'ALENE • MERIDIAN • NAMPA • SPOKANE

CONSTRUCTION DRAWINGS FOR:

OSPREY ESTATES SUBDIVISION

MASTER UTILITY PLAN

ATTENTION: 0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" ON 22x34 SHEET or 1/2" ON 11x17 SHEET, THEN DRAWING IS NOT TO SCALE

DATE: June 11, 2021
PROJECT: 180084
SHEET: C2.00

GeoTek, Inc.
320 E. Corporate Dr., Suite 300, Meridian, Idaho 83642
(208) 888-7010 Office
(208) 888-7924 Fax
www.geotekusa.com

PERCOLATION TEST RESULTS

PROJECT NAME	Osprey Estates	PROJECT NUMBER	2761-ID
PROJECT LOCATION	SEC of Lewis Ln & Southside Blvd. Nampa,ID	DATE	11/27/2024
TEST LOCATION	Storm Drainage Pond - NW Test Pit	REVIEWED BY	Marcus Valero
TEST PERFORMED BY	Parker Watson, Field Technician	REGISTRATION NO.	
TEST PIT SIZE	~ 3.0 x 10.0'	TEST PIT DEPTH	~ 3.0'

TEST DATA

Design Infiltration Rate	4.0 in/hr

Reading Time	Time Diff. (hrs)	Water Depth (In.)	Depth Change (in.)	Infiltration Rate (in./hr.)
12:49 PM	-	24.00	-	-
1:49 AM	1.00	10.00	14.00	14.0

Arrived onsite for scheduled inspection of the Storm drainage pond. Civil plans call for a minimum 4.0" per hour infiltration rate (Per sheet C5.05). Contractor states engineer on record (Ardurra) requested two test pits. Prior to arrival, Contractor placed 3' feet of free draining material (Poorly graded Sand) and dug two test pits down to native soil. Contractor stated presoak was conducted a day prior. Conducted percolation testing with representatives of contractor. Results for storm drain pond NW test pit are listed above; results appear to indicate a satisfactory average percolation rate above the design rate listed on sheet C5.05. Notifed contractor of passing results.

Tested by: Parker Watson
Parker Watson, Field Technician

Reviewed by:
Marcus Valero, Staff Professional

12/10

GeoTek, Inc.
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(208) 888-7010 Office
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PERCOLATION TEST RESULTS

PROJECT NAME	Osprey Estates	PROJECT NUMBER	2761-ID
PROJECT LOCATION	SEC of Lewis Ln & Southside Blvd. Nampa,ID	DATE	11/27/2024
TEST LOCATION	Storm Drainage Pond - SE Test Pit	REVIEWED BY	Marcus Valero
TEST PERFORMED BY	Parker Watson, Field Technician	REGISTRATION NO.	
TEST PIT SIZE	~ 4.0 x 10.0'	TEST PIT DEPTH	~ 3.0'

TEST DATA

Design Infiltration Rate	4.0 in/hr

Reading Time	Time Diff. (hrs)	Water Depth (in.)	Depth Change (in.)	Infiltration Rate (in./hr.)
11:57 AM	-	24.00	-	-
12:57 PM	1.00	0.00	24.00	24.0

Arrived onsite for scheduled inspection of the Storm drainage pond. Civil plans call for a minimum 4.0" per hour infiltration rate (Per sheet C5.05). Contractor states engineer on record (Ardurra) requested two test pits. Prior to arrival, Contractor placed 3' feet of free draining material (Poorly graded Sand) and dug two test pits down to native soil. Contractor stated presoak was conducted a day prior. Conducted percolation testing with representatives of contractor. Attempted to obatin 2' feet of head for percolation testing but not possible after 45 mins indicating native material to be free draining. Results for storm drain pond SE test pit are listed above; results appear to indicate a satisfactory average percolation rate above the design rate listed on sheet C5.05. Notifed contractor of passing results.

Tested by:
Parker Watson, Field Technician

Reviewed by:
Marcus Valero, Staff Professional

12/10

APPENDIX D

PROJECT GEOTECHNICAL REPORT

PRELIMINARY GEOTECHNICAL EVALUATION FOR "OSPREY ESTATES SUBDIVISION" – A ±147 ACRE SITE - LOCATED SOUTH OF EAST LEWIS LANE AND WEST OF SOUTHSIDE BOULEVARD, NAMPA, IDAHO

August 27, 2019

GTI-Project No. 2054-ID

Prepared For:

WESTPARK COMPANIES
1710 S. Wells Avenue, Suite 110
Meridian, Idaho 83680

GeoTek, Inc.

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Appendix E, MTI Geotechnical Engineering Report B181542g - Revised, dated 11-15-18

GeoTek, Inc.
320 East Corporate Drive Suite 300 Meridian, ID 83642-3511
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August 27, 2019
Project No. 2054-ID

WESTPARK COMPANIES
1710 S. Wells Avenue, Suite 110
Meridian, Idaho 83680

Attention: Mr. Taylor Merrill

Subject: **Preliminary Geotechnical Evaluation** for "Osprey Estates Subdivision" – a 147± acre site – Located South of East Lewis Lane and West of Southside Boulevard, Nampa, Idaho

Reference: **Geotechnical Engineering Report – Revised –** of Osprey Estates Subdivision – Southwest of Southside Boulevard and Lewis Lane, Nampa, ID, MTI File Number B181542g, dated November 15, 2018

In accordance with your request, GeoTek, Inc. (GTI) has completed a geotechnical evaluation of the subject property for the construction of a single-family residential development with associated improvements. This report is preliminary in nature due to the fact that GTI was requested to perform field exploratory test pits on only approximately two-thirds of the site. Note that Materials Testing and Inspection (MTI) previously performed field exploratory borings to identify basalt rock depth in the eastern and southern sections of the site. Reference the attached report for further information (Appendix E). GeoTek will excavate additional exploratory test pits, upon the notice and direction from our client, on the central, western, and southern portions of the property and supply a complete Geotechnical Evaluation with updated findings and design recommendations at that time. The purpose of our study was to evaluate the soils underlying the site and to provide recommendations for project design and construction based on our findings. This report outlines the geologic and geotechnical conditions of the site based on current data and provides earthwork and construction recommendations with respect to those conditions.

SCOPE OF SERVICES

The scope of our services has included the following:

1. Review of soils and geologic reports and maps for the site (Appendix A).

2. Site reconnaissance.

3. Review of aerial photographs.

4. Excavating and logging of twenty-five (25) exploratory test pits (Appendix B).

5. Obtaining samples of representative soils, as the exploratory test pits were advanced.

6. Performing laboratory testing on representative soil samples (Appendix D).

7. Assessment of potential geologic constraints.

8. Engineering analysis regarding foundation design/construction, foundation settlement, and site preparation.

9. Preparation of this report.

SITE DESCRIPTION

The project site consists of irregularly shaped parcels, totaling approximately 147± acres, and is bound by East Lewis Lane and single-family homes to the north, Southside Boulevard and an industrial storage yard along with single-family homes to the east, undeveloped agricultural land to the south, as well as agricultural land and the Aaron Drain to the west (Figures 1 and 2). Currently, the property consists of multiple pastures used for ranching and raising livestock. The Burke Lateral irrigation channel bisects the site running east to west. The Aaron Drain – a large, concrete lined irrigation canal, approximately 6 feet wide – borders the western side of the site's western-most parcel and runs northeast to southwest. Access to the site is possible from East Lewis Lane and Southside Boulevard. From topographic maps, the site's elevation is approximately 2,545± feet to 2,590± feet above mean sea level. Historically, topography generally directs surface water to the southwest.

PROPOSED DEVELOPMENT

It is our understanding that site development would consist of performing typical cut and fill earthwork to attain the desired graded configuration(s) for the construction of a residential subdivision consisting of one- to two-story detached single-family residential structures with associated improvements. It is further assumed that final site grade will be within 5 feet of existing site grade.

FIELD STUDIES

Subsurface conditions at the site were explored by using a rubber-tired backhoe. Twenty-five (25) test pits were advanced onsite for the Test Pit Logs in August of 2019. A log of the site exploration is included with this report in Appendix B. Four (4) percolation tests were performed on the subject site, as well as four (4) initial ground water measurements (Appendix C). Field studies were completed during August of 2019 by field personnel who conducted field excavation location mapping, logged the excavations, and obtained samples of representative soils for laboratory testing.

The approximate locations of the explorations are indicated on the enclosed Site Exploration Plan (Figure 2). The Unified Soil Classification System (USCS) Classification was used to visually classify the subgrade soils during the field evaluation.

REGIONAL GEOLOGY

The subject site is situated within the Boise River Valley, which comprises the northwestern portion of the Snake River Plain physiographic province. The western portion of the Snake River Plain is aligned in a northwest-southeast direction and generally divides the Owyhee mountains to the south from the Central Idaho mountains toward the north (Wood and Clemens, 2004). The headwaters of the Boise River are located in the Central Idaho mountains east of Boise, Idaho. The river leaves the central mountains and enters the Snake River Plain near Barber and drains toward the west into the Snake River near Parma. The Owyhee mountains and the Central Idaho Mountains are composed predominantly of volcanic and igneous rocks. The western portion of the Snake River Plain is a northwest trending complex graben formed by extension and regional uplift along the northern boundary of the basin and range province (Wood and Clemens, 2004). The graben generally forms a basin which has been partially filled with younger sedimentary and volcanic rocks (Malde, 1991).

The Boise River Valley is bounded on the northeast by the Boise Front, which is a northwest trending topographic high extending generally from Boise to Emmett, Idaho. The Boise Front consists of Cretaceous aged granitic and metamorphic rocks cut by Tertiary aged rhyolite and overlain with Miocene aged lake sediments (Wood and Clemens, 2004). These units have been cut by northwest trending faults which down drop these units toward the southwest. The faults also provide conduits for Quaternary aged basalt intrusions and flows (Malde, 1991).

The depositional environment for the valley floor is dominantly lake laid deposits of sand, silt and clay. These materials were deposited during two periods of lake activity, one during the Miocene and the other during the Pleistocene. This valley infilling process has been subsequently truncated by down faulting within the valley ranging in height from a few feet to over 50 feet. Younger alluvium has been, and continues to be, transported dominantly by water and deposited on the basins gently sloping valley floor and within low-level flood plains. Portions of the alluvial deposits are being down cut by intermittent streams to the flood plain, and as a result stream terraces are being formed.

SITE SOILS

Artificial Fill

Based on field studies, some spread fills were observed along the perimeter of the site and on the interior maintenance roadways. This fill is generally associated with the construction of the roadways and irrigation laterals. This spread fill shall be considered artificial fill. The majority of the property has been cultivated for ranching use and the upper 12 inches of material has been disturbed and consists of silts and sandy silts with a moderate amount of organics. This shall be considered artificial fill. Deeper fills may be encountered onsite. The "Artificial Fills" are soft, contain

organics/roots, and are not considered suitable for support of foundations. All artificial fill material should be removed as described in the "Removals" section of this report.

Native Alluvial Soils

Alluvial soils encountered generally consisted surficial layers of silts and sandy silts, underlain by sandy silts, silty sands, and basalt. The moisture content within the alluvial materials was generally slightly moist near surface and at depth. The consistency of these soils ranged from soft to firm near surface and moderately dense/firm to dense/stiff at depth. We anticipate that the onsite soils can be excavated with conventional earthwork equipment. Basalt rock was encountered in most of the excavations. Special excavation equipment and techniques may be necessary, dependent upon depths of cuts and whether or not these harder materials are encountered during construction.

Much of the property has been used for ranching and livestock grazing, causing the upper 12 inches of soil to be disturbed. The soil consists of brown to dark brown silts and sandy silts with a moderate amount of organics and roots overlying layers of sandy silts and silty sands. Deeper fills may be encountered onsite. The upper 12 inches of soil across the site is soft and contains organics/roots. This soil layer is not considered suitable for support of foundations. All upper soils should be removed as described in the "Removals" section of this report.

After the upper 12 inches of soil is removed, the underlying 12 inches of the native alluvium soil will require, at a minimum, some removal and/or processing efforts to be considered suitable for the support of the proposed site improvements. Locally deeper processing/removals may be necessary. Refer to the "Recommendations Earthwork Construction" section of this report for specific site preparation recommendations.

SURFACE & GROUND WATER

Ground water was not encountered in any of the excavations. According to the State of Idaho Department of Water Resources Well Drillers' logs, ground water in the vicinity is approximately 53 to 54 feet below the existing ground surface. Irrigation ditches exist adjacent to the site and they transmit water on a periodic basis. Generally, irrigation ditches and canals will locally influence ground water during the irrigation season (i.e., May through October). If encountered, wet materials should be spread out and air-dried or mixed with drier soils to reduce their moisture content as appropriate for fill placement. Ground water is not anticipated to adversely affect planned development, provided that earthwork construction methods comply with recommendations contained in this report or those made subsequent to review of the improvement plan(s). GTI assumes that the design civil engineer on record will evaluate the site for potential flooding and set grades such that the improvements are adequately protected. These observations reflect conditions at the time of this investigation and do not preclude changes in local ground water conditions in the future from natural causes, damaged structures (lines, pipes etc.), or heavy irrigation.

TECTONIC FAULTING AND REGIONAL SEISMICITY

The site is situated in an area of active as well as potentially active tectonic faults, however no faults were observed during the field evaluation. There are a number of faults in the regional area, which are considered active and would have an affect on the site in the form of ground shaking, should they be the source of an earthquake. It is reasonable to assume that structures built in this area will be subject to at least one seismic event during their life, therefore, it is recommended that all structures be designed and constructed in accordance with the International Building Code (IBC). Based on experience in the general vicinity, library references, and a field evaluation of the site – a Seismic Design Site Class Designation of 'C' may be used for seismic design.

Secondary Seismic Constraints

The following list includes other potential seismic related hazards that have been evaluated with respect to the site, but in our opinion, the potential for these seismically related constraints to affect the site is considered negligible.

* Liquefaction
* Dynamic Settlements
* Surface Fault Rupture
* Ground Lurching or Shallow Ground Rupture

Summary:

It is important to keep in perspective that if a seismic event were to occur on any major fault, intense ground shaking could be induced to this general area. Potential damage to any settlement sensitive structures would likely be greatest from the vibrations and impelling force caused by the inertia of the structures mass than that created from secondary seismic constraints. Considering the subsurface soil conditions and local seismicity, it is estimated that the site has a low risk associated with the potential for these phenomena to occur and adversely affect surface improvements. These potential risks are no greater at this site than they are for other structures and improvements developed on the alluvial materials in this vicinity.

RESULTS OF LABORATORY TESTING

Laboratory tests were performed on representative samples of the onsite earth materials in order to evaluate their physical and chemical characteristics. The tests performed, and the results obtained are presented in Appendix D.

CONCLUSIONS

Based on our field exploration, laboratory testing and engineering analyses, it is our opinion that the subject site is suited for development from a geotechnical engineering viewpoint. The recommendations presented herein should be incorporated into the final design, grading, and construction phases of development. The engineering analyses performed concerning site

preparation and the recommendations presented below have been completed using the information provided to us regarding site development. In the event that the information concerning proposed development is not correct, the conclusion and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and conclusions of this report are modified or approved in writing by this office.

RECOMMENDATIONS - EARTHWORK CONSTRUCTION

General

All grading should conform to the International Building Code (IBC) and the requirements of the City of Nampa except where specifically superseded in the text of this report. During earthwork construction all removals, drain systems, slopes, and the general grading procedures of the contractor should be observed and the fill selectively tested.

If unusual or unexpected conditions are exposed in the field, they should be reviewed by this office and if warranted, modified and/or additional recommendations will be offered. It is recommended that the earthwork contractor(s) perform their own independent reconnaissance of the site to observe field conditions firsthand. If the contractor(s) should have any questions regarding site conditions, site preparation, or the remedial recommendations provided, they should contact an engineer at GeoTek for any necessary clarifications prior to submitting earthwork bids. All applicable requirements of local and national construction and general industry safety orders, the Occupational Safety and Health Act, and the Construction Safety Act should be met.

Demolition

The following recommendations are provided as guidelines in the event a structure is encountered that are not intended to remain.

1. All existing surface or subsurface structures (not intended to remain), within the area to be developed, should be razed and moved off site.

2. If a septic tank (to be abandoned or below a proposed improvement) is located within the project site, it is recommended that it be pumped out and with few exceptions likely removed. Any leach lines, seepage pits, or other pipes associated with this structure should also be removed or properly abandoned.

3. If any wells are encountered, an attempt should be made to identify the owner and purpose of the well. Well abandonment should adhere to the recommendations provided by the Idaho Department of Water Resources, the Public Health Department, or any other government agencies. If the well is located in the area of a proposed structure, these recommendations should be reviewed by GTI and if warranted, additional geotechnical recommendations will be offered.

Removals/Processing - General

Presented below are removal/processing recommendations for the various earth materials encountered on the project. Debris, vegetation, and other deleterious material should be stripped/removed from areas proposed for structural improvements.

Based on a review of the exploratory logs and our site reconnaissance, after the upper 12 inches of surficial soils are removed and disposed of offsite, a minimum removal/processing depth of 12 inches into underlying alluvial materials should be accomplished across the site. If the left in place soils can be scarified to encounter a competent layer below; they may be processed in place; otherwise, they should be removed to competent material. Locally deeper removals/processing may be necessary based on the field conditions exposed

We recommend that all surficial clays and deleterious soils be removed from beneath the foundations and building pads and replaced with a low expansive structural fill. The exposed ground surface should be moisture conditioned and compacted a minimum depth of 12 inches to provide uniform foundation support. Also, a minimum of 12 inches of compacted structural fill below the bottom of footings should be provided. A minimum relative compaction of 90 percent of the laboratory maximum modified density (ASTM D 1557), at a moisture content of optimum or above, is necessary to generate any near surface settlements. Locally deeper removals/processing may be necessary based on the conditions exposed. Removal bottoms should be checked by a representative of GeoTek, Inc. to see if deeper removals are necessary.

If very hard basalt rock or cemented materials are encountered during over-excavation, excavation may potentially be terminated, but this will need to be determined on a case by case basis by a representative of GTI. Foundations for the proposed structures may be founded on basalt rock or cemented material; however, in order to avoid the potential for differential settlement, the entire foundation would need to be supported entirely by this material. If this is not possible, basalt rock or cemented materials should be removed to a minimum depth of 12 inches below the bottom of the footing and replaced with compacted structural fill. This can best be determined in the field based upon the conditions exposed. Termination of any excavation on basalt rock or cemented soils will need to be reviewed by GTI and the owner. If existing improvements or property line restrictions limit removals, condition specific recommendations would be provided on a case-by-case basis. During earthwork construction, care should be taken by the contractor so that adverse ground movements or settlements are not generated affecting existing improvements.

Transitional Pads

Transitional pads are defined in this report as pads which are partially cut and partially fill. To mitigate some of the differential settlement which will occur on transitional pads, the cut side should be over-excavated/processed to a minimum depth equal to 2 feet below the bottom of the footings or to the depth of the fill, whichever is less. On transitional pads with more than 7.5 feet of fill, plans need to be reviewed by GTI and site-specific recommendations will be provided.

Excavation Difficulty

Basalt rock was encountered in most of our excavations. Moderately hard to hard materials that are 24 inches thick or less may be excavated with heavy equipment. It should be expected that excavation of these materials would produce oversized material requiring special fill placement techniques. GTI could provide additional consultation regarding rock-soil fills upon request. It should be anticipated that in some areas blasting may be necessary to attain the desired graded configurations and that a trencher will be necessary to achieve the desired trench depth for utilities. Personnel from our office should be onsite to observe the excavation process. As an alternative, we would suggest raising the grades in areas to avoid costly excavation.

Frozen soils, if encountered, should be removed and allowed to thaw prior to any fill placement or construction. Removal bottoms should be checked by a representative of GTI to see if deeper removals are necessary.

Fill Placement

Subsequent to completing removals/processing and ground preparation, the excavated onsite and/or imported soils may be placed in relatively thin lifts (less than 8 inches thick), cleaned of vegetation and debris, brought to at least optimum moisture content, and compacted to a minimum relative compaction of 90 percent of the laboratory standard (ASTM D 1557).

Import Material

Potentially, soils will be imported to the site for earthwork construction purposes. A sample of any intended import material should first be submitted to GTI so that, if necessary, additional laboratory or chemical testing can be performed to verify that the intended import material is compatible with onsite soils. In general, import material should be within the following minimum guidelines:

* Free of organic matter and debris.
* Maintain less than 0.2 percent sulfate content.
* Maintain less than 3.0 percent soluble material.
* Maintain less than 0.02 percent soluble chlorides.
* Maintain less than 0.2 percent sodium sulfate content.
* Maintain a Plasticity Index less than 12 (i.e., low expansive).
* One hundred percent passing the six-inch screen.
* At least seventy-five percent passing a three-inch screen.
* Maintain between 5 and 20 percent passing the No. 200 screen.
* Maintain at least 20 percent retained on the No. 4 screen.

Observation and Testing

During earthwork construction, all removal/processing and the general grading procedures should be observed and the fill selectively tested by a representative(s) of GTI. If unusual or unexpected conditions are exposed in the field, they should be reviewed by GTI and, if warranted, modified and/or additional recommendations will be offered.

Ground Water

Ground water was not encountered in any of our excavations. According to the State of Idaho Department of Water Resources Well Drillers' logs, ground water in the vicinity is approximately 53 to 54 feet below the existing ground surface. Based on site conditions in the future, a transient high ground water condition could develop over a clay or less permeable layer and this condition could generate down gradient seepage. The possible effect these layers could have on this and adjacent sites should be considered and can best be evaluated in the field during grading. If warranted by exposed field conditions, it may be recommended that a drainage system be established to collect and convey any subsurface water to an appropriate location for drainage. Typically, potential areas of seepage are difficult to identify prior to their occurrence; therefore, it is often best to adopt a "wait and see" approach to determine if any seepage conditions do develop, at which time specific recommendation to mitigate an identified condition can be provided.

Earthwork Settlements

Ground settlement should be anticipated due to primary consolidation and secondary compression. The total amount of settlement and time over which it occurs is dependent upon various factors, including material type, depth of fill, depth of removals, initial and final moisture content, and in-place density of subsurface materials. Compacted fills, to the heights anticipated, are not generally prone to excessive settlement. However, some settlement of the left in-place alluvium is expected, and the majority of this settlement is anticipated to occur during grading.

RECOMMENDATIONS – FOUNDATIONS

General

Foundation design and construction recommendations are based on preliminary laboratory testing and engineering analysis performed on near surface soils. The proposed foundation systems should be designed and constructed in accordance with the guidelines contained herein and in the International Building Code.

Based on our experience in the area, the soils onsite should have a negligible corrosive potential to concrete and metal, materials selected for construction purposes should be resistant to corrosion. Where permitted by building code, PVC pipe should be utilized. All concrete should be designed, mixed, placed, finished, and cured in accordance with the guidelines presented by the Portland Cement Association (PCA) and the American Concrete Institute (ACI).

Based on our grading recommendations, the soils beneath the foundations are anticipated to have low expansion potential. Therefore, foundation recommendations for low expansive soil conditions are provided below. If more expansive soils are encountered, the pad(s) will either need to be regraded and the more expansive soils removed by the contractor or increased foundation recommendations will need to be provided.

Conventional Foundation Recommendations

Column loads are anticipated to be 50 kips or less, while wall loads are expected to be 3 kips per linear foot or less. The conventional recommendations provided are from a geotechnical

engineering perspective (i.e., for expansive conditions) and are not meant to supersede the design by the project's structural engineer.

Preliminary recommendations for foundation design and construction are presented below. The specific criteria to be used should be verified on evaluation of the proposed buildings, structural loads, and expansion and chemical testing performed after grading is complete.

The bearing values indicated are for the total dead, plus frequently applied live loads and may be increased by one third for short duration loading – which includes the effects of wind or seismic forces. When combining passive pressure and friction for lateral resistance, the passive component should be reduced by one third. A grade beam, reinforced as below and a minimum of 12 inches wide, should be utilized across all large entrances. The base of the grade beam should be at the same elevation as the bottom of the adjacent footings. Footings should be founded at a minimum depth of 24 inches below the lowest adjacent ground surface, as required by local codes, to extend below the frost line. Reinforcement for spread footings should be designed by the project's structural engineer.

For foundations systems including a crawl space, it is recommended that the foundation be designed so that water is not allowed to penetrate the under-floor area. Proper grading and backfill for the foundations are critical and should adhere to the "fill placement" and "drainage" recommendations of this evaluation, as well as local building codes.

Footing Type	Minimum Structural Fill Depth Below Footing Bottom (inches)	Minimum Footing Depth (inches)	Allowable Bearing Pressure (psf)	Coefficient of Friction	Passive Earth Pressure (psf/ft)	Maximum Earth Pressure (psf)
Strip/Spread	12	24	2,000	0.35	250	3,000

The coefficient of friction and passive earth pressure values recommended are working values. Strip footings should have a minimum width of one (1) foot and spread footings should have a minimum soil to concrete area of four (4) square feet. Increases are allowed for the bearing capacity of the footings at a rate of 250 pounds per square foot for each additional foot of width and 250 pounds per square foot for each additional foot of depth into the recommended bearing material, up to the maximum outlined. If the bearing value exceeds 3,000 psf, an additional review by GTI is recommended. As mentioned previously, the exposed ground surface should be moisture conditioned and compacted a minimum depth of 12 inches below bottom of footings.

Foundation Settlement

Provided that the recommendations contained in this report are incorporated into final design and construction phase of development, total settlement is estimated to be less than one inch and differential settlement is estimated to be less than 0.75 inches for a 25-foot span. Two-way angular

distortions due to settlements are not estimated to exceed 1/400. The structures should be loaded uniformly, thus avoiding any localized settlements.

SUBSURFACE DISPOSAL SYSTEM FOR STORMWATER

It is the understanding of GTI that subsurface stormwater storage facilities will be constructed on site. The facilities should be designed in accordance with the City of Nampa requirements. During our field reconnaissance, bedrock was encountered sporadically across the site and was found to vary significantly in depth encountered (i.e. basalt was encountered as shallow as 0.5 feet in TP-4 and was not encountered at a depth of 12.0 feet in TP-6). Reference Figure 3 – "Basalt Depth Map". GTI recommends locating subsurface disposal systems for stormwater in areas of the site where deeper basalt was encountered which would correlate to higher infiltration rates.

A minimum clearance of 3 feet is required between the bottom of the proposed infiltration facility and any condition that would inhibit downward flow such as bedrock. If stormwater storage facilities will be constructed in areas of basalt that will not meet an infiltration rate of greater than 0.5 inch/hour, GTI recommends drilling and blasting to a minimum of 10 feet into the basalt bedrock materials. Additional feasibility infiltration testing can be conducted by GTI once facility locations are planned.

A blasting contractor should be contacted for specific recommendations, however based on our preliminary research, it should be anticipated that drilling and blasting spacing be approximately 4-foot on centers in order to produce the necessary void ratio and to produce material less than 2 feet in size. It is recommended that GeoTek, Inc. perform a field percolation test upon completion of the drilling and blasting operation to verify proper infiltration.

If bedrock is encountered during construction at an elevation higher than that shown on the design plans, the Design Professional of Record shall be contacted to redesign the facility based on the higher elevation. An infiltration test shall be performed to verify the design infiltration rate is met.

PAVEMENT SECTIONS

Pavement sections presented in the following table are based on an R-value of 20, assumed traffic index(s) for industrial development and estimated traffic index(s) for residential construction. These pavement sections are presented for planning purposes only and should be verified based on specific laboratory testing performed subsequent to rough grading of the site.

Pavement Construction and Maintenance

All section changes should be properly transitioned. If adverse conditions are encountered during the preparation of subgrade materials, special construction methods may need to be employed. All subgrade materials should be processed to a minimum depth of 12 inches and compacted to a minimum relative compaction of 90 percent near optimum moisture content. All aggregate base

should be compacted to a minimum relative compaction of 95 percent at optimum moisture content. The recommended pavement sections provided are meant as minimums. If thinner or highly variable pavement sections are constructed, increased maintenance and repair should be expected. If the ADT (average daily traffic) or ADTT (average daily truck traffic) increases beyond that intended, as reflected by the traffic index(s) used for design, increased maintenance and repair could be required for the pavement section.

Positive site drainage should be maintained at all times. Water should not be allowed to pond or seep into the ground. If planters or landscaping are adjacent to paved areas, measures should be taken to minimize the potential for water to enter the pavement section.

ASSUMED TRAFFIC RIGHT-OF-AWAY	SUBGRADE R-VALUE	MINIMUM ASPHALT THICKNESS (in.)	MINIMUM AGGREGATE THICKNESS (in.)	
			Aggregate Base (3/4" minus)*	Subbase (Pitrun)*
Residential Normal Traffic TI = 6.0	20	2.5	4.0	10.0
Collector Normal Traffic TI = 8.0	20	3.0	6.0	14.0

*Aggregate Base and Subbase gradation specification requirement per the current edition of the Idaho Standards for Public Works Construction (ISPWC) Manual. Asphalt mix design shall meet the requirements of ISPWC, Section 810 Class III Plant mix. Materials shall be placed in accordance with ISPWC Standard Specifications for Highway Construction.

OTHER RECOMMENDATIONS

Site Improvements

As is commonly known, expansive soils are problematic with respect to the design, construction, and long-term performance of concrete flatwork. Due to the nature of concrete flatwork, it is essentially impossible to totally mitigate the effects of soil expansion. Typical measures to control soil expansion for structures include; low expansive soil caps, deepened foundation system, increased structural design, and soil presaturation. As they are generally not cost effective, these measures are very seldom utilized for flatwork because it's less costly to simply replace any damaged or distressed sections than to "structurally" design them. Even if "structural" design parameters are applied to flatwork construction, there would still be relative movements between adjoining types of structures and other improvements (e.g., curb and sidewalk). This is particularly true as the level of care during construction of flatwork is often not as meticulous as that for structures. Unfortunately, it is fairly common practice for flatwork to be poured on subgrade soils, which have been allowed to dry out since site grading. Generally, after flatwork construction is completed, landscape irrigation begins, utility lines are pressurized, and drainage systems are utilized; presenting

the potential for water to enter the dry subgrade soils and causing the soil to expand.

Recommendations for exterior concrete flatwork design and construction can be provided upon request. If, in the future, any additional improvements are planned for the site, recommendations concerning the geological or geotechnical aspects of design and construction of said improvements could be provided upon request. This office should be notified in advance of any fill placement, grading, or trench backfilling after rough grading has been completed. This includes any grading, utility trench and retaining wall backfills.

Landscape Maintenance and Planting

Water has been shown to weaken the inherent strength of all earth materials. Slope stability is significantly reduced by overly wet conditions. Graded slopes constructed within and utilizing onsite materials would be erosive. Eroded debris may be minimized and surficial slope stability enhanced by establishing and maintaining a suitable vegetation cover as soon as possible after construction. Compaction to the face of fill slopes would tend to minimize short-term erosion until vegetation is established. Plants selected for landscaping should be lightweight, deep-rooted types, which require little water and are capable of surviving the prevailing climate. From a geotechnical standpoint, leaching is not recommended for establishing landscaping. If the surface soils are processed for the purpose of adding amendments, they should be recompacted to 90 percent compaction. Only the amount of irrigation necessary to sustain plant life should be provided. Over watering the landscape areas could adversely affect proposed site improvements. We recommend that any proposed open bottom planter areas adjacent to proposed structures be eliminated for a minimum distance of 5 feet and desert landscape, using xeriscape technology, be used outside of this buffer zone. As an alternative, closed-bottom type planters could be utilized. An outlet, placed in the bottom of the planter, could be installed to direct drainage away from structures or any exterior concrete flatwork. Irrigation timers should be adjusted on a monthly basis.

Soil Corrosion

Based on our experience in the area, the soils onsite should have a negligible corrosive potential to concrete and metal, materials selected for construction purposes should be resistant to corrosion. Where permitted by building code PVC pipe should be utilized. All concrete should be designed, mixed, placed, finished, and cured in accordance with the guidelines presented by the Portland Cement Association (PCA) and the American Concrete Institute (ACI).

Trench Excavation

All footing trench excavations should be observed by a representative of this office prior to placing reinforcement. Footing trench spoil and any excess soils generated from utility trench excavations should be compacted to a minimum relative compaction of 90 percent if not removed from the site. Considering the nature of the onsite soils, it should be anticipated that caving or sloughing could be a factor in excavations. Shoring or excavating the trench walls and slopes to the angle of repose (typically 25 to 45 degrees) may be necessary and should be anticipated in non-cemented soils. All excavations should be observed by one of our representatives and conform to national and local safety codes.

Onsite Utility Trench Backfill

Considering the overall nature of the soil encountered onsite, it should be anticipated that materials will need to be imported to the site for use as pipe bedding and pipe zone material. All utility trench backfill should be brought to near optimum moisture content and then compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard. Compaction testing and observation, along with probing should be performed to verify the desired results. Sand backfill, unless excavated from the trench, should not be used adjacent to perimeter footings or in trenches on slopes. Compaction testing and observation, along with probing should be performed to verify the desired results. Sand backfill, unless excavated from the trench, should not be used adjacent to perimeter footings or in trenches on slopes. Compaction testing and observation, along with probing should be performed to verify the desired results. Offsite utility trenches should be compacted to a minimum of 90 relative compaction. Compaction testing and observation, along with probing should be performed to verify the desired results.

Drainage

Positive site drainage should be maintained at all times in accordance with the IBC. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond and/or seep into the ground. Pad drainage should be directed toward the street or other approved area. The ground immediately adjacent to the foundation shall be sloped away from the building at a minimum of 5-percent for a minimum distance of 10 feet measured perpendicularly to the face of the wall. If physical obstructions prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternate method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 2-percent where located within 10 feet of the building foundation. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2-percent away from the building. Roof gutters and down spouts should be utilized to control roof drainage. Down spouts should outlet onto paved areas or a minimum of five feet from proposed structures or into a subsurface drainage system. Areas of seepage may develop due to irrigation or heavy rainfall. Minimizing irrigation will lessen this potential. If areas of seepage develop, recommendations for minimizing this effect could be provided upon request.

PLAN REVIEW

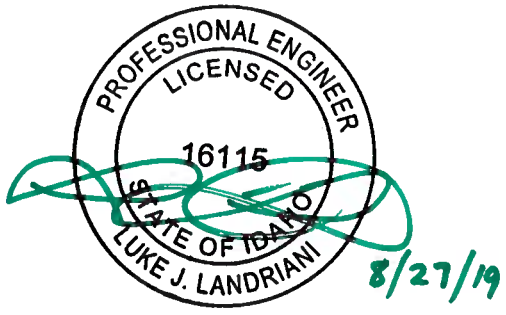
Final grading, foundation, and improvement plans should be submitted to this office for review and commented on as they become available in order to minimize any misunderstandings between the plans and recommendations presented herein. In addition, foundation excavations and earthwork construction performed on the site should be observed and tested by this office. If conditions are found to differ substantially from those stated, appropriate recommendations would be offered at that time.

LIMITATIONS

The materials encountered on the project site and utilized in our laboratory study are believed representative of the area; however, soil materials vary in character between excavations and conditions exposed during mass grading. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing, or recommendations performed or provided by others. Since our study is based upon the site materials observed, selective laboratory testing and engineering analysis, the conclusions and recommendations are professional opinions. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

The opportunity to be of service is greatly appreciated. If you have any questions concerning this report or if we may be of further assistance, please do not hesitate to contact the undersigned.

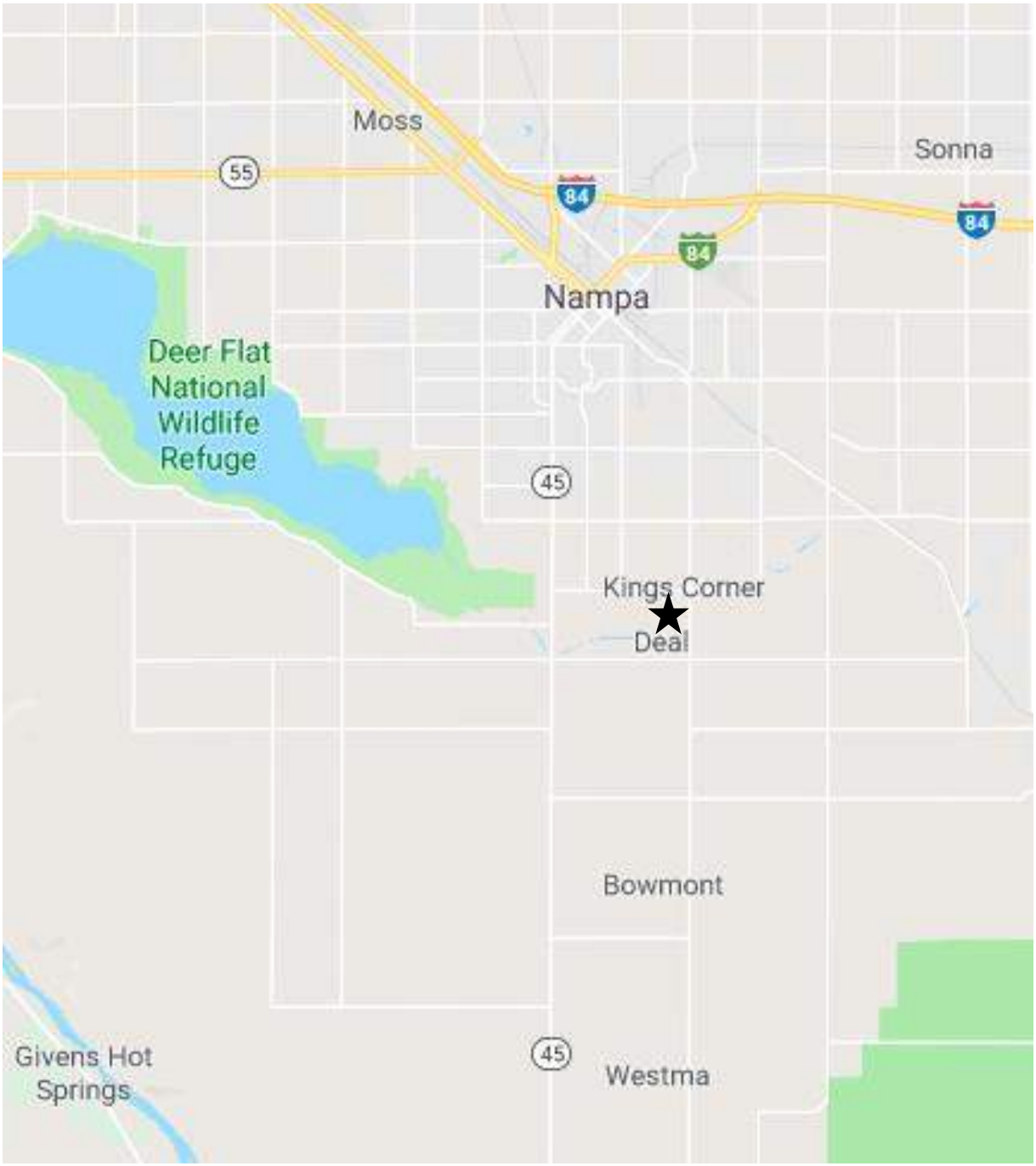
Respectfully submitted,
GeoTek, Inc.



Steven J. Huber, EI
Staff Professional

Luke J. Landriani, PE
Senior Engineer

Tyler S. Lydeen, EI
Staff Professional



★ **APPROXIMATE SITE LOCATION**

N

Source: Google Maps 2019, GeoTek Field Observations, 2019.
Not to Scale

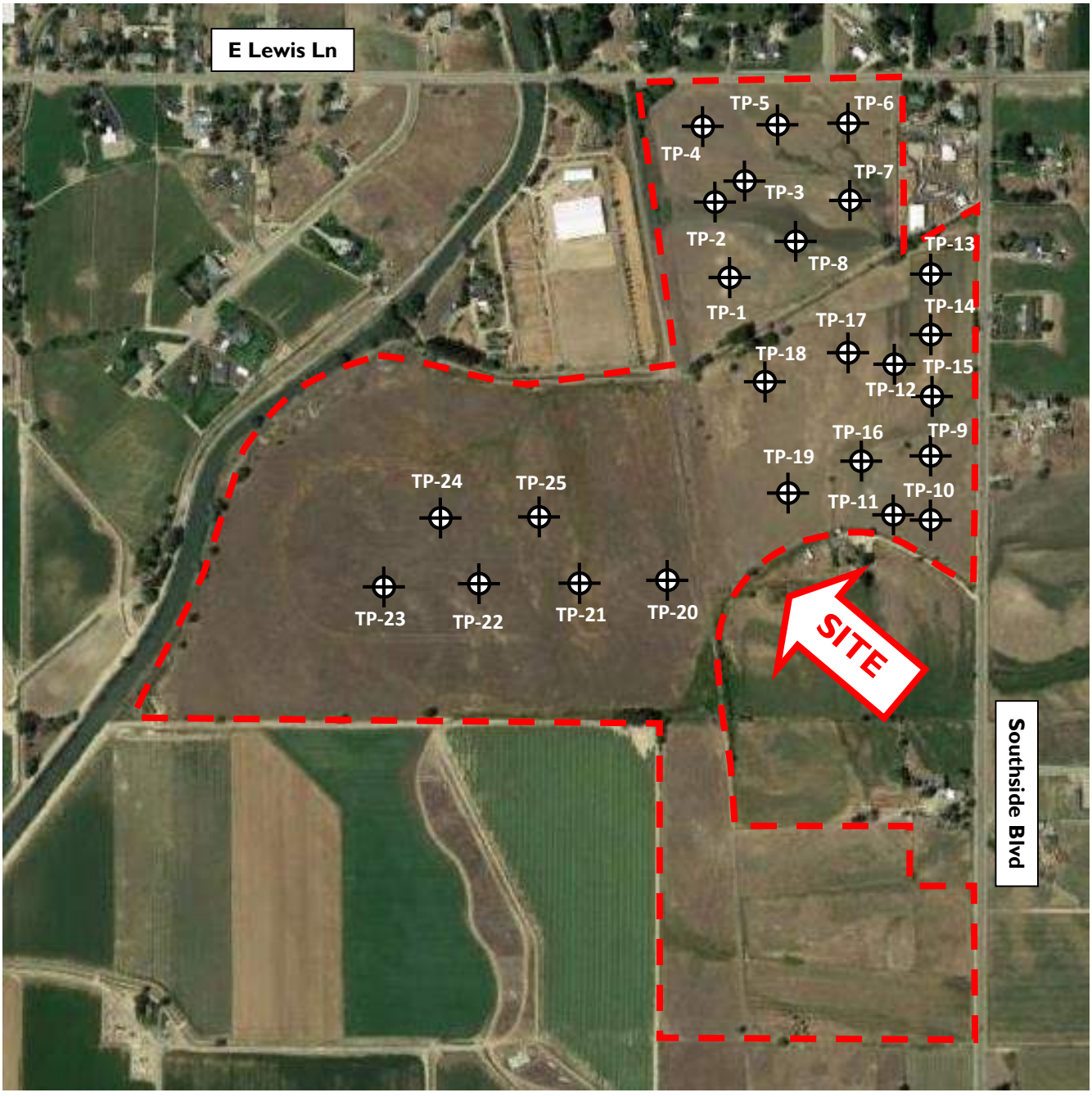
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GEOTECHNICAL | ENVIRONMENTAL | MATERIALS

3[redacted]

FIGURE 1
SITE LOCATION MAP
Osprey Estates Subdivision
E Lewis Ln and Southside Blvd
Nampa, Idaho
Prepared for: Westpark Companies

Project No.:	Report Date:	Drawn By:
2054-ID	August 2019	SJH



Approximate Test Pit Locations

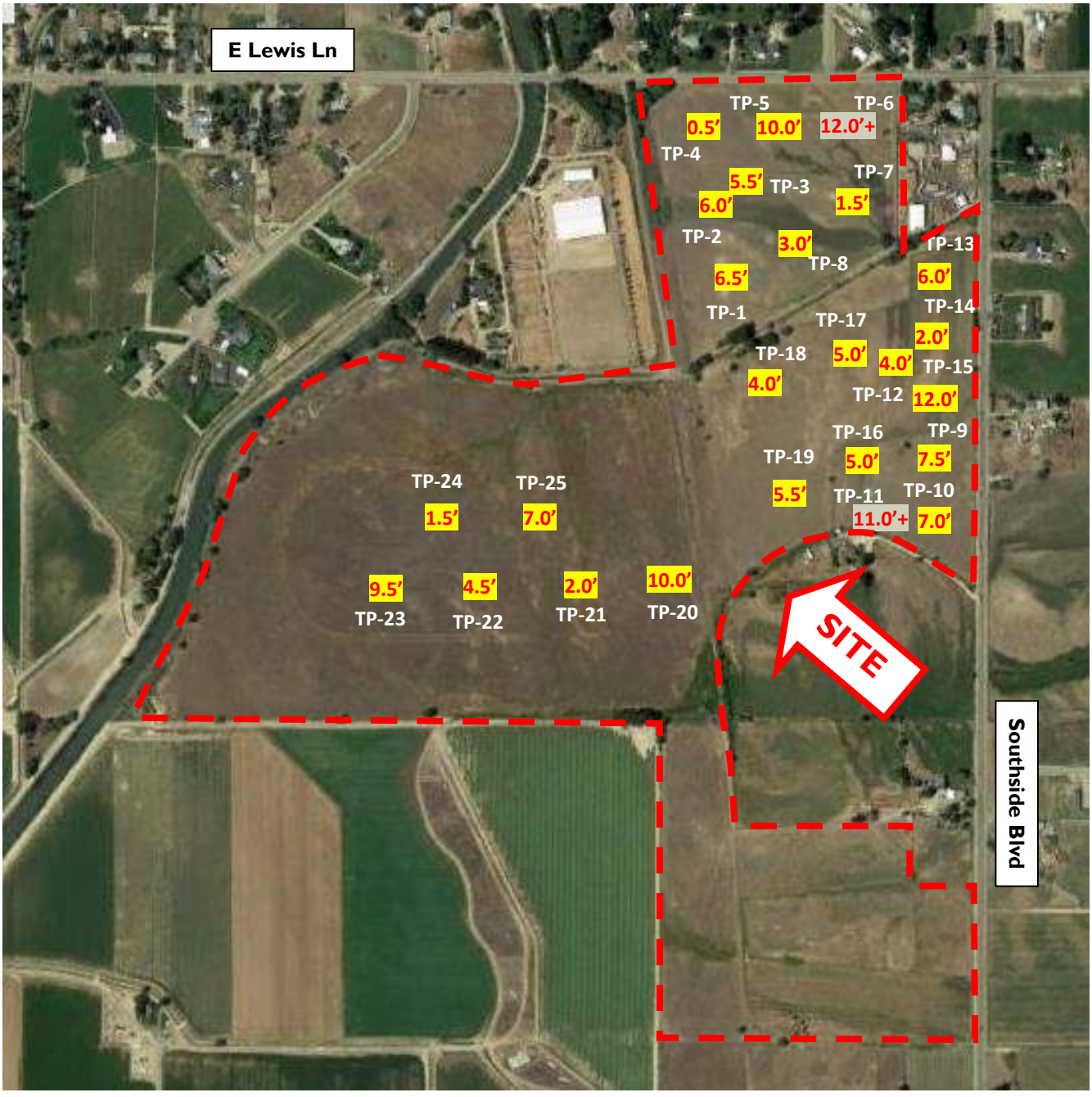
N

Source: Google Earth 2019, GeoTek Field Observations, 2019. Not to Scale.

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320 E. Corporate Dr, Suite 300, Meridian, ID 83642

FIGURE 2
SITE EXPLORATION MAP
Osprey Estates Subdivision
E Lewis Ln and Southside Blvd
Nampa, Idaho
Prepared for: Westpark Companies

Project No.:	Report Date:	Drawn By:
2054-ID	August 2019	SJH



##' **Approximate Test Pit Location & Depth of basalt**

##'+ **Approximate Test Pit Location & No basalt encountered**

Source: Google Earth 2019, GeoTek Field Observations, 2019. Not to Scale.

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FIGURE 3
BASALT DEPTH MAP
Osprey Estates Subdivision
E Lewis Ln and Southside Blvd
Nampa, Idaho
Prepared for: Westpark Companies

Project No.:	Report Date:	Drawn By:
2054-ID	August 2019	SJH



N

Source: T-O Engineers, July 16, 2019.
Not to Scale

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FIGURE 4
PROPOSED SITE PLAN
Osprey Estates Subdivision
E Lewis Ln and Southside Blvd
Nampa, Idaho
Prepared for: Westpark Companies

Project No.:	Report Date:	Drawn By:
2054-ID	August 2019	SJH

APPENDIX A

REFERENCES

Ada County Highway District Development Policy Manual, Revised by Resolution No. 690, October 2003

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APPENDIX B

LOG GENERAL NOTES

CONSISTENCY OF FINE-GRAINED SOILS		
Unconfined Compressive Strength, Qu, psf	**Standard Penetration or N-Value (SS) Blows/Ft**	**Consistency**
< 500	<2	Very Soft
500 - 1,000	2 - 3	Soft
1,001 - 2,000	4 - 7	Firm
2,001 - 4,000	8 - 16	Stiff
4,001 - 8,000	17 - 32	Very Stiff
> 8,001	32+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS	
Standard Penetration (SPT) or N-Value (SS) Blows/Ft	**Relative Density**
0 - 3	Very Loose
4 - 9	Loose
10 - 29	Medium Dense
30 - 49	Dense
50+	Very Dense

SPT penetration test using 140 pound hammer, with 30 inch free fall on 2 inch outside diameter(1-3/8 ID) sampler
For ring sampler using 140 lb hammer, with a 30 inch free fall on 3 inch outside diameter (2-1/2 ID) sample,
use N-value x 0.7 to get Standard N-value
For fine grained soil consistency, thumb penetration used per ASTM D-2488

RELATIVE PROPORTIONS OF SAND & GRAVEL	
Descriptive Term of other constituents	**Percent of Dry Weight**
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY	
Major Component of Sample	**Particle Size**
Boulders	Over 12 inches
Cobbles	3 inches to 12 inches
Gravel	#4 Sieve to 3 inches
Sand	#200 Sieve to #4 Sieve
Silt or Clay	Passing #200 Sieve

RELATIVE HARDNESS OF CEMENTED SOILS (CALICHE)	
Description	**General Characteristics**
Very Dense to Moderately Hard	Partially Cemented Granular Soil - Can be carved with a knife and broken with force by hand.
Very Stiff to Moderately Hard	Partially Cemented Fine-Grained Soil - Can be carved with a knife and broken with force by hand.
Moderately Hard	Moderate hammer blow required to break a sample
Hard	Heavy hammer blow required to break a sample
Very Hard	Repeated heavy hammer blow required to break a sample

LOG LEGEND

MATERIAL DESCRIPTION		
Soil Pattern	**USCS Symbol**	**USCS Classification**
	FILL	Artificial Fill
	GP or GW	Poorly/Well graded GRAVEL
	GM	Silty GRAVEL
	GC	Clayey GRAVEL
	GP-GM or GW-GM	Poorly/Well graded GRAVEL with Silt
	GP-GC or GW-GC	Poorly/Well graded GRAVEL with Clay
	SP or SW	Poorly/Well graded SAND
	SM	Silty SAND
	SC	Clayey SAND
	SP-SM or SW-SM	Poorly/Well graded SAND with Silt
	SP-SC or SW-SC	Poorly/Well graded SAND with Clay
	SC-SM	Silty Clayey SAND
	ML	SILT
	MH	Elastic SILT
	CL-ML	Silty CLAY
	CL	Lean CLAY
	CH	Fat CLAY
	PCEM	PARTIALLY CEMENTED
	CEM	CEMENTED
	BDR	BEDROCK

SAMPLING	
	SPT
	Ring Sample
NR	No Recovery
	Bulk Sample
	Water Table

CONSISTENCY					
Cohesionless Soils		**Cohesive Soils**		**Cementation**	
VL	Very Loose	So	Soft	MH	Moderately Hard
L	Loose	F	Firm	H	Hard
MD	Medium Dense	S	Stiff	VH	Very Hard
D	Dense	VS	Very Stiff		
VD	Very Dense				

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TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-1

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Lt. Brown to Tan, Sandy SILT w/ trace Gravel, Slightly Moist	F	
3				SM	Brown to Lt. Brown, Silty SAND, Slightly Moist	D	
4							
5							
6							
7					**END OF TEST PIT @ 6.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-2

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				SM	Brown to Lt. Brown, Silty SAND, Slightly Moist	MD	
3				ML	Lt. Brown to Tan, SILT w/ Sand, Slightly Moist	F	
4							
5							
6					**END OF TEST PIT @ 6.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
7					**NO GROUNDWATER ENCOUNTERED**		
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-3

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown, SILT, Slightly Moist	So / F	Organics upper 1.0'
2	X			ML	Lt. Brown to Tan, Sandy SILT, Slightly Moist	MD	Percolation test conducted @ 2.0'
3							
4							
5							
6					**END OF TEST PIT @ 5.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-4

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
				ML	Brown, SILT, Slightly Moist	So	Organics upper 0.5'
1					**END OF TEST PIT @ 0.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
2							
3							
4							
5							
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9							
10							
11							
12							
13							
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16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-5

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown to Brown, SILT, Slightly Moist to Moist	So	Organics upper 1.0'
2				ML	Lt. Brown, Sandy SILT, Moist	F	
3							
4							
5	X						
6							
7							
8							
9							
10					**END OF TEST PIT @ 10.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
11					**NO GROUNDWATER ENCOUNTERED**		
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST PIT LOG

GEOTEK

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-6

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Lt. Brown to Brown, Sandy SILT, Slightly Moist	F	
3							
4							
5				SM	Brown to Dk. Brown, Silty SAND w/ trace Gravel and Basalt, Moist	D	
6							
7							
8							
9							
10							
11							
12					**END OF TEST PIT @ 12.0'**		
13					**NO GROUNDWATER ENCOUNTERED**		
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-7

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown, Sandy SILT, Slightly Moist	So / F	Organics upper 1.0'
2					**END OF TEST PIT @ 1.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
3							
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GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-8

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown to Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Lt. Brown to Tan, Sandy SILT w/ Basalt, Slightly Moist	F	
3					**END OF TEST PIT @ 3.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
4					**NO GROUNDWATER ENCOUNTERED**		
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20							

TEST PIT LOG

GEOTEK

PROJECT #:	2054-ID	**LOGGED BY:**	SJH
PROJECT:	Osprey Estates Subdivision	**METHOD:**	Backhoe
CLIENT:	Westpark Companies	**EXCAVATOR:**	JustDigIt
LOCATION:	SW of E Lewis Ln and Southside Blvd, Nampa, ID	**DATE:**	8/7/19
		ELEVATION:	

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	TEST PIT NUMBER: TP-9 / MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown to Dk. Brown, SILT, Slightly Moist	So / F	Organics upper 1.0'
2				ML	Lt. Brown to Tan, Sandy SILT, Slightly Moist	F	
3							
4							
5							
6							
7							
8					**END OF TEST PIT @ 7.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-10

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown, SILT, Slightly Moist	So / F	Organics upper 1.0'
2				ML	Lt. Brown to Tan, Sandy SILT, Slightly Moist	F	
3							
4							
5							
6							
7					**END OF TEST PIT @ 7.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
8					**NO GROUNDWATER ENCOUNTERED**		
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST PIT LOG

GEOTEK

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	TEST PIT NUMBER: TP-11 / MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown, SILT, Slightly Moist	So / F	Organics upper 1.0'
2				ML	Lt. Brown to Tan, SILT, Slightly Moist	F	
3							
4				SM	Brown, Silty SAND, Slightly Moist to Moist	MD	
5							
6							
7							Percolation test conducted @ 7.0'
8							
9							
10							
11					**END OF TEST PIT @ 11.0'**		
12					**NO GROUNDWATER ENCOUNTERED**		
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-12

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown to Dk. Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Tan, Sandy SILT w/ Basalt, Slightly Moist	F	
3							Percolation test conducted @ 2.5'
4					**END OF TEST PIT @ 4.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
5					**NO GROUNDWATER ENCOUNTERED**		
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST PIT LOG

GEOTEK

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	TEST PIT NUMBER: TP-13 / MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown, SILT, Slightly Moist	So / F	Organics upper 1.0'
2				ML	Tan to Lt. Brown, SILT, Slightly Moist to Moist	F	
3							
4				SM	Lt. Brown to Brown, Silty SAND, Moist	D	
5							
6					**END OF TEST PIT @ 6.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
7					**NO GROUNDWATER ENCOUNTERED**		
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-14

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				SM	Lt. Brown to Tan, Silty SAND, Slightly Moist	MD	
					END OF TEST PIT @ 2.0' (PRACTICAL REFUSAL, BASALT ROCK) **NO GROUNDWATER ENCOUNTERED**		
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST PIT LOG

GEOTEK

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	TEST PIT NUMBER: TP-15 / MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown to Dk. Brown, SILT, Slightly Moist	So / F	Organics upper 1.0'
2				ML	Lt. Brown to Tan, SILT, Slightly Moist	F	
7				SM	Lt. Brown to Brown, Silty SAND w/ Basalt, Slightly Moist to Moist	D	
12					**END OF TEST PIT @ 12.0' (PRACTICAL REFUSAL, BASALT ROCK) NO GROUNDWATER ENCOUNTERED**		

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-16

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2	X			SM	Lt. Brown to Tan, Silty SAND, Slightly Moist	MD	
3							
4							
5					**END OF TEST PIT @ 5.0' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-17

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Brown to Lt. Brown, Sandy SILT, Slightly Moist	F	
3							
4				SM	Lt. Brown to Tan, Silty SAND, Slightly Moist	MD	
5					**END OF TEST PIT @ 5.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
6					**NO GROUNDWATER ENCOUNTERED**		
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST PIT LOG

GEOTEK

PROJECT #:	2054-ID	**LOGGED BY:**	SJH
PROJECT:	Osprey Estates Subdivision	**METHOD:**	Backhoe
CLIENT:	Westpark Companies	**EXCAVATOR:**	JustDigIt
LOCATION:	SW of E Lewis Ln and Southside Blvd, Nampa, ID	**DATE:**	8/7/19
		ELEVATION:	

TEST PIT NUMBER: TP-18

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				SM	Tan, Silty SAND w/ Basalt, Slightly Moist	MD	
3							
4					**END OF TEST PIT @ 4.0' (PRACTICAL REFUSAL, BASALT ROCK)**		
5					**NO GROUNDWATER ENCOUNTERED**		
6							
7							
8							
9							
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11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-19

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So / F	Organics upper 1.0'
2				SM	Lt. Brown to Tan, Silty SAND, Slightly Moist	MD	
3							
4							
5							
6					**END OF TEST PIT @ 5.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-20

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Tan, Sandy SILT, Slightly Moist	F	
8				SM	Lt. Brown, Silty SAND, Slightly Moist	D	Percolation test conducted @ 8.0'
10					**END OF TEST PIT @ 10.0' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-21

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Lt. Brown to Tan, Sandy SILT, Slightly Moist	F	
					END OF TEST PIT @ 2.0' (PRACTICAL REFUSAL, BASALT ROCK) **NO GROUNDWATER ENCOUNTERED**		
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
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18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-22

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown to Gray, SILT, Slightly Moist	So	Organics upper 1.0'
2				ML	Lt. Brown to Tan, Sandy SILT, Slightly Moist	F	
3							
4							
5					**END OF TEST PIT @ 4.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST PIT LOG

GEOTEK

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-23

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown to Brown, SILT, Slightly Moist	So	Organics upper 1.0'
2						F	
3							
4							
5							
6							
7				ML	Lt. Brown, Sandy SILT, Slightly Moist	F	
8				PCEM	Tan, PARTIALLY CEMENTED Silty SAND, Slightly Moist	MH	
9				SM	Lt. Brown to Brown, Silty SAND, Slightly Moist	D	
10					**END OF TEST PIT @ 9.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

TEST PIT NUMBER: TP-24

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Brown, SILT, Slightly Moist	So	Organics upper 1.0'
				SM	Lt. Brown, Silty SAND, Slightly Moist	MD	
2					**END OF TEST PIT @ 1.5' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
3							
4							
5							
6							
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10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

GEOTEK

TEST PIT LOG

PROJECT #: 2054-ID
PROJECT: Osprey Estates Subdivision
CLIENT: Westpark Companies
LOCATION: SW of E Lewis Ln and Southside Blvd, Nampa, ID

LOGGED BY: SJH
METHOD: Backhoe
EXCAVATOR: JustDigIt
DATE: 8/7/19
ELEVATION:

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows / 6 in.	Soil Pattern	USCS Symbol	TEST PIT NUMBER: TP-25 / MATERIAL DESCRIPTION AND COMMENTS	Consistency	REMARKS
1				ML	Dk. Brown to Brown, Sandy SILT, Slightly Moist to Moist	So / F	Organics upper 1.0'
2							
3							
4							
5							
6							
7					**END OF TEST PIT @ 7.0' (PRACTICAL REFUSAL, BASALT ROCK)** **NO GROUNDWATER ENCOUNTERED**		
8							
9							
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15							
16							
17							
18							
19							
20							

APPENDIX C

FIELD TESTS AND OBSERVATIONS (2054-ID)

PERCOLATION TESTS

The infiltration rate was determined by conducting percolation tests for onsite earth materials. The infiltration rate was determined in inches per hour in general accordance with the City of Nampa requirements. Infiltration rate results are presented below. The infiltration rates provided below should be used for design and not exceeded.

LOCATION	INFILTRATION RATE (Inches/Hour)
TP-3 @ 2.0'	1.5
TP-11 @ 7.0'	2.7
TP-12 @ 2.5'	0.6
TP-20 @ 7.0'	3.3

GROUND WATER MONITORING RESULTS

Ground water monitoring results are presented below. Ground water elevation results are recorded in feet below existing grade.

STAND-PIPE PIEZOMETER #	TP-3	TP-11	TP-12	TP-20
8/8/19	4.8+	12.1+	5.2+	10.1+

\+ Indicates a dry reading at the bottom of the piezometer
n/a Indicates that the piezometer was damaged/missing in the field and no measurements were obtained.

APPENDIX D

LABORATORY TESTS RESULTS (2054-ID)

ATTERBERG LIMITS

Atterberg limits were performed on representative samples in general accordance with ASTM D 4318. The results are shown in the following pages.

PARTICLE SIZE ANALYSIS

Sieve analyses were performed in general accordance with ASTM test method C136 and ASTM C117. Test results are presented in the following pages.

RESISTANCE R-VALUE AND EXPANSION PRESSURE OF COMPACTED SOILS

Tests were conducted on representative soil samples, in general accordance with Idaho test method T-8 and AASHTO T-190, to determine the soil's performance when placed in the base, subbase, or subgrade of a road subjected to traffic.

LOCATION	R-VALUE @ 200 psi
(Sample 3485)	20

GeoTek - Idaho
320 Corporate Drive, Ste #300 7950 Meadowlark Way, Ste E
Meridian, ID 83642 Coeur d'Alene, ID 83815
Phone: [redacted]
Fax: [redacted]

Material Test Report

Report No: MAT:19-03889-S01

Client: Westpark Companies
1710 S. Wells Avenue, Suite 110
Meridian ID 83680

CC:

Project: 2054-ID
Osprey Estates Subdivision-Preliminary GEO

THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details

Sample ID	19-03889-S01
Date Sampled	8/7/2019
Specification	General Sieve Set
Sampled By	Tyler Lydeen
Location	TP-5, 5.0'-6.0'

Atterberg Limit:

Liquid Limit: N/A
Plastic Limit: NP
Plasticity Index: NP

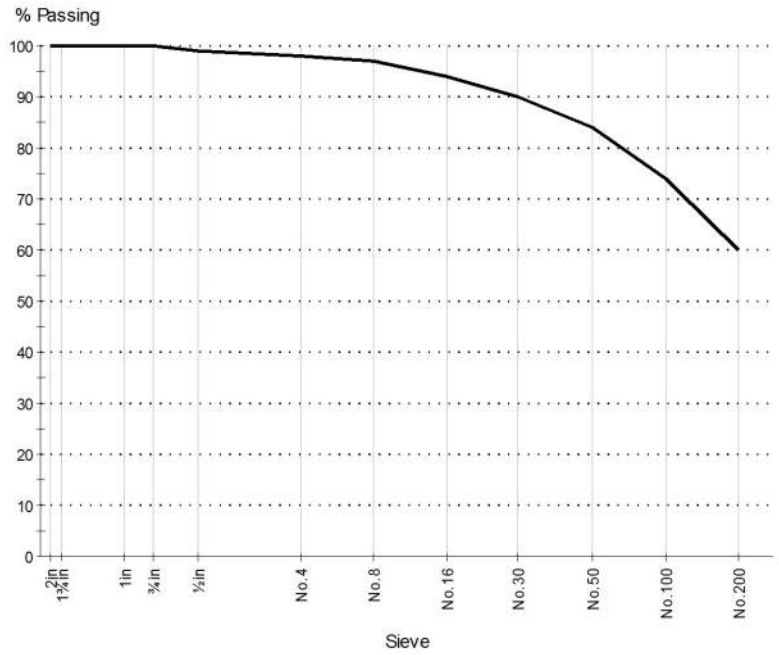
Sample Description:

Lab No. 3679
ML, Sandy SILT

Particle Size Distribution

Grading: ASTM C 136, ASTM C 117

Date Tested:
Tested By:



Sieve Size	% Passing	Limits
2in	100	
1¾in	100	
1in	100	
¾in	100	
½in	99	
No.4	98	
No.8	97	
No.16	94	
No.30	90	
No.50	84	
No.100	74	
No.200	60	

COBBLES	GRAVEL		SAND			FINES (60.0%)	
	Coarse	Fine	Coarse	Medium	Fine		
(0.0%)	(0.0%)	(2.0%)	(1.7%)	(9.3%)	(27.0%)	Silt	Clay

D85: 0.3367 **D60:** 0.0750 **D50:** N/A
D30: N/A **D15:** N/A **D10:** N/A

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GeoTek - Idaho
320 Corporate Drive, Ste #300 7950 Meadowlark Way, Ste E
Meridian, ID 83642 Coeur d'Alene, ID 83815
Phone: [redacted]
Fax: [redacted]

Material Test Report

Report No: MAT:19-03889-S02

Client: Westpark Companies
1710 S. Wells Avenue, Suite 110
Meridian ID 83680

CC:

Project: 2054-ID
Osprey Estates Subdivision-Preliminary GEO

THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details

Sample ID	19-03889-S02
Date Sampled	8/7/2019
Specification	General Sieve Set
Sampled By	Tyler Lydeen
Location	TP-7, 0.5'-1.5'

Atterberg Limit:

Liquid Limit: 44
Plastic Limit: 32
Plasticity Index: 12

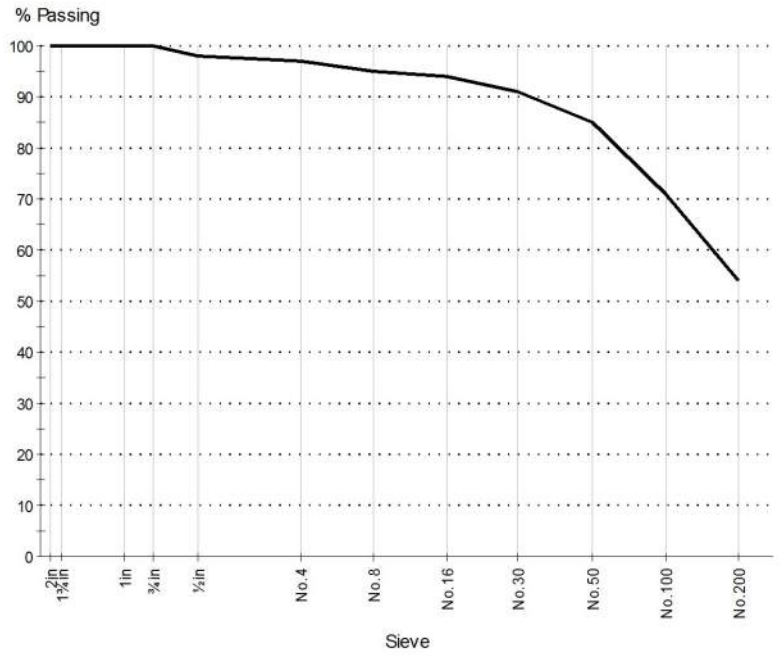
Sample Description:

Lab No. 3680
ML, Sandy SILT

Particle Size Distribution

Grading: ASTM C 136, ASTM C 117

Date Tested:
Tested By:



Sieve Size	% Passing	Limits
2in	100	
1¾in	100	
1in	100	
¾in	100	
½in	98	
No.4	97	
No.8	95	
No.16	94	
No.30	91	
No.50	85	
No.100	71	
No.200	54	

COBBLES	GRAVEL		SAND			FINES (54.0%)	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
(0.0%)	(0.0%)	(3.0%)	(2.2%)	(6.7%)	(34.0%)		

D85: 0.3000 **D60:** 0.0958 **D50:** N/A
D30: N/A **D15:** N/A **D10:** N/A

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APPENDIX E

MATERIALS TESTING & INSPECTION

❑ Environmental Services ❑ Geotechnical Engineering ❑ Construction Materials Testing ❑ Special Inspections

Geotechnical Engineering Report - Revised

of

Osprey Estates Subdivision
Southwest of Southside Boulevard and
Lewis Lane
Nampa, ID

Prepared for:

Westpark Companies
2463 E Gala Street, Suite 120
Meridian, ID 83642

MTI File Number B181542g

2791 S Victory View Way • Boise, ID 83709 • ([redacted]
www.mti-id.com • mti@mti-id.com

❑ Environmental Services ❑ Geotechnical Engineering ❑ Construction Materials Testing ❑ Special Inspections

Mr. Taylor Merrill
Westpark Companies
2463 E Gala Street, Suite 120
Meridian, ID 83642
[redacted]

Re: Geotechnical Engineering Report - Revised
Osprey Estates Subdivision
Southwest of Southside Boulevard and Lewis Lane
Nampa, ID

Dear Mr. Merrill:

In compliance with your instructions, MTI has conducted a soils exploration and foundation evaluation for the above referenced development. Fieldwork for this investigation was conducted from 16 to 19 October 2018 and depth to rock drilling was completed on 30 October 2018. Data have been analyzed to evaluate pertinent geotechnical conditions. Results of this investigation, together with our recommendations, are to be found in the following report. We have provided a PDF copy for your review and distribution.

Often, questions arise concerning soil conditions because of design and construction details that occur on a project. MTI would be pleased to continue our role as geotechnical engineers during project implementation. Additionally, MTI can provide materials testing and special inspection services during construction of this project. If you will advise us of the appropriate time to discuss these engineering services, we will meet with you at your convenience.

MTI appreciates this opportunity to be of service to you and looks forward to working with you in the future. If you have questions, please call (208) 376-4748.

Respectfully Submitted,
Materials Testing & Inspection

Jacob Schlador, E.I.T.
Staff Engineer

Reviewed by: Monica Saculles, P.E.
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PROFESSIONAL ENGINEER LICENSED 14919 STATE OF IDAHO MONICA SACULLES 11-15-18

Cc: Caleb LaClair, T.O. Engineers (PDF Copy)

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INTRODUCTION

This report presents results of a geotechnical investigation and analysis in support of data utilized in design of structures as defined in the 2015 International Building Code (IBC). Information in support of groundwater and stormwater issues pertinent to the practice of Civil Engineering is included. Observations and recommendations relevant to the earthwork phase of the project are also presented. Revisions in plans or drawings for the proposed development from those enumerated in this report should be brought to the attention of the soils engineer to determine whether changes in the provided recommendations are required. Deviations from noted subsurface conditions, if encountered during construction, should also be brought to the attention of the soils engineer.

Project Description

The proposed development is in the southeastern portion of the City of Nampa, Canyon County, ID, and occupies portions of the NE¼SE¼, SE¼NW¼, and NE¼ the of Section 14, Township 2 North, Range 2 West, Boise Meridian. This project will consist of construction of a residential subdivision with up to 117 buildable lots and associated roadways. The site to be developed is approximately 88 acres. Total settlements are limited to 1 inch. Loads of up to 4,000 pounds per lineal foot for wall footings, and column loads of up to 50,000 pounds were assumed for settlement calculations. Additionally, assumptions have been made for traffic loading of pavements. Retaining walls are not anticipated as part of the project. MTI has not been informed of the proposed grading plan.

Authorization

Authorization to perform this exploration and analysis was given in the form of a written authorization to proceed from Mr. Taylor Merrill of Westpark Companies to Monica Saculles of Materials Testing and Inspection (MTI), on 28 September 2018. Said authorization is subject to terms, conditions, and limitations described in the Professional Services Contract entered into between Westpark Companies and MTI. Our scope of services for the proposed development has been provided in our proposal dated 20 September 2018 and repeated below.

Purpose

The purpose of this Geotechnical Engineering Report is to determine various soil profile components and their engineering characteristics for use by either design engineers or architects in:

- Preparing or verifying suitability of foundation design and placement
- Preparing site drainage designs
- Indicating issues pertaining to earthwork construction
- Preparing residential pavement section design requirements

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Scope of Investigation

The scope of this investigation included review of geologic literature and existing available geotechnical studies of the area, visual site reconnaissance of the immediate site, subsurface exploration of the site, field and laboratory testing of materials collected, and engineering analysis and evaluation of foundation materials.

Warranty and Limiting Conditions

MTI warrants that findings and conclusions contained herein have been formulated in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology only for the site and project described in this report. These engineering methods have been developed to provide the client with information regarding apparent or potential engineering conditions relating to the site within the scope cited above and are necessarily limited to conditions observed at the time of the site visit and research. Field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for the purposes cited above.

Exclusive Use

This report was prepared for exclusive use of the property owner(s), at the time of the report, and their retained design consultants ("Client"). Conclusions and recommendations presented in this report are based on the agreed-upon scope of work outlined in this report together with the Contract for Professional Services between the Client and Materials Testing and Inspection ("Consultant"). Use or misuse of this report, or reliance upon findings hereof, by parties other than the Client is at their own risk. Neither Client nor Consultant make representation of warranty to such other parties as to accuracy or completeness of this report or suitability of its use by such other parties for purposes whatsoever, known or unknown, to Client or Consultant. Neither Client nor Consultant shall have liability to indemnify or hold harmless third parties for losses incurred by actual or purported use or misuse of this report. No other warranties are implied or expressed.

Report Recommendations are Limited and Subject to Misinterpretation

There is a distinct possibility that conditions may exist that could not be identified within the scope of the investigation or that were not apparent during our site investigation. Findings of this report are limited to data collected from noted explorations advanced and do not account for unidentified fill zones, unsuitable soil types or conditions, and variability in soil moisture and groundwater conditions. To avoid possible misinterpretations of findings, conclusions, and implications of this report, MTI should be retained to explain the report contents to other design professionals as well as construction professionals.

Since actual subsurface conditions on the site can only be verified by earthwork, note that construction recommendations are based on general assumptions from selective observations and selective field exploratory sampling. Upon commencement of construction, such conditions may be identified that require corrective actions, and these required corrective actions may impact the project budget. Therefore, construction recommendations in this report should be considered preliminary, and MTI should be retained to observe actual subsurface conditions during earthwork construction activities to provide additional construction recommendations as needed.

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Since geotechnical reports are subject to misinterpretation, **do not** separate the soil logs from the report. Rather, provide a copy of, or authorize for their use, the complete report to other design professionals or contractors. Locations of exploratory sites referenced within this report should be considered approximate locations only. For more accurate locations, services of a professional land surveyor are recommended.

This report is also limited to information available at the time it was prepared. In the event additional information is provided to MTI following publication of our report, it will be forwarded to the client for evaluation in the form received.

Environmental Concerns

Comments in this report concerning either onsite conditions or observations, including soil appearances and odors, are provided as general information. These comments are not intended to describe, quantify, or evaluate environmental concerns or situations. Since personnel, skills, procedures, standards, and equipment differ, a geotechnical investigation report is not intended to substitute for a geoenvironmental investigation or a Phase II/III Environmental Site Assessment. If environmental services are needed, MTI can provide, via a separate contract, those personnel who are trained to investigate and delineate soil and water contamination.

SITE DESCRIPTION

Site Access

Access to the site may be gained via Interstate 84 to the Ten Mile Road exit. Proceed south on Ten Mile Road approximately 2.2 miles to its intersection with Amity Road. From this intersection, proceed west 3.0 miles to Robinson Road. Continue south on Robinson Road for approximately 3.0 miles to its intersection with Lewis Lane. Proceed west on Lewis Lane approximately 2.0 miles to its intersection with Southside Boulevard. The site occupies a portion of land to the southwest of the intersection. Presently the site exists as pasture fields. The location is depicted on site map plates included in the **Appendix**.

Regional Geology

The project site is located within the western Snake River Plain of southwestern Idaho and eastern Oregon. The plain is a northwest trending rift basin, about 45 miles wide and 200 miles long, that developed about 14 million years ago (Ma) and has since been occupied sporadically by large inland lakes. Geologic materials found within and along the plain's margins reflect volcanic and fluvial/lacustrine sedimentary processes that have led to an accumulation of approximately 1 to 2 km of interbedded volcanic and sedimentary deposits within the plain. Along the margins of the plain, streams that drained the highlands to the north and south provided coarse to fine-grained sediments eroded from granitic and volcanic rocks, respectively. About 2 million years ago the last of the lakes was drained and since that time fluvial erosion and deposition has dominated the evolution of the landscape. The project site is underlain by "Basalt of Kuna Butte" (Othberg and Stanford, 1993), a dark gray olivine basalt flow forming irregular topography southeast of Nampa. This basalt erupted from the northwest end of Kuna Butte during Pleistocene time and has an unmapped thickness. Fine grained sediments overlying the basalt commonly contain 10-20% pedogenic clay and locally present duripans.

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General Site Characteristics

This proposed development consists of approximately 88 acres of relatively flat terrain. Minor changes in elevation were noted throughout the site. It should be noted that drainage ditches were present in portions of the site. Areas in and around these drainage ditches tended to be soft and slightly moist. Throughout the majority of the site, surficial soils consist of lean clays and silts with various sand content. Vegetation primarily consists of bunchgrass and other native grass varieties typical of arid to semi-arid environments.

Regional drainage is north and west toward the Boise River. Stormwater drainage for the site is achieved by percolation through surficial soils. The site is situated so that it is unlikely that it will receive any stormwater drainage from off-site sources. Stormwater drainage collection and retention systems are not in place on the project site and do not currently exist within the vicinity of the project site.

Regional Site Climatology and Geochemistry

According to the Western Regional Climate Center, the average precipitation for the Treasure Valley is on the order of 10 to 12 inches per year, with an annual snowfall of approximately 20 inches and a range from 3 to 49 inches. The monthly mean daily temperatures range from 21°F to 95°F, with daily extremes ranging from -25°F to 111°F. Winds are generally from the northwest or southeast with an annual average wind speed of approximately 9 miles per hour (mph) and a maximum of 62 mph. Soils and sediments in the area are primarily derived from siliceous materials and exhibit low electro-chemical potential for corrosion of metals or concretes. Local aggregates are generally appropriate for Portland cement and lime cement mixtures. Surface water, groundwater, and soils in the region typically have pH levels ranging from 7.2 to 8.2.

SEISMIC SITE EVALUATION

Geoseismic Setting

Soils on site are classed as Site Class C in accordance with Chapter 20 of the American Society of Civil Engineers (ASCE) publication ASCE/SEI 7-10. Structures constructed on this site should be designed per IBC requirements for such a seismic classification. Our investigation did not reveal hazards resulting from potential earthquake motions including: slope instability, liquefaction, and surface rupture caused by faulting or lateral spreading. Incidence and anticipated acceleration of seismic activity in the area is low.

Seismic Design Parameter Values

The United States Geological Survey National Seismic Hazard Maps (2008), includes a peak ground acceleration map. The map for 2% probability of exceedance in 50 years in the Western United States in standard gravity (g) indicates that a peak ground acceleration of 0.155 is appropriate for the project site based on a Site Class C.

The following section provides an assessment of the earthquake-induced earthquake loads for the site based on the Risk-Targeted Maximum Considered Earthquake (MCE_R). The MCE_R spectral response acceleration for short periods, S_{MS}, and at 1-second period, S_{M1}, are adjusted for site class effects as required by the 2015 IBC.

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Design spectral response acceleration parameters as presented in the 2015 IBC are defined as a 5% damped design spectral response acceleration at short periods, S_{DS}, and at 1-second period, S_{D1}.

The USGS National Seismic Hazards Mapping Project includes a program that provides values for ground motion at a selected site based on the same data that were used to prepare the USGS ground motion maps. The maps were developed using attenuation relationships for soft rock sites; the source model, assumptions, and empirical relationships used in preparation of the maps are described in Petersen and others (1996).

Seismic Design Values

Seismic Design Parameter	Design Value
Site Class	C "Dense Soil or Soft Rock"
S_s	0.273 (g)
S_1	0.098 (g)
F_a	1.200
F_v	1.700
S_{Ms}	0.328
S_{M1}	0.166
S_{DS}	0.219
S_{D1}	0.111

SOILS EXPLORATION

Exploration and Sampling Procedures

Field exploration conducted to determine engineering characteristics of subsurface materials included a reconnaissance of the project site and investigation by test pit and by depth to rock boring. MTI obtained an Erosion and Sediment Control permit, as per City of Nampa requirements, prior to conducting field exploration activities at the project site. Test pit sites were located in the field by means of a Global Positioning System (GPS) device and are reportedly accurate to within eleven feet. Rock borings had been pre-selected by T.O. Engineers and were staked on the site prior to the advancement of rock borings. Upon completion of investigation, each test pit and rock boring was backfilled with loose excavated materials. Re-excavation and compaction of these test pit areas are required prior to construction of overlying structures.

In addition, samples were obtained from representative soil strata encountered. Samples obtained have been visually classified in the field by professional staff, identified according to test pit number and depth, placed in sealed containers, and transported to our laboratory for additional testing. Subsurface materials have been described in detail on logs provided in the **Appendix**. Results of field and laboratory tests are also presented in the **Appendix**. MTI recommends that these logs **not** be used to estimate fill material quantities.

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Laboratory Testing Program

Along with our field investigation, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of subsurface materials necessary in an analysis of anticipated behavior of the proposed structures. Laboratory tests were conducted in accordance with current applicable American Society for Testing and Materials (ASTM) and American Association of State Highway and Transportation Officials (AASHTO) specifications, and results of these tests are to be found on the accompanying logs located in the **Appendix**. The laboratory testing program for this report included: Atterberg Limits Testing – ASTM D4318, Grain Size Analysis – ASTM C117/C136, and Resistance Value (R-value) and Expansion Pressure of Compacted Soils – Idaho T-8.

Soil and Sediment Profile

The profile below represents a generalized interpretation for the project site. Note that on site soils strata, encountered between test pit locations, may vary from the individual soil profiles presented in the logs, which can be found in the **Appendix**.

The materials encountered during exploration were quite typical for the geologic area mapped as Basalt of Kuna Butte. Lean clay and silt soils with varying sand content were typically encountered at ground surface throughout the site. Silts and lean clays were dark brown, brown, and light brown, dry to moist, medium stiff to hard, and contained fine-grained sand. Organic materials were measured to depths of roughly 1 foot, and disturbed materials, as a result of plowing activities, usually reached a depth of 1 to 1½ feet if present.

Underlying the surficial soils and at ground surface within a limited number of test pits were sandy silts and silty sands. Sandy silts and silty sands were brown to light brown, dry to slightly moist, stiff to hard/dense to very dense, and contained fine to coarse-grained sand and varying degrees of calcium carbonate cementation. In some instances, basalt gravel and cobbles were encountered. At depth throughout the majority of the site was basalt. Basalt was dark gray, slightly weathered, moderately to widely fractured, and strong to very strong.

During excavation, test pit sidewalls were generally stable. However, moisture contents will affect wall competency with saturated soils having a tendency to readily slough when under load and unsupported.

Depth to Rock

Borings were advanced to a maximum depth of 12 feet below ground surface (bgs) or until rock was encountered. Please see the **Rock Boring Map** found in the **Appendix** for the boring locations. Below is a table showing the depth that basalt rock was encountered.

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Depth to Rock

Boring Number	Depth to Rock (Feet bgs)		Boring Number	Depth to Rock (Feet bgs)
1	4		39	11
2	5		40	6
3	2		41	3
4	6		42	8
5	11		43	10
6	7		44	2
7	8		45	5
8	10		46	8
9	12		47	6
10	5		48	12
11	8		49	12
12	4		50	12
13	5		51	12
14	9		52	12
15	12		53	9
16	11		54	12
17	9		55	12
18	6		56	11
19	2		57	4
20	4		58	10
21	2		59	5
22	9		60	9
23	10		61	5
24	11		62	9
25	11		63	3
26	11		64	8
27	9		65	7
28	5		66	6
29	11		67	5
30	10		68	8
31	5		69	10
32	5		70	2
33	12		71	7
34	12		72	6
35	12		73	1
36	Not Encountered		74	5
37	8		75	11
38	4		76	6

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Depth to Rock

Boring Number	Depth to Rock (Feet bgs)		Boring Number	Depth to Rock (Feet bgs)
77	12		82	1
78	7		83	6
79	3		84	5
80	2		85	7
81	4			

Volatile Organic Scan

No environmental concerns were identified prior to commencement of the investigation. Therefore, soils obtained during on-site activities were not assessed for volatile organic compounds by portable photoionization detector. Samples obtained during our exploration activities exhibited no odors or discoloration typically associated with this type of contamination. No groundwater was encountered.

SITE HYDROLOGY

Existing surface drainage conditions are defined in the **General Site Characteristics** section. Information provided in this section is limited to observations made at the time of the investigation. Either regional or local ordinances may require information beyond the scope of this report.

Groundwater

During this field investigation, groundwater was not encountered in test pits advanced to a maximum depth of 13.5 feet bgs. Soil moistures in the test pits were generally dry to moist throughout. In the vicinity of the project site, groundwater levels are controlled in large part by residential and commercial irrigation activity and leakage from nearby canals. Maximum groundwater elevations likely occur during the later portion of the irrigation season.

During previous investigations performed in December 2005, April 2006, and December 2016 within approximately 1-mile to the north, northeast, and northwest of the project site, no evidence of groundwater was noted within numerous test pits advanced to depths as great as 11.5 to 15.2 feet bgs. Furthermore, according to United States Geological Survey (USGS) monitoring well data within approximately ½-mile of the project site, groundwater was measured at a depth of 53 feet bgs.

For construction purposes, MTI estimates groundwater depths to remain greater than approximately 20 feet bgs or below the surface of basalt throughout the year. This depth can be confirmed through long-term groundwater monitoring.

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Soil Infiltration Rates

Soil permeability, which is a measure of the ability of a soil to transmit a fluid, was tested in the field. For this report, an estimation of infiltration is also presented using generally recognized values for each soil type and gradation. Of soils comprising the generalized soil profile for this study, clay and silt soils generally offer little permeability, with typical hydraulic infiltration rates of less than 2 inches per hour. Sandy silt soils will commonly exhibit infiltration rates from 2 to 4 inches per hour and silty sand sediments usually display rates of 4 to 8 inches per hour; though calcium carbonate cementation may reduce these values to near zero. Infiltration rates through basalt rock can be highly variable, ranging from nearly zero to greater than 6 inches per hour in some cases. Movement of water through the basalt may be more characteristic of fracture flow. Infiltration testing was performed as part of MTI's investigation and results are included in the **Infiltration Testing** section.

Infiltration Testing

Infiltration testing was conducted using an open test pit method. Test pit areas will need to be re-excavated and compacted prior to construction of structures that will be sensitive to settlement. Test locations were presoaked prior to testing. Pre-soaking increases soil moistures, which allows the tested soils to reach a saturated condition more readily during testing. Saturation of the tested soils is desirable in order to isolate the vertical component of infiltration by inhibiting horizontal seepage during testing.

Testing was conducted on 17 and 19 October 2018. Details and results of testing are as follows:

Infiltration Testing Results

Test Location	Test Depth (feet bgs)	Soil Type	Stabilized Infiltration Rate (inches/hour)	Design Infiltration Rate (inches/hour)
TP-3	4.5	Basalt	1.20	0.60
TP-4	13.5	Basalt	1.68	0.84
TP-5	5.1	Basalt	0.96	0.48
TP-7	6.1	Basalt	0.96	0.48
TP-8	13.2	Silty Sand	0.96	0.48
TP-9	4.5	Basalt	2.88	1.44

Appropriate factors of safety have been applied to the stabilized infiltration rates achieved during testing. The reason for the decreased infiltration rate is to account for long term saturation of the soils and the potential for less permeable soils to settle into the bottom of the infiltration facilities. MTI recommends that all infiltration facilities be constructed in accordance with the local municipality requirements.

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FOUNDATION, SLAB, AND PAVEMENT DISCUSSION AND RECOMMENDATIONS

Various foundation types have been considered for support of the proposed development. Two requirements must be met in the design of foundations. First, the applied bearing stress must be less than the ultimate bearing capacity of foundation soils to maintain stability. Second, total and differential settlement must not exceed an amount that will produce an adverse behavior of the superstructure. Allowable settlement is usually exceeded before bearing capacity considerations become important; thus, allowable bearing pressure is normally controlled by settlement considerations.

Considering subsurface conditions and the proposed construction, it is recommended that the development be founded upon conventional spread footings and continuous wall footings. Total settlements should not exceed 1 inch if the following design and construction recommendations are observed. Presently, there are approximately 117 lots proposed for the project site. The following recommendations are not specific to the individual structures, but rather should be viewed as guidelines for the subdivision – wide development.

Foundation Design Recommendations

Based on data obtained from the site and test results from various laboratory tests performed, MTI recommends the following guidelines for the net allowable soil bearing capacity:

Soil Bearing Capacity

Footing Depth	ASTM D1557 Subgrade Compaction	Net Allowable Soil Bearing Capacity
Footings must bear on competent, undisturbed, native lean clay soils, silty clay soils, silt soils, sandy lean clay soils, sandy silt soils, silty sands, or compacted structural fill. Existing organic materials and fill materials must be completely removed from below foundation elements.[1] Excavation depths ranging from roughly 1.0 to 1.5 feet bgs should be anticipated to expose proper bearing soils.[2]	Not Required for Native Soil 95% for Structural Fill	1,500 lbs/ft^2 A ⅓ increase is allowable for short-term loading, which is defined by seismic events or designed wind speeds.

[1]It will be required for MTI personnel to verify the bearing soil suitability for each structure at the time of construction.
[2]Depending on the time of year construction takes place, the subgrade soils may be unstable because of high moisture contents. If unstable conditions are encountered, over-excavation and replacement with granular structural fill and/or use of geotextiles may be required.

Footings should be proportioned to meet either the stated soil bearing capacity or the 2015 IBC minimum requirements. Total settlement should be limited to approximately 1 inch, and differential settlement should be limited to approximately ½ inch. Objectionable soil types encountered at the bottom of footing excavations should be removed and replaced with structural fill. Excessively loose or soft areas that are encountered in the footings subgrade will require over-excavation and backfilling with structural fill. To minimize the effects of slight differential movement that may occur because of variations in the character of supporting soils and seasonal moisture content, MTI recommends continuous footings be suitably reinforced to make them as rigid as possible. For frost protection, the bottom of external footings should be 24 inches below finished grade.

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Crawl Space Recommendations

All residences constructed with crawl spaces should be designed in a manner that will inhibit water in the crawl spaces. MTI recommends that roof drains carry stormwater at least 10 feet away from each residence. Grades should be at least 5 percent for a distance of 10 feet away from all residences. In addition, rain gutters should be placed around all sides of residences, and backfill around stem walls should be placed and compacted in a controlled manner.

Floor, Patio, and Garage Slab-on-Grade

Plow zones, which should be treated as uncontrolled fill, were encountered thoughout the site. MTI recommends that these plow zones be excavated to a sufficient depth to expose competent, native soils or to a minimum depth of 1 foot below finished subgrade. If plow zones remain after over-excavation, the exposed subgrade must be compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557. MTI personnel must be present during excavation to identify these materials.

Organic, loose, or obviously compressive materials must be removed prior to placement of concrete floors or floor-supporting fill. In addition, the remaining subgrade should be treated in accordance with guidelines presented in the **Earthwork** section. Areas of excessive yielding should be excavated and backfilled with structural fill. Fill used to increase the elevation of the floor slab should meet requirements detailed in the **Structural Fill** section. Fill materials must be compacted to a minimum 95 percent of the maximum dry density as determined by ASTM D1557.

A free-draining granular mat (drainage fill course) should be provided below slabs-on-grade. This should be a minimum of 4 inches in thickness and properly compacted. The mat should consist of a sand and gravel mixture, complying with Idaho Standards for Public Works Construction (ISPWC) specifications for ¾-inch (Type 1) crushed aggregate. The granular mat should be compacted to no less than 95 percent of the maximum dry density as determined by ASTM D1557. A moisture-retarder should be placed beneath floor slabs to minimize potential ground moisture effects on moisture-sensitive floor coverings. The moisture-retarder should be at least 15-mil in thickness and have a permeance of less than 0.01 US perms as determined by ASTM E96. Placement of the moisture-retarder will require special consideration with regard to effects on the slab-on-grade and should adhere to recommendations outlined in the ACI 302.1R and ASTM E1745 publications. Upon request, MTI can provide further consultation regarding installation.

Recommended Pavement Sections

MTI has used a traffic index of 6, 7, and 8 to determine the necessary pavement cross-sections for the site. MTI has made assumptions for traffic loading variables based on the character of the proposed construction. The Client should review these assumptions to make sure they reflect intended use and loading of pavements both now and in the future. MTI collected a sample of near-surface soils for Resistance Value (R-value) testing representative of soils to depths of 2 feet below existing ground surface. This sample, consisting of lean clay soils collected from test pit 4, yielded a R-value of less than 5. An R-value of 4 was used for design. The following are minimum thickness requirements for assured pavement function. Depending on site conditions, additional work, e.g. soil preparation, may be required to support construction equipment. These have been listed within the **Soft Subgrade Soils** section. Results of the test are graphically depicted in the **Appendix**.

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Flexible Pavement Sections

The Gravel Equivalent Method, as defined in Section 500 of the State of Idaho Department of Transportation (ITD) Materials Manual, was used to develop the pavement sections. The calculation sheets provided in the **Appendix** indicate the soils constant, traffic loading, traffic projections, and material constants used to calculate the pavement sections. MTI recommends that materials used in the construction of asphaltic concrete pavements meet the requirements of the ISPWC Standard Specification for Highway Construction. Construction of the pavement section should be in accordance with these specifications and should adhere to guidelines recommended in the section on **Construction Considerations**.

Gravel Equivalent Method Flexible Pavement Specifications

Pavement Section Component[1]	**Residential Roadway**	**Main Access Roadways**	**Lewis Lane and Southside Boulevard Improvements**
Asphaltic Concrete	2.5 Inches	2.5 Inches	3.0 Inches
Crushed Aggregate Base	6.0 Inches	6.0 Inches	8.0 Inches
Structural Subbase	12.0 Inches	16.0 Inches	18.0 Inches
Compacted Subgrade	See **Pavement Subgrade Preparation** Section	See **Pavement Subgrade Preparation** Section	See **Pavement Subgrade Preparation** Section

[1]It will be required for MTI personnel to verify subgrade competency at the time of construction.

Asphaltic Concrete:	Asphalt mix design shall meet the requirements of ISPWC, Section 810 Class III plant mix. Materials shall be placed in accordance with ISPWC Standard Specifications for Highway Construction.
Aggregate Base:	Material complying with ISPWC Standards for Crushed Aggregate Materials.
Structural Subbase:	Material complying with requirements for granular structural fill (uncrushed) as defined in ISPWC.

Pavement Subgrade Preparation

Plow zones, which should be treated as uncontrolled fill, were encountered throughout the site. MTI recommends that these plow zones be excavated to a sufficient depth to expose competent, native soils or to a minimum depth of 1 foot below finished subgrade. If plow zones remain after over-excavation, the exposed subgrade must be compacted to at least 95 percent of the maximum dry density as determined by ASTM D698. MTI personnel must be present during excavation to identify these materials.

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Common Pavement Section Construction Issues

The subgrade upon which above pavement sections are to be constructed must be properly stripped, compacted (if indicated), inspected, and proof-rolled. Proof rolling of subgrade soils should be accomplished using a heavy rubber-tired, fully loaded, tandem-axle dump truck or equivalent. Verification of subgrade competence by MTI personnel at the time of construction is required. Fill materials on the site must demonstrate the indicated compaction prior to placing material in support of the pavement section. MTI anticipated that pavement areas will be subjected to moderate traffic. Subgrade clays and silts near and above optimum moisture contents may pump during compaction. Pumping or soft areas must be removed and replaced with structural fill.

Fill material and aggregates, as well as compacted native subgrade soils, in support of the pavement section must be compacted to no less than 95 percent of the maximum dry density as determined by ASTM D698 for flexible pavements and by ASTM D1557 for rigid pavements. If a material placed as a pavement section component cannot be tested by usual compaction testing methods, then compaction of that material must be approved by observed proof rolling. Minor deflections from proof rolling for flexible pavements are allowable. Deflections from proof rolling of rigid pavement support courses should not be visually detectable.

CONSTRUCTION CONSIDERATIONS

Recommendations in this report are based upon structural elements of the project being founded on competent, native lean clay soils, silt soils, silty clay soils, sandy lean clay soils, sandy silt soils, silty sand sediments, or compacted structural fill. Structural areas should be stripped to an elevation that exposes these soil types.

Earthwork

Excessively organic soils, deleterious materials, or disturbed soils generally undergo high volume changes when subjected to loads, which is detrimental to subgrade behavior in the area of pavements, floor slabs, structural fills, and foundations. Brush, and thick grasses with associated root systems were noted at the time of our investigation. It is recommended that organic or disturbed soils, if encountered, be removed to depths of 1 foot (minimum), and wasted or stockpiled for later use. However, in areas where trees are/were present, deeper excavation depths should be anticipated. Stripping depths should be adjusted in the field to assure that the entire root zone or disturbed zone (plow depths) or topsoil are removed prior to placement and compaction of structural fill materials. Exact removal depths should be determined during grading operations by MTI personnel, and should be based upon subgrade soil type, composition, and firmness or soil stability. If underground storage tanks, underground utilities, wells, or septic systems are discovered during construction activities, they must be decommissioned then removed or abandoned in accordance with governing Federal, State, and local agencies. Excavations developed as the result of such removal must be backfilled with structural fill materials as defined in the **Structural Fill** section.

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MTI should oversee subgrade conditions (i.e., moisture content) as well as placement and compaction of new fill (if required) after native soils are excavated to design grade. Recommendations for structural fill presented in this report can be used to minimize volume changes and differential settlements that are detrimental to the behavior of footings, pavements, and floor slabs. Sufficient density tests should be performed to properly monitor compaction. For structural fill beneath building structures, one in-place density test per lift for every 5,000 square feet is recommended. In parking and driveway areas, this can be decreased to one test per lift for every 10,000 square feet.

Dry Weather

If construction is to be conducted during dry seasonal conditions, many problems associated with soft soils may be avoided. However, some rutting of subgrade soils may be induced by shallow groundwater conditions related to springtime runoff or irrigation activities during late summer through early fall. Solutions to problems associated with soft subgrade soils are outlined in the **Soft Subgrade Soils** section. Problems may also arise because of lack of moisture in native and fill soils at time of placement. This will require the addition of water to achieve near-optimum moisture levels. Low-cohesion soils exposed in excavations may become friable, increasing chances of sloughing or caving. Measures to control excessive dust should be considered as part of the overall health and safety management plan.

Wet Weather

If construction is to be conducted during wet seasonal conditions (commonly from mid-November through May), problems associated with soft soils must be considered as part of the construction plan. During this time of year, fine-grained soils such as silts and clays will become unstable with increased moisture content, and eventually deform or rut. Additionally, constant low temperatures reduce the possibility of drying soils to near optimum conditions.

Soft Subgrade Soils

Shallow fine-grained subgrade soils that are high in moisture content should be expected to pump and rut under construction traffic. During periods of wet weather, construction may become very difficult if not impossible. The following recommendations and options have been included for dealing with soft subgrade conditions:

- Track-mounted vehicles should be used to strip the subgrade of root matter and other deleterious debris. Heavy rubber-tired equipment should be prohibited from operating directly on the native subgrade and areas in which structural fill materials have been placed. Construction traffic should be restricted to designated roadways that do not cross, or cross on a limited basis, proposed roadway or parking areas.
- Soft areas can be over-excavated and replaced with granular structural fill.
- Construction roadways on soft subgrade soils should consist of a minimum 2-foot thickness of large cobbles of 4 to 6 inches in diameter with sufficient sand and fines to fill voids. Construction entrances should consist of a 6-inch thickness of clean, 2-inch minimum, angular drain-rock and must be a minimum of 10 feet wide and 30 to 50 feet long. During the construction process, top dressing of the entrance may be required for maintenance.

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- Scarification and aeration of subgrade soils can be employed to reduce the moisture content of wet subgrade soils. After stripping is complete, the exposed subgrade should be ripped or disked to a depth of 1½ feet and allowed to air dry for 2 to 4 weeks. Further disking should be performed on a weekly basis to aid the aeration process.
- Alternative soil stabilization methods include use of geotextiles, lime, and cement stabilization. MTI is available to provide recommendations and guidelines at your request.

Frozen Subgrade Soils

Prior to placement of structural fill materials or foundation elements, frozen subgrade soils must either be allowed to thaw or be stripped to depths that expose non-frozen soils and wasted or stockpiled for later use. Stockpiled materials must be allowed to thaw and return to near-optimal conditions prior to use as structural fill.

The onsite, shallow clayey and silty soils are susceptible to frost heave during freezing temperatures. For exterior flatwork and other structural elements, adequate drainage away from subgrades is critical. Compaction and use of structural fill will also help to mitigate the potential for frost heave. Complete removal of frost susceptible soils for the full frost depth, followed by replacement with a non-frost susceptible structural fill, can also be used to mitigate the potential for frost heave. MTI is available to provide further guidance/assistance upon request.

Structural Fill

Soils recommended for use as structural fill are those classified as GW, GP, SW, and SP in accordance with the Unified Soil Classification System (USCS) (ASTM D2487). Use of silty soils (USCS designation of GM, SM, and ML) as structural fill may be acceptable. However, use of silty soils (GM, SM, and ML) as structural fill below footings is prohibited. These materials require very high moisture contents for compaction and require a long time to dry out if natural moisture contents are too high and may also be susceptible to frost heave under certain conditions. Therefore, these materials can be quite difficult to work with as moisture content, lift thickness, and compactive effort becomes difficult to control. If silty soil is used for structural fill, lift thicknesses should not exceed 6 inches (loose), and fill material moisture must be closely monitored at both the working elevation and the elevations of materials already placed. Following placement, silty soils must be protected from degradation resulting from construction traffic or subsequent construction.

Recommended granular structural fill materials, those classified as GW, GP, SW, and SP, should consist of a 6-inch minus select, clean, granular soil with no more than 50 percent oversize (greater than ¾-inch) material and no more than 12 percent fines (passing No. 200 sieve). These fill materials should be placed in layers not to exceed 12 inches in loose thickness. Prior to placement of structural fill materials, surfaces must be prepared as outlined in the **Construction Considerations** section. Structural fill material should be moisture-conditioned to achieve optimum moisture content prior to compaction. For structural fill below footings, areas of compacted backfill must extend outside the perimeter of the footings for a distance equal to the thickness of fill between the bottom of foundation and underlying soils, or 5 feet, whichever is less. All fill materials must be monitored during placement and tested to confirm compaction requirements, outlined below, have been achieved.

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Each layer of structural fill must be compacted, as outlined below:

- Below Structures and Rigid Pavements: A minimum of 95 percent of the maximum dry density as determined by ASTM D1557.
- Below Flexible Pavements: A minimum of 92 percent of the maximum dry density as determined by ASTM D1557 or 95 percent of the maximum dry density as determined by ASTM D698.

The ASTM D1557 test method must be used for samples containing up to 40 percent oversize (greater than ¾-inch) particles. If material contains more than 40 percent but less than 50 percent oversize particles, compaction of fill must be confirmed by proof rolling each lift with a 10-ton vibratory roller (or equivalent) until the maximum density has been achieved. Density testing must be performed after each proof rolling pass until the in-place density test results indicate a drop (or no increase) in the dry density, defined as maximum density or "break over" point. The number of required passes should be used as the requirements on the remainder of fill placement. Material should contain sufficient fines to fill void spaces, and must not contain more than 50 percent oversize particles.

Backfill of Walls

Backfill materials must conform to the requirements of structural fill, as defined in this report. For wall heights greater than 2.5 feet, the maximum material size should not exceed 4 inches in diameter. Placing oversized material against rigid surfaces interferes with proper compaction, and can induce excessive point loads on walls. Backfill shall not commence until the wall has gained sufficient strength to resist placement and compaction forces. Further, retaining walls above 2.5 feet in height shall be backfilled in a manner that will limit the potential for damage from compaction methods and/or equipment. It is recommended that only small hand-operated compaction equipment be used for compaction of backfill within a horizontal distance equal to the height of the wall, measured from the back face of the wall.

Backfill should be compacted in accordance with the specifications for structural fill, except in those areas where it is determined that future settlement is not a concern, such as planter areas. In nonstructural areas, backfill must be compacted to a firm and unyielding condition.

Excavations

Shallow excavations that do not exceed 4 feet in depth may be constructed with side slopes approaching vertical. Below this depth, it is recommended that slopes be constructed in accordance with Occupational Safety and Health Administration (OSHA) regulations, Section 1926, Subpart P. Based on these regulations, on-site soils are classified as type "C" soil, and as such, excavations within these soils should be constructed at a maximum slope of 1½ feet horizontal to 1 foot vertical (1½:1) for excavations up to 20 feet in height. Excavations in excess of 20 feet will require additional analysis. Note that these slope angles are considered stable for short-term conditions only, and will not be stable for long-term conditions.

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During the subsurface exploration, test pit sidewalls generally exhibited little indication of collapse. For deep excavations, native granular sediments cannot be expected to remain in position. These materials are prone to failure and may collapse, thereby undermining upper soil layers. This is especially true when excavations approach depths near the water table. Care must be taken to ensure that excavations are properly backfilled in accordance with procedures outlined in this report.

Shallow soil cementation (caliche) was observed throughout much of the site and may cause difficulties during foundation development and utility placement. Cemented soils should be anticipated throughout the site at depths of 1.3 to 13 feet bgs.

Groundwater Control

Groundwater was not encountered during the investigation and is anticipated to be below the depth of most construction. Excavations below the water table will require a dewatering program. Special precautions may be required for control of surface runoff and subsurface seepage. It is recommended that runoff be directed away from open excavations. Silty and clayey soils may become soft and pump if subjected to excessive traffic during time of surface runoff. Ponded water in construction areas should be drained through methods such as trenching, sloping, crowning grades, nightly smooth drum rolling, or installing a French drain system. Additionally, temporary or permanent driveway sections should be constructed if extended wet weather is forecasted.

GENERAL COMMENTS

Based on the subsurface conditions encountered during this investigation and available information regarding the proposed development, the site is adequate for the planned construction. When plans and specifications are complete, and if significant changes are made in the character or location of the proposed structure, consultation with MTI must be arranged as supplementary recommendations may be required. Suitability of subgrade soils and compaction of structural fill materials must be verified by MTI personnel prior to placement of structural elements. Additionally, monitoring and testing should be performed to verify that suitable materials are used for structural fill and that proper placement and compaction techniques are utilized.

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APPENDICES

ACRONYM LIST

AASHTO:	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ASCE	American Society of Civil Engineers
ASTM:	American Society for Testing and Materials
bgs:	below ground surface
CBR:	California Bearing Ratio
D:	natural dry unit weight, pcf
ESAL	Equivalent Single Axle Load
GS:	grab sample
IBC:	International Building Code
IDEQ	Idaho Department of Environmental Quality
ISPWC:	Idaho Standards for Public Works Construction
ITD:	Idaho Transportation Department
LL:	Liquid Limit
M:	water content
MSL:	mean sea level
N:	Standard "N" penetration: blows per foot, Standard Penetration Test
NP:	nonplastic
OSHA	Occupational Safety and Health Administration
PCCP:	Portland Cement Concrete Pavement
PERM:	vapor permeability
PI:	Plasticity Index
PID:	photoionization detector
PVC:	polyvinyl chloride
Qc:	cone penetrometer value, unconfined compressive strength, psi
Qp:	Penetrometer value, unconfined compressive strength, tsf
Qu:	Unconfined compressive strength, tsf
RMR	Rock Mass Rating
RQD	Rock Quality Designation
R-Value	Resistance Value
SPT:	Standard Penetration Test (140:pound hammer falling 30 in. on a 2:in. split spoon)
USCS:	Unified Soil Classification System
USDA:	United States Department of Agriculture
UST:	underground storage tank
V:	vane value, ultimate shearing strength, tsf

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GEOTECHNICAL GENERAL NOTES

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION			
Coarse-Grained Soils	**SPT Blow Counts (N)**	**Fine-Grained Soils**	**SPT Blow Counts (N)**
Very Loose:	< 4	Very Soft:	< 2
Loose:	4-10	Soft:	2-4
Medium Dense:	10-30	Medium Stiff:	4-8
Dense:	30-50	Stiff:	8-15
Very Dense:	>50	Very Stiff:	15-30
		Hard:	>30

Moisture Content	
Description	**Field Test**
Dry	Absence of moisture, dusty, dry to touch
Moist	Damp but not visible moisture
Wet	Visible free water, usually soil is below water table

Cementation	
Description	**Field Test**
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or beaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

PARTICLE SIZE					
Boulders:	>12 in.	Coarse-Grained Sand:	5 to 0.6 mm	Silts:	0.075 to 0.005 mm
Cobbles:	12 to 3 in.	Medium-Grained Sand:	0.6 to 0.2 mm	Clays:	<0.005 mm
Gravel:	3 in. to 5 mm	Fine-Grained Sand:	0.2 to 0.075 mm		

UNIFIED SOIL CLASSIFICATION SYSTEM			
Major Divisions		**Symbol**	**Soil Descriptions**
Coarse-Grained Soils <50% passes No.200 sieve	Gravel & Gravelly Soils <50% coarse fraction passes No.4 sieve	GW	Well-graded gravels; gravel/sand mixtures with little or no fines
		GP	Poorly-graded gravels; gravel/sand mixtures with little or no fines
		GM	Silty gravels; poorly-graded gravel/sand/silt mixtures
		GC	Clayey gravels; poorly-graded gravel/sand/clay mixtures
	Sand & Sandy Soils >50% coarse fraction passes No.4 sieve	SW	Well-graded sands; gravelly sands with little or no fines
		SP	Poorly-graded sands; gravelly sands with little or no fines
		SM	Silty sands; poorly-graded sand/gravel/silt mixtures
		SC	Clayey sands; poorly-graded sand/gravel/clay mixtures
Fine Grained Soils >50% passes No.200 sieve	Silts & Clays LL < 50	ML	Inorganic silts; sandy, gravelly or clayey silts
		CL	Lean clays; inorganic, gravelly, sandy, or silty, low to medium-plasticity clays
		OL	Organic, low-plasticity clays and silts
	Silts & Clays LL > 50	MH	Inorganic, elastic silts; sandy, gravelly or clayey elastic silts
		CH	Fat clays; high-plasticity, inorganic clays
		OH	Organic, medium to high-plasticity clays and silts
Highly Organic Soils		PT	Peat, humus, hydric soils with high organic content

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ROCK CLASSIFICATION SYSTEM

WEATHERING	
WEATHERING	**FIELD TEST**
Fresh	No sign of decomposition or discoloration. Rings under hammer impact.
Slightly Weathered	Slight discoloration inwards from open fractures, otherwise similar to Fresh.
Moderately Weathered	Discoloration throughout. Weaker minerals such as feldspar decomposed. Strength somewhat less than fresh rock but cores cannot be broken by hand or scraped with a knife. Texture preserved.
Highly Weathered	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct but fabric preserved.
Completely Weathered	Minerals decomposed to soil but fabric and structure preserved. Specimens easily crumbled or penetrated.

FRACTURING	
SPACING	**DISCRIPTION**
6 ft.	Very widely
2 – 6 ft.	Widely
8 – 24 in.	Moderately
2 ½ - 8 in.	Closely
¾ - 2 ½ in.	Very Closely

ROCK QUALITY DESIGNATION (RQD)	
RQD (%)	**ROCK QUALITY**
90 – 100	Excellent
75 – 90	Good
50 – 75	Fair
25 – 50	Poor
0 - 25	Very Poor

COMPETENCY			
STRENGTH	**CLASS**	**FIELD TEST**	**APPROXIMATE RANGE OF UNCONFINED COMPRESSIVE STRENGTH (tsf)**
Extremely Strong	I	Many blows with geologic hammer required to break intact specimen.	>2000
Very Strong	II	Hand-held specimen breaks with pick end of hammer under more than one blow.	2000 - 1000
Strong	III	Cannot be scraped or peeled with knife, hand-held specimen can be broken with single moderate blow with pick end of hammer.	1000 - 500
Moderately Strong	IV	Can just be scraped or peeled with knife. Indentations 1 mm to 3 mm show in specimen with moderate blow with pick end of hammer.	500 - 250
Weak	V	Material crumbles under moderate blow with pick end of hammer and can be peeled with a knife, but is hard to hand-trim for tri-axial test specimen.	250 - 10
Friable	VI	Material crumbles in hand.	N/A

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-1 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.508028 **Longitude:** -116.534506
Depth to Water Table: Not Encountered **Total Depth:** 8.3 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-2.1	Sandy Silt (ML): *Brown, dry to slightly moist, stiff to very stiff, with fine to medium-grained sand.* *--Organics to a depth of 0.9 foot bgs.* *--Plow zone to a depth of 1.5 feet bgs.*			1.5-2.0	
2.1-8.3	Silty Sand (SM): *Brown to light brown, dry, dense to very dense, with fine to medium-grained sand and intermittent coarse-grained sand.* *--Intermittent fine to coarse basalt gravel was encountered below 5.0 feet bgs.* *--Moderate to strong calcium carbonate cementation was encountered from 4.8 to 6.3 feet bgs.* *--Weak intermittent calcium carbonate cementation encountered below 6.8 feet bgs.*				
Below 8.3	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-2 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.507242 **Longitude:** -116.335743
Depth to Water Table: Not Encountered **Total Depth:** 12.9 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-1.5	Lean Clay (CL): *Dark brown, slightly moist, stiff to very stiff.* *--Organics to a depth of 0.8 foot bgs.* *--Plow zones to a depth 1.1 feet bgs.*				
1.5-3.9	Sandy Silt (ML): *Brown to light brown, dry to slightly moist, very stiff to hard, with fine to medium-grained sand and intermittent coarse-grained sand.*				
3.9-12.9	Silty Sand (SM): *Brown, dry, dense to very dense, with fine to coarse-grained sand.* *--Weak to moderate calcium carbonate cementation encountered from 3.9 to 8.0 and 10.1 to 12.9 feet bgs.* *--Strong to very strong calcium carbonate cementation encountered from 8.0 to 10.1 feet bgs.*				
Below 12.9	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-3 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.507975 **Longitude:** -116.536994
Depth to Water Table: Not Encountered **Total Depth:** 4.5 Feet bgs
Notes: Infiltration testing conducted at a depth of 4.5 feet bgs.

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-1.1	Lean Clay (CL): *Dark brown, dry, very stiff to hard.* *--Organics to a depth of 0.7 feet bgs.* *--Plow zones to a depth of 1.0 foot bgs.*			2.75-4.5	
1.1-3.9	Silt with Sand (ML): *Light brown, dry, stiff to very stiff, with fine-grained sand.*			1.5-3.5	
3.9-4.5	Sandy Silt (ML): *Brown to light brown, dry, very stiff to hard, with fine to medium-grained sand and intermittent coarse-grained sand.* *--Moderate to strong calcium carbonate cementation encountered throughout.*				
Below 4.5	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-4 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.506866 **Longitude:** -116.537695
Depth to Water Table: Not Encountered **Total Depth:** 13.5 Feet bgs
Notes: Infiltration testing conducted at a depth of 13.5 feet bgs.

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-1.6	Lean Clay (CH): *Dark brown, dry, and hard.* *--Organics to a depth of 0.8 foot bgs.* *--Plow zones to a depth of 1.1 feet bgs.*	GS	1.0-1.5	4.5+	A / R-Value
1.6-5.0	Sandy Silt (ML): *Brown to light brown, dry, very stiff to hard, with fine to medium-grained sand.* *--Intermittent weak calcium carbonate cementation encountered throughout.*				
5.0-13.5	Silty Sand (SM): *Light brown, dry, dense to very dense, with fine to coarse-grained sand.* *--Moderate calcium carbonate cementation encountered from 5.0 to 7.8.* *--Strong to very strong calcium carbonate cementation encountered from 7.8 to 9.3 feet bgs.* *--Weak to moderate induration with calcic veining encountered below 9.3 feet bgs.*				
Below 13.5	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

Lab Test ID	M	LL	PI	Sieve Analysis (% passing)				
-	%	-	-	#4	#10	#40	#100	#200
A	11.1	38	20	100	100	99	96	87.2

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-5 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.509933 **Longitude:** -116.537799
Depth to Water Table: Not Encountered **Total Depth:** 5.1 Feet bgs
Notes: Infiltration testing conducted at a depth of 5.1 feet bgs.

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-1.1	Lean Clay (CH): *Dark brown, dry, very stiff to hard.* --*Organics and plow zone to a depth of 1.0 foot bgs.*			4.0-4.5	
1.1-3.9	Silt (ML): *Light brown, dry, stiff to hard, with fine-grained sand.*				
3.9-5.1	Silty Sand (SM): *Brown to light brown, dry, dense to very dense, with fine to coarse-grained sand.* --*Moderate to strong calcium carbonate cementation encountered throughout.*				
Below 5.1	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-6 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.510722 **Longitude:** -116.538534
Depth to Water Table: Not Encountered **Total Depth:** 7.7 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-1.3	Sandy Lean Clay (CL): *Dark brown to brown, dry, stiff to very stiff, with fine to medium-grained sand.* *--Organics to a depth of 0.8 foot bgs.* *--Plow zones to a depth of 1.2 feet bgs.*				
1.3-7.7	Silty Sand (SM): *Light brown, dry, dense to very dense, with fine to coarse-grained sand.* *--Moderate calcium carbonate cementation encountered throughout.*				
Below 7.7	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-7 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.510290 **Longitude:** -116.542277
Depth to Water Table: Not Encountered **Total Depth:** 6.1 Feet bgs
Notes: Infiltration testing conducted at a depth of 6.1 feet bgs.

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-4.0	Silty Clay with Sand (CL): *Dark brown, slightly moist to moist, medium stiff to stiff, with fine-grained sand.* *--Organics to a depth of 1.2 feet bgs.* *--Plow zones to a depth of 1.3 feet bgs.*	GS	1.5-2.0	0.75-1.5	B
4.0-6.1	Silty Sand (SM): *Brown to light brown, dry to slightly moist, dense to very dense, with fine to coarse-grained sand.* *--Moderate to strong calcium carbonate cementation encountered throughout.*				
Below 6.1	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

Lab Test ID	M	LL	PI	Sieve Analysis (% passing)				
-	%	-	-	#4	#10	#40	#100	#200
B	19.7	24	6	98	97	95	91	83.7

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-8 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.5110517 **Longitude:** -116.545099
Depth to Water Table: Not Encountered **Total Depth:** 13.2 Feet bgs
Notes: Infiltration testing conducted at a depth of 13.2 feet bgs.

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-3.7	Silt with Sand (ML): *Brown to light brown, dry to slightly moist, stiff to very stiff, with fine-grained sand.* *--Organics to a depth of 0.7 foot bgs.* *--Plow zones to a depth of 1.1 feet bgs.*			1.5-2.5	
3.7-13.2	Silty Sand (SM): *Brown to light brown, dry, dense to very dense, with fine to coarse-grained sand.* *--Strong to very strong calcium carbonate cementation encountered below 5.1 feet bgs.* *--Refusal on very strong calcium carbonate cementation.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-9 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.512755 **Longitude:** -116.542917
Depth to Water Table: Not Encountered **Total Depth:** 4.5 Feet bgs
Notes: Infiltration testing conducted at a depth of 4.5 feet bgs.

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-4.5	Sandy Silt (ML): *Dark brown to light brown, dry to slightly moist, stiff to hard, with fine to medium-grained sand.* *--Organics to a depth of 0.5 foot bgs.* *--Plow zones to a depth of 1.0 foot bgs.* *--Moderate calcium carbonate cementation encountered below 1.1 feet bgs.*			1.5-4.5	
Below 4.5	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-10 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.512407 **Longitude:** -116.541227
Depth to Water Table: Not Encountered **Total Depth:** 11.8 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-1.3	Sandy Lean Clay (CL): *Dark brown, dry, stiff, with fine to medium-grained sand.* *--Organics to a depth of 0.5 foot bgs.* *--Plow zones to a depth of 0.9 foot bgs.*			1.5-1.75	
1.3-6.9	Silt with Sand (ML): *Light brown, dry, very stiff to hard, with fine to medium-grained sand.* *--Moderate calcium carbonate cementation encountered throughout.*				
6.9-11.8	Silty Sand (SM): *Light brown, dry, dense to very dense, with fine to coarse-grained sand and 5-inch-minus basalt cobbles.* *--Moderate calcium carbonate cementation encountered throughout.*				
Below 11.8	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-11 **Date Advanced:** 16 Oct 2018 **Logged by:** Jacob Schlador, E.I.T.
Excavated by: Creighton Contracting **Location:** See Site Map Plates
Latitude: 43.513599 **Longitude:** -116.539125
Depth to Water Table: Not Encountered **Total Depth:** 6.6 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-1.8	Lean Clay with Sand (CL): *Dark brown, slightly moist, medium stiff to very stiff, with fine-grained sand.* *--Organics to a depth of 0.6 foot bgs.* *--Plow zones to a depth of 1.0 foot bgs.*			1.0-2.0	
1.8-6.6	Silty Sand (SM): *Light brown, dry, dense to very dense, with fine to coarse-grained sand.* *--Moderate to strong calcium carbonate cementation encountered throughout.*				
Below 6.6	Basalt: *Dark gray, slightly weathered, moderately to widely fractured, strong to very strong.*				

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GRAVEL EQUIVALENT METHOD – PAVEMENT THICKNESS DESIGN PROCEDURES

Pavement Section Design Location: Osprey Subdivision, Residential Roadways

Average Daily Traffic Count:	400	All Lanes & Both Directions		
Design Life:	20	Years		
Traffic Index:	6.00			
Climate Factor:	1	**R-Value of Subgrade:**	4.00	
Subgrade CBR Value:	2	**Subgrade Mr:**	3,000	
R-Value of Aggregate Base:	80			
R-Value of Granular Borrow:	60			
Subgrade R-Value:	4			
Expansion Pressure of Subgrade:	1.40			
Unit Weight of Base Materials:	130			
Total Design Life 18 kip ESAL's:	33,131			
ASPHALTIC CONCRETE:				
Gravel Equivalent, Calculated:	0.384			
Thickness:	0.174545455	Use =	2.5	Inches
Gravel Equivalent, ACTUAL:	0.46			
CRUSHED AGGREGATE BASE:				
Gravel Equivalent (Ballast):	0.768			
Thickness:	0.310	Use =	6	Inches
Gravel Equivalent, ACTUAL:	0.958			
SUBBASE:				
Gravel Equivalent (Ballast):	1.843			
Thickness:	0.983	Use =	12	Inches
Gravel Equivalent, ACTUAL:	1.858			
TOTAL Thickness:	1.708			
Thickness Required by Exp. Pressure:	1.551			

	Design Depth Inches	City of Nampa Substitution Ratios
Asphaltic Concrete (at least 2.5):	**2.50**	2.20
Asphalt Treated Base (at least 4.2):	**0.00**	
Cement Treated Base (at least 4.2):	**0.00**	
Crushed Aggregate Base (at least 4.2):	**6.00**	1.00
Subbase (at least 4.2):	**12.00**	0.90

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GRAVEL EQUIVALENT METHOD – PAVEMENT THICKNESS DESIGN PROCEDURES

Pavement Section Design Location: Osprey Subdivision, Main Access Roadways

Average Daily Traffic Count:	550	All Lanes & Both Directions	
Design Life:	20	Years	
Traffic Index:	7.00		
Climate Factor:	1	**R-Value of Subgrade:**	4.00
Subgrade CBR Value:	2	**Subgrade Mr:**	3,000
R-Value of Aggregate Base:	80		
R-Value of Granular Borrow:	60		
Subgrade R-Value:	4		
Expansion Pressure of Subgrade:	1.40		
Unit Weight of Base Materials:	130		
Total Design Life 18 kip ESAL's:	121,008		
ASPHALTIC CONCRETE:			
Gravel Equivalent, Calculated:	0.448		
Thickness:	0.203636364	Use = 2.5 Inches	
Gravel Equivalent, ACTUAL:	0.46		
CRUSHED AGGREGATE BASE:			
Gravel Equivalent (Ballast):	0.896		
Thickness:	0.438	Use = 6 Inches	
Gravel Equivalent, ACTUAL:	0.958		
SUBBASE:			
Gravel Equivalent (Ballast):	2.150		
Thickness:	1.325	Use = 16 Inches	
Gravel Equivalent, ACTUAL:	2.158		
TOTAL Thickness:	2.042		
Thickness Required by Exp. Pressure:	1.551		

	Design Depth Inches	City of Nampa Substitution Ratios
Asphaltic Concrete (at least 2.5):	**2.50**	2.20
Asphalt Treated Base (at least 4.2):	**0.00**	
Cement Treated Base (at least 4.2):	**0.00**	
Crushed Aggregate Base (at least 4.2):	**6.00**	1.00
Subbase (at least 4.2):	**16.00**	0.90

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GRAVEL EQUIVALENT METHOD – PAVEMENT THICKNESS DESIGN PROCEDURES

Pavement Section Design Location: Osprey Subdivision, Main Access Roadways

Average Daily Traffic Count:	750	All Lanes & Both Directions	
Design Life:	20	Years	
Traffic Index:	8.00		
Climate Factor:	1	**R-Value of Subgrade:**	4.00
Subgrade CBR Value:	2	**Subgrade Mr:**	3,000
R-Value of Aggregate Base:	80		
R-Value of Granular Borrow:	60		
Subgrade R-Value:	4		
Expansion Pressure of Subgrade:	1.40		
Unit Weight of Base Materials:	130		
Total Design Life 18 kip ESAL's:	371,659		
ASPHALTIC CONCRETE:			
Gravel Equivalent, Calculated:	0.512		
Thickness:	0.232727273	Use = 3 Inches	
Gravel Equivalent, ACTUAL:	0.55		
CRUSHED AGGREGATE BASE:			
Gravel Equivalent (Ballast):	1.024		
Thickness:	0.474	Use = 8 Inches	
Gravel Equivalent, ACTUAL:	1.217		
SUBBASE:			
Gravel Equivalent (Ballast):	2.458		
Thickness:	1.379	Use = 18 Inches	
Gravel Equivalent, ACTUAL:	2.567		
TOTAL Thickness:	2.417		
Thickness Required by Exp. Pressure:	1.551		

	Design Depth Inches	City of Nampa Substitution Ratios
Asphaltic Concrete (at least 2.5):	**3.00**	2.20
Asphalt Treated Base (at least 4.2):	**0.00**	
Cement Treated Base (at least 4.2):	**0.00**	
Crushed Aggregate Base (at least 4.2):	**8.00**	1.00
Subbase (at least 4.2):	**18.00**	0.90

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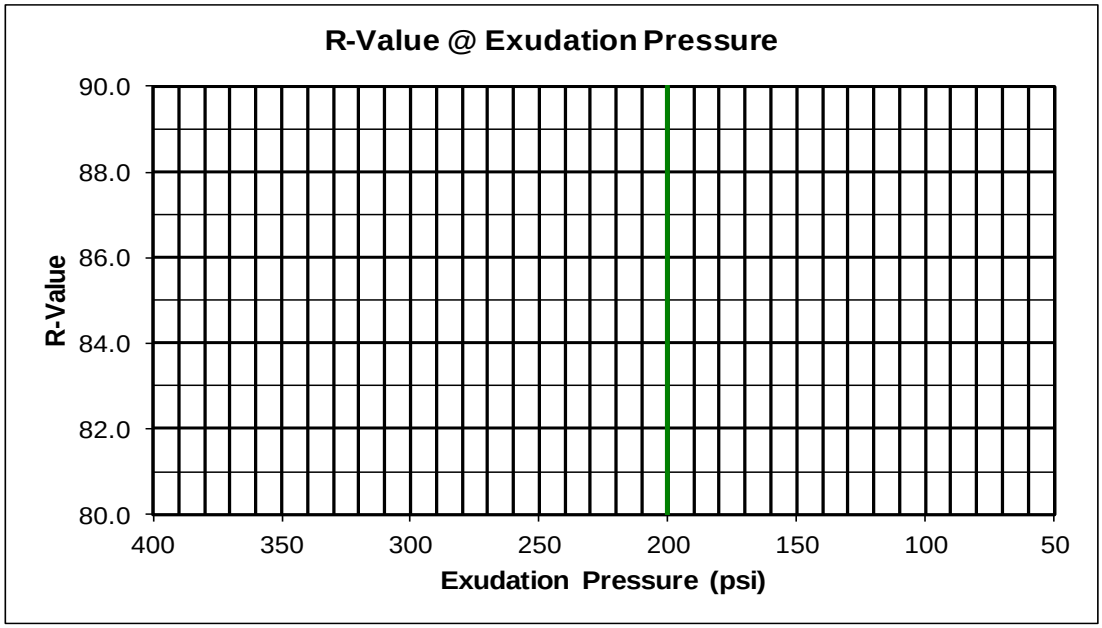
R-VALUE LABORATORY TEST DATA

Source and Description:	TP-4: 1.0' – 1.5', Lean Clay							
Date Obtained:	16 March 2018							
Sample ID:	18-7878							
Sampling and Preparation:	ASTM D75:		AASHTO T2:	X	ASTM D421:		AASHTO T87:	X
Test Standard:	ASTM D2844:		AASHTO T190:		Idaho T8:	X		

Sample	A	B	C
Dry Density (lb/ft^3)	NA	NA	NA
Moisture Content (%)	NA	NA	NA
Expansion Pressure (psi)	NA	NA	NA
Exudation Pressure (psi)	NA	NA	NA
R-Value	NA	NA	NA

R-Value @ 200 psi Exudation Pressure = Less than 5**

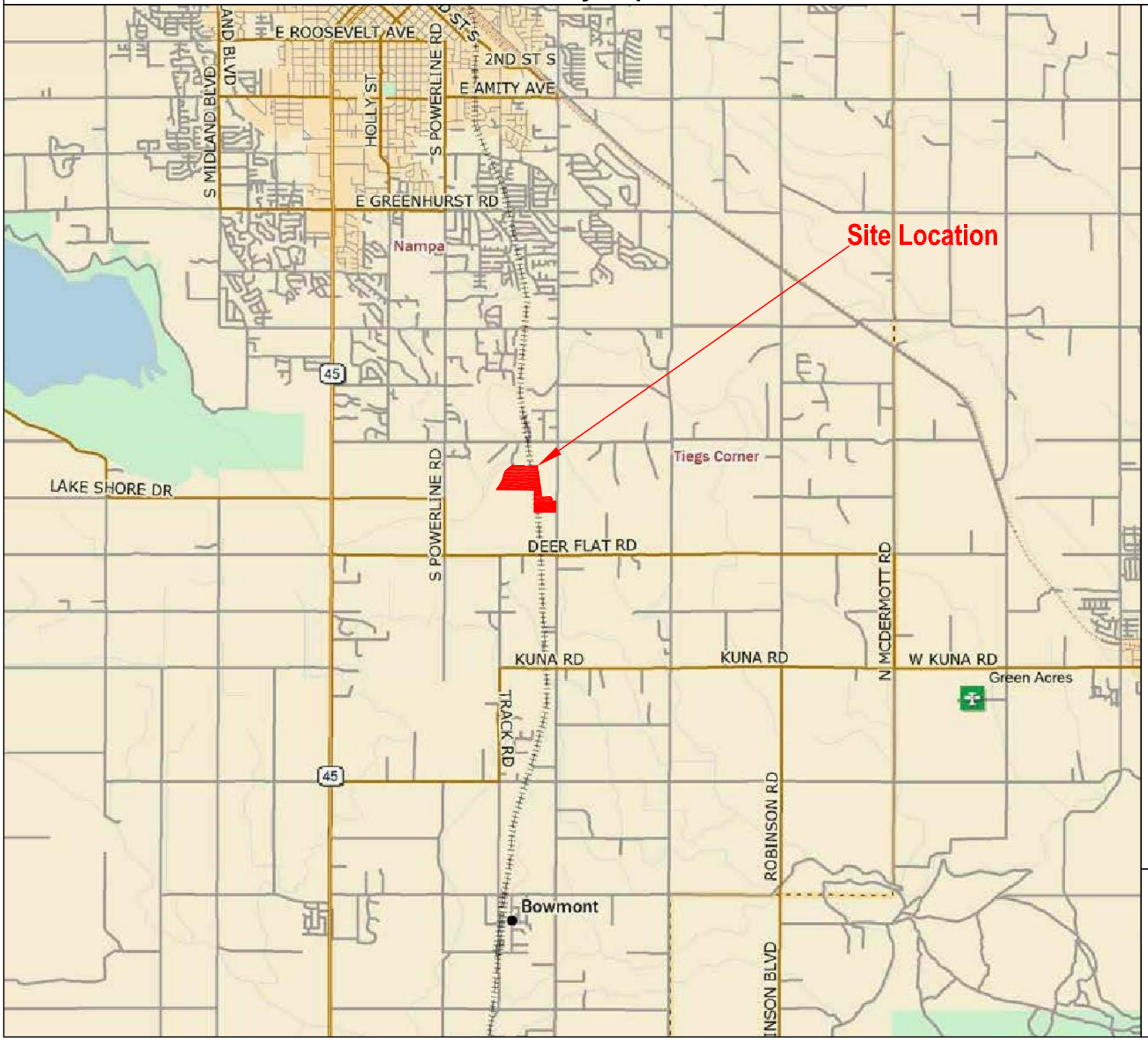
** ASTM D2844 Note 2: Occasionally, material from very plastic clay-test specimens will extrude from under the mold and around the follower ram during the loading operation. If this occurs when the 800-psi point is reached and fewer than five lights are lighted, the soil should be reported as less than 5 R-value.



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Vicinity Map

Plate 1



MAP NOTES:

- Delorme Street Atlas
- Not to Scale

LEGEND

Approximate Site Location

N

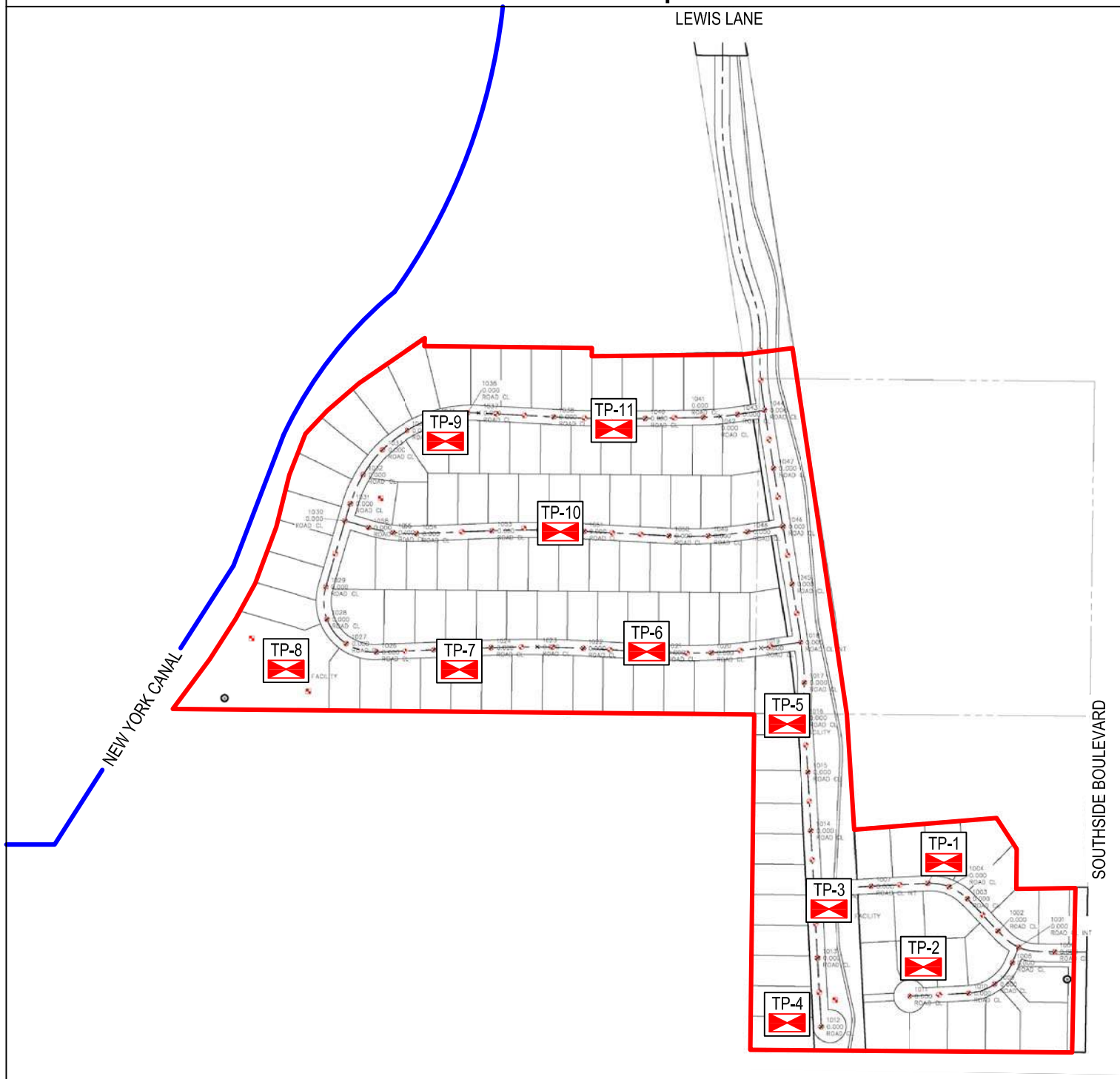
Osprey Estates Subdivision
SW of Southside Blvd and Lewis Lane
Nampa, ID

Modified from DeLorme by: JBS
1 November 2018
Drawing: B181542g

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[redacted]

Site Map

Plate 2



NOTES:

- Not to Scale

LEGEND

Approximate Site Boundary

Approximate MTI Test Pit Location

N

Osprey Estates Subdivision
SW of Southside Blvd and Lewis Lane
Nampa, ID

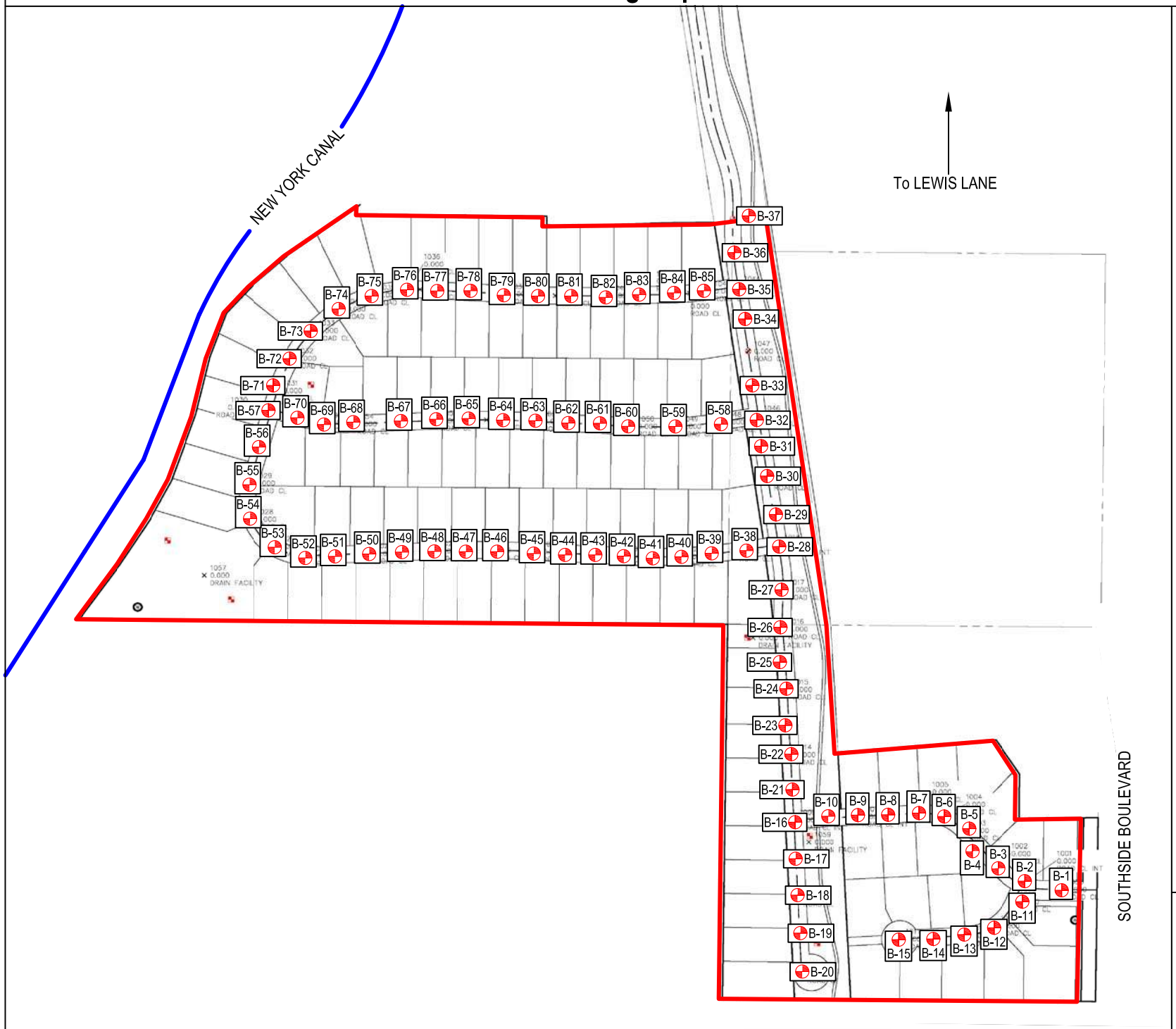
Modified by: JBS
1 November 2018
Drawing: B181542g

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Rock Boring Map

Plate 3



NOTES:

- Not to Scale

LEGEND

Approximate Site Boundary

Approximate MTI Boring Location

N

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SW of Southside Blvd and Lewis Lane
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Depth to Rock Map

Plate 4



NOTES:

- Not to Scale

LEGEND

Survey Points

Rock Depth
Feet bgs

- 0.0-3.36
- 3.37 - 5.95
- 5.96 - 8.47
- 8.48 - 11.1
- 11.2 - >12.0

N

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APPENDIX E

APPROVED STORM DRAINAGE REPORT FOR OSPREY ESTATES SUBDIVISION NO. 1

STORM DRAINAGE REPORT

for

OSPREY ESTATES SUBDIVISION NO.1

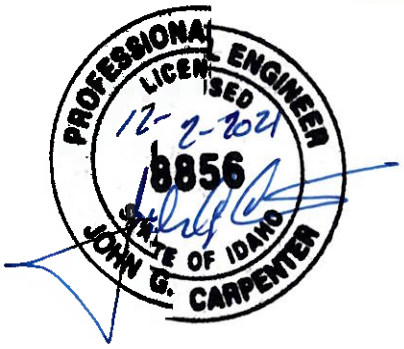
NAMPA, IDAHO

Prepared for:

The WestPark Company, Inc.
PO Box 344
Meridian, ID 83680
208-888-9940

Prepared By:

T-O ENGINEERS
332 N. Broadmore Way
Nampa, ID 83687
208-442-6300



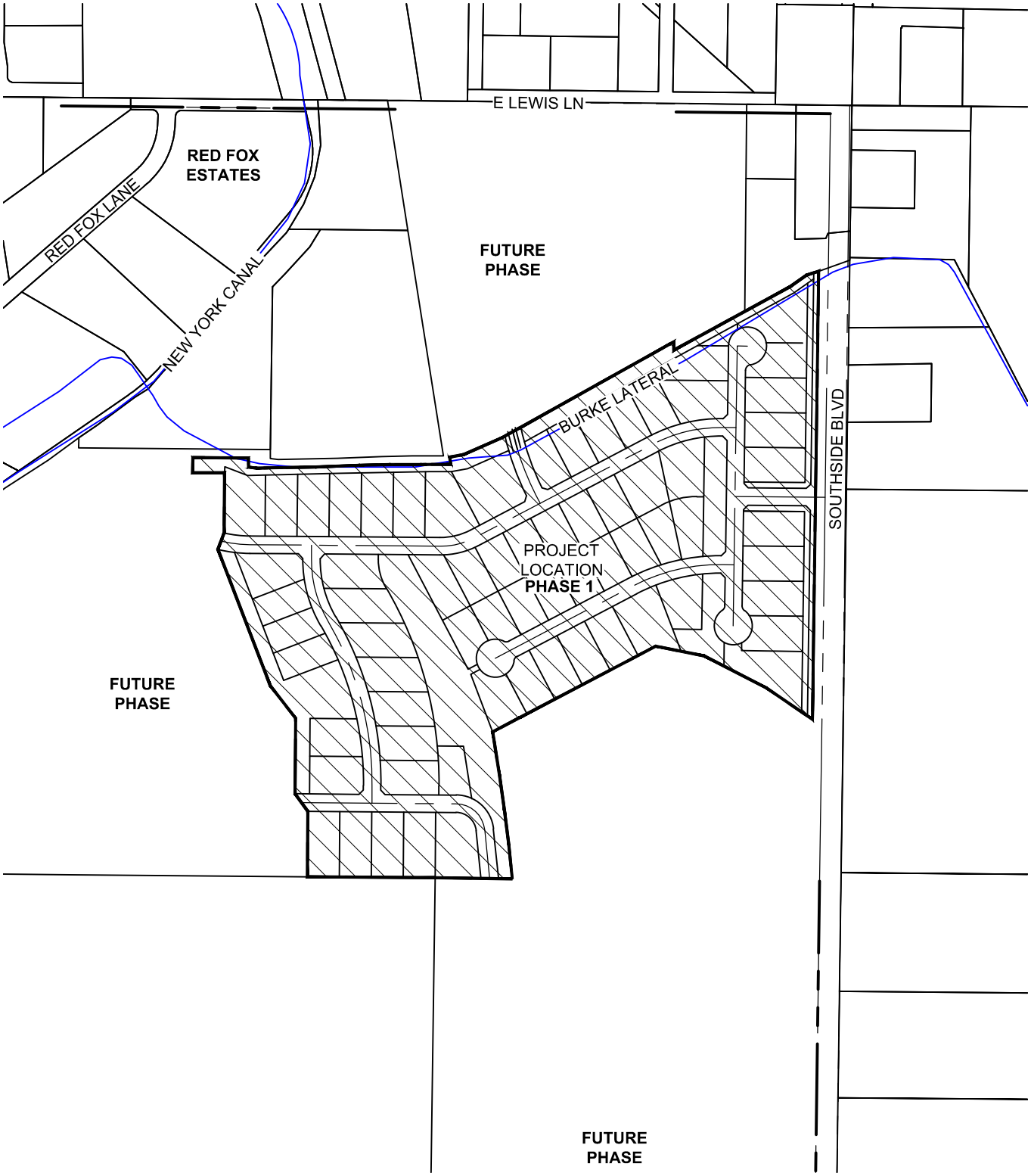
Date Prepared: March 21, 2021

T-O Project No. 180084

OSPREY ESTATES PHASE 1

FIGURE 1

VICINITY MAP



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E-FILE: 180084 - STORM DRAIN VICINITY MAP.dwg DATE: 7/21/20 JOB: 180084

L:\180084\40_Final Design\Reports and Calcs\180084 - STORM DRAIN VICINITY MAP.dwg, 7/27/2020 3:10:00 PM, Lauren Pick, DWG To PDF.pc3
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BASIN KEY

- A — BASIN A - 10.40 AC
- B — BASIN B - 17.75 AC
- C — BASIN C - 4.01 AC
- D — BASIN D - 10.20 AC
- E — BASIN E - 3.58 AC

OSPREY ESTATES SUBDIVISION PHASE 1

FIGURE 3
BASIN PLAN

N

0 125 250 500 750

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[redacted]0 WWW.TO-ENGINEERS.COM

E-FILE: 180084-C-STORM BASINS PHASE 1.dwg DATE: 3/18/21 JOB: 180084

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NOTES

1. KEYNOTES REPRESENT SUBBASIN NAMES. FOR EXAMPLE: KYNOTE A DESIGNATES THAT AREA AS SUBBASIN A.
2. SOME AREAS ACCOUNTED FOR ARE LOCATED IN FUTURE PHASES.

OSPREY ESTATES SUBDIVISION PHASE 1

FIGURE 4 SUBBASIN PLAN

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Subbasins

+ Create New Subbasin

Summary of project subbasins

Subbasin ID	Type	Total Area (acres)	Runoff Coeff.	Time of Concentration (min)	Design Storm (year)	Rainfall Intensity (in/hr)	Peak Runoff (cfs)	Drainage Point
Basin A	Post-Development	10.40	0.41	20.2	50	1.92	8.19	
Basin B	Post-Development	17.75	0.36	24.2	50	1.71	10.93	
Basin C	Post-Development	4.01	0.60	22.9	50	1.78	4.28	
Basin D	Post-Development	10.19	0.54	23.0	50	1.77	9.74	
Basin E	Post-Development	3.57	0.56	18.0	50	2.04	4.08	
Basin F	Post-Development	2.41	0.55	10.0	100	3.1	4.11	
Subbasin L	Post-Development	2.68	0.50	15.6	50	2.17	2.91	CB-7
Subbasin K	Post-Development	1.06	0.69	10.0	50	2.7	1.97	CB-2
Subbasin J	Post-Development	2.22	0.55	18.0	50	2.04	2.49	CB-1
Subbasin I	Post-Development	10.08	0.42	20.2	50	1.92	8.13	CB-6
Subbasin H	Post-Development	7.14	0.41	23.9	50	1.73	5.06	CB-8
Subbasin G	Post-Development	5.65	0.44	24.0	50	1.72	4.28	CB-5
Subbasin F	Post-Development	1.02	0.73	12.3	50	2.47	1.84	CB-12
Subbasin E	Post-Development	2.40	0.74	22.9	50	1.78	3.16	CB-4
Subbasin D	Post-Development	1.00	0.50	12.4	50	2.46	1.23	CB-3
Subbasin C	Post-Development	1.17	0.60	14.1	50	2.29	1.61	CB-10
Subbasin B	Post-Development	3.00	0.47	22.0	50	1.83	2.58	CB-11
Subbasin A	Post-Development	4.11	0.72	22.7	50	1.79	5.3	CB-9

Basin D

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Subbasin Info

Subbasin ID:	**Basin D**		Weighted C	=	0.54	
Type:	Post-Development		Manual C	=		
Total area:	10.19	acres	Calculated ToC	=	23	min
Design storm:	50	year	Manual ToC	=		min
Rainfall intensity:	1.77	in/hr				
Peak runoff:	9.74	cfs				
Drainage point:						

Time of Concentration

Calculations are based on the Velocity Method as outlined in HEC-22 §3.2.2.3

Flow Segment Type	Land Cover Description	Intercept Coefficient	Manning's Roughness	2-yr 24-hr Rainfall (in)	Length (ft)	Slope (ft/ft)	Wetted Perimeter (ft)	Velocity (ft/s)	Travel Time (min)
Open channel flow	-	-	0.009	-	550	0.005	4	29.4	0.3
Shallow concentrated flow	Paved	0.619	-	-	450	0.005	-	1.44	5.2
Sheet flow per TR-55 (<400 ft)	-	-	0.050	0.96	206	0.010	-	0.20	17.5
							Time of Concentration		**23.0**

Runoff Coefficient

Land Use Description	Runoff Coefficient	Area (acres)	Area %
Roof	0.95	1.81	18%
Pavement and concrete	0.90	1.54	15%
Pavement and concrete	0.90	1.49	15%
Vegetative landscaped area	0.20	5.35	53%
Weighted C	**0.54**		**101%**

Subbasin Info

Subbasin ID:	**Basin E**		Weighted C	=	0.56	
Type:	Post-Development		Manual C	=		
Total area:	3.57	acres	Calculated ToC	=	18	min
Design storm:	50	year	Manual ToC	=		min
Rainfall intensity:	2.04	in/hr				
Peak runoff:	4.08	cfs				
Drainage point:						

Time of Concentration

Calculations are based on the Velocity Method as outlined in HEC-22 §3.2.2.3

Flow Segment Type	Land Cover Description	Intercept Coefficient	Manning's Roughness	2-yr 24-hr Rainfall (in)	Length (ft)	Slope (ft/ft)	Wetted Perimeter (ft)	Velocity (ft/s)	Travel Time (min)
Open channel flow	-	-	0.009	-	12	0.008	1	14.8	0.0
Shallow concentrated flow	Paved	0.619	-	-	498	0.018	-	2.72	3.1
Sheet flow per TR-55 (<400 ft)	-	-	0.050	0.96	169	0.010	-	0.19	14.9
							Time of Concentration		**18.0**

Runoff Coefficient

Land Use Description	Runoff Coefficient	Area (acres)	Area %
Roof	0.95	0.59	17%
Pavement and concrete	0.90	0.21	6%
Pavement and concrete	0.90	1.00	28%
Vegetative landscaped area	0.20	1.75	49%
Weighted C	**0.56**		**100%**

Subbasin A

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Subbasin Info

Subbasin ID:	**Subbasin A**		Weighted C	=	0.72	
Type:	Post-Development		Manual C	=		
Total area:	4.11	acres	Calculated ToC	=	22.7	min
Design storm:	50	year	Manual ToC	=		min
Rainfall intensity:	1.79	in/hr				
Peak runoff:	5.30	cfs				
Drainage point:	CB-9					

Time of Concentration

Calculations are based on the Velocity Method as outlined in HEC-22 §3.2.2.3

Flow Segment Type	Land Cover Description	Intercept Coefficient	Manning's Roughness	2-yr 24-hr Rainfall (in)	Length (ft)	Slope (ft/ft)	Wetted Perimeter (ft)	Velocity (ft/s)	Travel Time (min)
Open channel flow	-	-	0.009	-				0.0	
Shallow concentrated flow	Paved	0.619	-	-	450	0.005	-	1.44	5.2
Sheet flow per TR-55 (<400 ft)	-	-	0.050	0.96	206	0.010	-	0.20	17.5
							Time of Concentration		**22.7**

Runoff Coefficient

Land Use Description	Runoff Coefficient	Area (acres)	Area %
Roof	0.95	0.34	8%
Vegetative landscaped area	0.20	1.10	27%
Pavement and concrete	0.90	0.13	3%
Pavement and concrete	0.90	2.53	62%
Weighted C	**0.72**		**100%**

Subbasin C

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Subbasin Info

Subbasin ID:	**Subbasin C**		Weighted C	=	0.60	
Type:	Post-Development		Manual C	=		
Total area:	1.17	acres	Calculated ToC	=	14.1	min
Design storm:	50	year	Manual ToC	=		min
Rainfall intensity:	2.29	in/hr				
Peak runoff:	1.61	cfs				
Drainage point:	CB-10					

Time of Concentration

Calculations are based on the Velocity Method as outlined in HEC-22 §3.2.2.3

Flow Segment Type	Land Cover Description	Intercept Coefficient	Manning's Roughness	2-yr 24-hr Rainfall (in)	Length (ft)	Slope (ft/ft)	Wetted Perimeter (ft)	Velocity (ft/s)	Travel Time (min)
Open channel flow	-	-		-					
Shallow concentrated flow	Paved	0.619	-	-	490	0.005	-	1.44	5.7
Sheet flow per TR-55 (<400 ft)	-	-	0.050	0.96	82	0.010	-	0.16	8.4
							Time of Concentration		**14.1**

Runoff Coefficient

Land Use Description	Runoff Coefficient	Area (acres)	Area %
Roof	0.95	0.14	12%
Pavement and concrete	0.90	0.05	4%
Vegetative landscaped area	0.20	0.51	44%
Pavement and concrete	0.90	0.47	40%
Weighted C	**0.60**		**100%**

Design Criteria

Max velocity	=	8	ft/s	Min. diameter	=	12	in
Min. slope	=	0.002	ft/ft	Max length	=	400	ft
Max slope	=	0.05	ft/ft	Min. cover	=	2	ft

Conveyance pipe calculations

Pipe ID	Dia. (in)	Mat.	Manning's *n*	Design Storm	Slope (ft/ft)	Length (ft)	Trib. Area (acres)	ToC (min)	Runoff Coeff.	Full-Flow Capacity (cfs) Q_{Full}	Design Flow (cfs) Q_0	Q_0/Q_{Full}	Full-Flow Vel. (ft/s)	Up Node	Down Node	Up Inv.	Down Inv.	Up Cover	Down Cover
P1	15	PVC	0.009	50	0.0040	34	2.7	10.00	0.69	*5.90*	*5.03*	*0.85*	4.81	CB-2	CB-1	2558.09	2557.95	1.91	2.05
P2	15	PVC	0.009	50	0.0084	11.924	2.2	18.00	0.55	*8.55*	*7.51*	*0.88*	6.97	CB-1	SGT-1	2557.95	2557.85	2.05	1.87
P3	12	PVC	0.009	50	0.0040	33.989	1.0	12.40	0.54	*3.25*	*1.33*	*0.41*	4.14	CB-3	CB-4	2558.32	2558.18	2.17	2.31
P4	12	PVC	0.009	50	0.0091	10.99	2.4	22.90	0.74	*4.91*	*4.49*	*0.91*	6.25	CB-4	SGT-2	2558.18	2558.08	2.31	3.05
P5	15	PVC	0.009	50	0.0040	50.32		22.93	0.74	*5.90*	*4.49*	*0.76*	4.81	SGT-2	SDMH-3	2557.68	2557.48	3.20	3.62
P6	15	PVC	0.009	50	0.0040	33.99	7.1	23.90	0.41	*5.90*	*5.02*	*0.85*	4.81	CB-8	CB-7	2564.93	2564.79	2.17	2.31
P7	15	PVC	0.009	50	0.0091	11.01	2.7	15.60	0.50	*8.90*	*7.95*	*0.89*	7.25	CB-7	SGT-3	2564.79	2564.69	2.31	2.46
P8	18	PVC	0.009	50	0.0040	293.47		23.93	0.50	*9.60*	*7.95*	*0.83*	5.43	SGT-3		2564.29	2563.12	2.61	
P9	15	PVC	0.009	50	0.0065	15.31	5.7	24.00	0.44	*7.52*	*4.31*	*0.57*	6.13	CB-5	SGT-4	2563.03	2562.93	1.75	2.19
P10	15	PVC	0.009	50	0.0084	58		24.04	0.44	*8.55*	*4.31*	*0.50*	6.97	SGT-4		2562.53	2562.04	2.59	
P11	18	PVC	0.009	50	0.0069	14.5	10.1	20.20	0.42	*12.60*	*8.16*	*0.65*	7.13	CB-6	SGT-5	2565.80	2565.70	2.36	2.72
P12	18	PVC	0.009	50	0.0045	21.85		20.23	0.42	*10.18*	*8.16*	*0.80*	5.76	SGT-5		2565.30	2565.20	3.12	
P13	15	PVC	0.009	50	0.0040	34.01	4.1	22.70	0.72	*5.90*	*5.28*	*0.89*	4.81	CB-9	CB-10	2568.56	2568.42	2.17	2.31
P14	15	PVC	0.009	50	0.0143	13.98	1.2	22.70	0.60	*11.16*	*6.93*	*0.62*	9.09	CB-10	SGT-6	2566.21	2566.01	4.52	2.25
P15	18	PVC	0.009	50	0.0040	214.56		22.73	0.72	*9.60*	*6.93*	*0.72*	5.43	SGT-6	SDMH-1	2565.61	2564.75	2.40	2.02
P16	18	PVC	0.009	50	0.0053	256.21		23.39	0.72	*11.05*	*6.93*	*0.63*	6.25	SDMH-1	SDMH-2	2564.75	2563.39	2.02	2.00
P17	18	PVC	0.009	50	0.0040	59		23.42	0.72	*9.60*	*6.93*	*0.72*	5.43	SDMH-2		2563.39	2563.15	2.00	
P18	15	PVC	0.009	50	0.0040	34	3.0	22.00	0.47	*5.90*	*2.58*	*0.44*	4.81	CB-11	CB-12	2563.93	2563.79	2.17	2.31
P19	15	PVC	0.009	50	0.0081	12.38	1.0	22.00	0.73	*8.40*	*4.38*	*0.52*	6.84	CB-12	SGT-7	2563.80	2563.70	2.30	1.83
P20	15	PVC	0.009	50	0.0040	44.66		22.03	0.73	*5.90*	*4.38*	*0.74*	4.81	SGT-7		2563.40	2563.22	2.13	

Design Criteria

Max throat velocity	=	0.5	ft/s
Min. baffle spacing	=	20	in

Sand and grease trap calculations

SGT ID	No. of SGTs	Size (gal)	Baffle Width (in)	Baffle Spacing (in)	Throat Area (sf)	Inflow (cfs)	Throat Velocity (ft/s)
SGT-1	2	1500	63	20	17.5	7.5	0.43
SGT-2	2	1000	51	20	14.2	4.5	0.32
SGT-3	2	1500	63	20	17.5	8.0	0.46
SGT-4	1	1500	63	20	8.8	4.3	0.49
SGT-5	2	1500	63	20	17.5	8.2	0.47
SGT-6	2	1000	51	20	14.2	6.9	0.49
SGT-7	2	1000	51	20	14.2	4.4	0.31

Canyon County Development Services
111 North 11th Avenue, #310
Caldwell, Idaho 83605
www.canyoncounty.id.gov
208-454-7458

AFFIDAVIT OF LEGAL INTEREST

I, OE Development, LLC (name), P.O Box 344 (address)

Meridian (city), ID (state), 83680 (zip code)

being first duly sworn upon oath, depose and say:

1. That I am the owner of record of the property described on the attached application and I grant my permission to

Ardurra (name), 332 N. Broadmore Way (address)

to submit the accompanying application pertaining to the subject property.

2. I agree to indemnify, defend and hold Canyon County and its employees harmless from any claims to liability resulting from any dispute as to the statements contained herein or as to the ownership of the property, which is the subject of the application.

Dated this 30th day of April, 20 25.

(signature), its Manager

STATE OF IDAHO)
ss
COUNTY OF CANYON)

On this 30th day of April, in the year 2025, before me Debbie A. Taylor, a notary public, personally appeared Larry Squires, personally known to me to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same.

DEBBIE A TAYLOR NOTARY PUBLIC Comm No. 58428 STATE OF IDAHO

Notary:

My Commission Expires: 4/30/2029

FINAL PLAT
PUBLIC HEARING - CHECKLIST

FINAL PLAT - CCZO Section 07-02-03

THE FOLLOWING ITEMS MUST BE SUBMITTED WITH THIS APPLICATION TO BE DEEMED COMPLETE (PLEASE CHECK OFF THE ITEMS REQUIRED):

Description	Applicant	Staff
Master Application completed and signed	✓	
Copy of Final Plat: 1 Hard Copy, 1 Digital	✓	
Final Drainage Plan, if applicable	✓	
Final Irrigation Plan, if applicable	✓	
Final Grading Plan, if applicable	✓	
Completed Final Plat Checklist	✓	
As-Built or Record Drawings if applicable CCZO §07-17-29(3)		
Condition Compliance Proof (Conditional Rezone/D.A.)		
Proof of approval from:		
Southwest District Health	✓	
Irrigation District	✓	
Fire District	✓	
Highway District/ Idaho Transportation Dept.	✓	
City Impact Area	✓	
Bonding Instructions	✓	
Deed or evidence of property interest to the subject property	✓	
Fee: $1000.00 **+$10.00/lot** **+$100.00 for Area of City Impact**	✓	
Fees are non-refundable		

*DISCLAIMER: The subject property shall be in compliance with the public nuisance ordinance, the building code and the zoning code before the Director can accept the application.

NOTES:

1. Any conditions of approval given during the rezoning or preliminary plat process, if applicable, must be addressed as part of submittal materials to ensure condition compliance is met.
2. Evidence that all improvements have been completed or bonded per CCZO §07-17-29(4) must be submitted after construction drawing approval and before the final plat signature by the Board of County Commissioners.

CANYON COUNTY DEVELOPMENT SERVICES DEPARTMENT
111 North 11th Avenue, #310, Caldwell, ID 83605
zoninginfo@canyoncounty.id.gov - Phone: 208-454-7458
Revised 3/30/23



Canyon County, 111 North 11th Avenue, #310, Caldwell, ID 83605

▪ Engineering Division ▪

Final Plat Check-List

Applicant: OE Development LLC	**Case Number:**
Subdivision Name: Osprey Estates Subdivision No. 3	**Plat Date:**

CANYON COUNTY CODE OF ORDINANCES 07-17-13 (1-6)

The information hereinafter required as part of the preliminary plat submitted shall be shown graphically or by note on plans, and may comprise several sheets showing various elements or required data.

1. METHOD & MEDIUM OF PRESENTATION	**Meets Code / Comments**
A. All plats to be recorded shall be prepared on a drafting medium in accordance with Requirements of Idaho Code Title 55, Chapter 19, paragraph (1) for Records of Survey Maps.	✓
B. The plat shall be drawn to an accurate scale of not more than one hundred feet to an inch (1"=100') unless otherwise approved by DSD *prior to submission*.	✓
C. The final plat drawing shall be additionally submitted in digital form approved by the Director.	✓
2. IDENTIFICATION DATA REQUIRED	
A. A title which includes the name of the subdivision and its location by number of section, township, range and county shall be placed together at one location at the top of the sheet and generally centered.	✓
B. Name, address and official seal of the surveyor preparing the plat.	✓
C. North arrow.	✓
D. Date of preparation.	✓
E. Revision block showing dates of any revisions subsequent to the original preparation date. The revision block shall be part of the title block which shall be placed along the right edge of the drawing.	✓

3. SURVEY DATA REQUIRED	**<u>Meets Code / Comments</u>**
A. Boundaries of the tract to be subdivided and the interior lots are to be fully balanced and closed, showing all bearings and distances determined by an accurate survey in the field. All dimensions shall be expressed in feet and decimals thereof. • *Check boundary measurements on plat with legal description measurements, verify they are the same* • *Request closure report be sent along with final plat when it gets routed to the County Surveyor. Closure report should include the metes and closure error ratio for each individual lot and the metes and closure error ratio for the exterior boundary of the subdivision.*	✓
B. Any excepted lots within the plat boundaries shall show all bearings and distances determined by an accurate survey in the field. All dimensions shall be expressed in feet and decimals thereof.	✓
C. Basis of bearing on the plat shall be referenced. • *Make sure it matches the legal description* • *Reference to point of beginning*	✓

4. DESCRIPTIVE DATA REQUIRED	**<u>Meets Code / Comments</u>**
A. Name, right-of-way lines, courses, lengths, width of all private and public streets, alleys, pedestrian ways and utility easements.	✓
B. All drainage ways.	
C. All easements provided for public services or utilities and any limitations of the easements. • Applicable description for easements	✓
D. All lots and blocks shall be numbered throughout the plat in accordance with Idaho Code. "Exceptions", "tracts", and "private parks" shall be so designated, lettered or named and clearly dimensioned.	✓
E. All sites to be dedicated to the public will be indicated and the intended use specified.	✓
F. All roads must be labeled as either "private" or "public" behind or beneath the road name.	✓
G. The area of each lot shall be stated in acres and decimals thereof.	
H. The statement from Idaho Code 22-4503 or any later amended statutory language shall appear on all final plats located in a zone where agricultural uses are allowed or permitted.	✓
I. A note as to the type of sewage disposal facilities to be provided.	✓

J. A note as to the type of water supply facilities to be provided.	✓
K. Required section and quarter-section line setbacks.	✓
5. DEDICATION AND ACKNOWLEDGMENT	**Meets Code / Comments**
A. A statement of dedication of all streets, alleys, pedestrian ways and other easements for public use by the person holding title of record and by person holding title as vendees under land contract.	✓
B. Acknowledgement of dedication: The dedication referred to in Section 07-18-17 of this Chapter shall be in the form of a certificate acknowledged in accordance with Idaho Code 50-1309.	✓
6. REQUIRED CERTIFICATIONS	**Meets Code / Comments**
A. Landowner's signature.	
B. Certification by a surveyor stating that the plat is correct and accurate and that the monuments described in it have been located as described. *Make sure stamp is signed and dated.*	
C. Certification of plat approval by the County Surveyor.	
D. Certification of plat approval by the Board.	
E. Approval or certification of comment by impacted agencies that may include: Highway Districts, Health Department, the City when the development is in an area of City Impact, Treasurer, Recorder, and State and Federal agencies having jurisdiction.	

AGENCY ACKNOWLEDGMENT

Date: 4/30/2025

Applicant: OE Development LLC

Parcel Number: PO Box 344, Meridian ID 83680

Site Address: 0 E LEWIS LN

SIGNATURES DO NOT INDICATE APPROVAL OR COMPLETION OF OFFICIAL REVIEW.

The purpose of this form is to facilitate communication between applicants and agencies so that relevant requirements, application processes, and other feedback can be provided to applicants early in the planning process. Record of communication with an agency regarding the project can be submitted instead of a signature. After the application is submitted, impacted agencies will be sent a hearing notification by DSD staff and will have the opportunity to submit comments.

Southwest District Health:

☐ Applicant submitted/met for informal review.

Date: _____ Signed: See attached email

Authorized Southwest District Health Representative
(This signature does not guarantee project or permit approval)

Fire District: District: Nampa Highway District #1

☒ Applicant submitted/met for informal review.

Date: _____ Signed: See attached email

Authorized Fire District Representative
(This signature does not guarantee project or permit approval)

Highway District: District: Nampa Fire District

☒ Applicant submitted/met for informal review.

Date: _____ Signed: See attached review letter

Authorized Highway District Representative
(This signature does not guarantee project or permit approval)

Irrigation District: District: Nampa-Meridian Irrigation District

☒ Applicant submitted/met for informal review.

Date: _____ Signed: See attached approval letter

Authorized Irrigation Representative
(This signature does not guarantee project or permit approval)

Area of City Impact City: Nampa

☒ Applicant submitted/met for informal review.

Date: _____ Signed: See attached email

Authorized AOCI Representative
(This signature does not guarantee project or permit approval)

DISCLAIMER: THIS ACKNOWLEDGMENT IS ONLY VALID SIX MONTHS FROM THE DATE ISSUED

AGENCY LOCATION AND CONTACT		
Southwest District Health		
Address		Phone Number
13307 Miami Lane, Caldwell		(208) 455-5400
Highway Districts		
Agency	Address	Phone Number
Canyon	15435 ID-44, Caldwell	(208) 454-8135
Golden Gate	500 Golden Gate Ave. E, Wilder	(208) 482-6267
Nampa	4507 12th Ave Road, Nampa	(208) 467-6576
Notus-Parma	106 S. 4th Str., Parma	(208) 722-5343
Idaho Transportation Department		
Address		Phone Number
11331 W. Chinden Blvd., Boise		(208) 334-8300
Fire Districts		
Agency	Address	Phone Number
Caldwell Rural	310 S. Seventh Ave., Caldwell	(208) 402-1041
Homedale Rural	120 S. Main St., Homedale	(208 337-3450
Kuna Rural	150 W. Boise St., Kuna	(208) 922-1144
Marsing Rural	303 Main St., Marsing	(208) 896-4796
Melba Rural	408 Carrie Rex, Melba	(208) 495-2351
Middleton Rural	302 E. Star Blvd., Middleton	(208) 585-6650
Nampa Rural	820 Second Str. South, Nampa	(208) 468-5770
Parma Rural	29200 HWY 95, Parma	(208) 722-6753
Star Rural	11665 State Str., Suite B, Star	(208) 286-7772
Upper Deer Flat Rural	9500 Missouri Ave., Nampa	(208) 466-3589
Wilder Rural	601 Patriot Way, Wilder	(208) 482-7563
Irrigation Districts		
Agency	Address	Phone Number
Famer Cooperative Ditch Co/Si	PO Box 69, Parma	(208) 722-2010
Farmers Union Ditch Co	PO Box 1474, Eagle	(208) 870-7919
Black Canyon	474 Elgin Ave., Notus	(208) 459-4141
Boise-Kuna	129 N. School Ave., Kuna	(208) 922-5608
Boise project Board of Control	2465 Overland Road, Boise	(208) 344-1141
Eureka	21766 Howe Road, Caldwell	(208) 250-8000
Franklin Ditch Co	3401 W. Pine Ave., Meridian	(208) 466-3819
Middleton Mill Ditch Co	PO Box 848, Middleton	(208) 585-3207
Nampa-Meridian	1503 1st Str. South, Nampa	(208) 466-7861
New York	6616 W. Overland Road, Boise	(208) 378-1023
Pioneer	3804 S. Lake Ave., Caldwell	(208) 459-3617
Pioneer-Dixie	19724 Dixie River Road, Caldwell	(208) 454-1559
Riverside	PO Box 180, Greenleaf	(208) 722-2010
Settlers	PO Box 7571, Boise	(208) 343-5271
Siebenberg Cooperative Ditch Co	PO Box 642, Parma	kchamberlain.fcdc@gmail.com
Wilder	709 Cleveland Blvd., Caldwell	(208) 459-3421
Mason Creek Ditch Co	1905 Mason Rd., Caldwell	johnmcavoy48@yahoo.com
Poor Boy Ditch Co	PO Box 395, Greenleaf	(208) 407-7681 (F) 498-9690
Canyon County Water Co./Flake Ditch	PO Box 11/PO Box 6, Star	(208) 455-1735
City Impact Area		
Agency	Address	Phone Number
Caldwell	621 Cleveland Blvd., Caldwell	(208) 455-3000
Nampa	500 12th Ave. S., Nampa	(208) 468-4430
Middleton	1103 W. Main St., Middleton	(208) 585-3133
Parma	305 N. 3rd St., Parma	(208) 722-5138
Melba	401 Carrie Rex Ave., Melba	(208) 495-2722
Greenleaf	20523 Whittier Dr., Greenleaf	(208) 454-0552
Notus	375 Notus Road, Notus	(208) 459-6212
Homedale	31 W. Wyoming Ave., Homedale	(208) 337-4641
Star	10769 W. State St., Star	(208) 286-7247
Wilder	107 4th St., Wilder	(208) 482-6204

DISCLAIMER: THIS ACKNOWLEDGMENT IS ONLY VALID SIX MONTHS FROM THE DATE ISSUED



Canyon County, 1115 Albany Street, Caldwell, ID 83605
(208) 454 7458 ▪ (208) 454 6633 Fax ▪ DSDInfo@canyonco.org ▪ www.canyonco.org/dsd

This letter is to inform you of Canyon County requirements regarding subdivision improvements.

Canyon County requires that all subdivision improvements must be either bonded or completed and certified by a registered professional engineer prior to the Board of County Commissioner's signature on the final plat.

Subdivision improvements consist of curbs, gutters, sidewalks, streetlights, paving, roads, irrigation, water, and sewer systems, and any other amenities within the subdivision.

If said items are completed prior to the Board's signature on the final plat, you must submit a letter from a registered professional engineer certifying that all improvements are constructed per code requirements and are completed. This letter must be stamped (sealed) by the engineer making the certification.

If said items are not going to be completed prior to the Board's signature on the final plat, they must be bonded.

Bonding Procedure (Canyon County Zoning Ordinance 07-17-29(4):

- Developer obtains three (3) contractor bids for the estimated cost to construct the improvements.
- Developer obtains a bond, irrevocable letter of credit, or other acceptable form of guarantee in the amount of 120% of the highest of the three (3) bid amounts.
- Developer will submit the three (3) contractor bids and the bond, irrevocable letter of credit, or other acceptable form of guarantee in the amount of 120% of the highest of the three (3) bid amounts to Development Services Department (DSD).
- If the internal roads are to be public, the Developer must bond these roads with the Highway District having jurisdiction and submit a copy of the bond to DSD.
- DSD forwards these items to the Canyon County Prosecuting Attorney's Office for legal review.
- Prosecuting Attorney reviews and approves bonding submittals.
- DSD will secure the bonding instrument.
- DSD requests a hearing date before the BOCC to consider signing the Final Plat.
- DSD will release the bond only upon written request from the DSD Director. This will only occur when DSD has received a letter from a registered professional engineer certifying that all improvements included in the bond are complete. This letter must be stamped (sealed) by the engineer making the certification. The bonded improvements shall be constructed within two (2) years from the date of recordation of the final plat; provided, however, the Board may extend the period one year upon showing of just cause by the developer.

- The scheduling of any payment to the developer will be in accordance with the County's current claim and payment schedule.

NAMPA HIGHWAY DISTRICT NO. 1

February 25, 2025

Ardurra
C/O J.D. Lyle
332 Broadmore Wy.
Nampa, ID. 83687

RE: Osprey Estates Subdivision #3 Construction Drawings Review

Dear J.D.,

As requested, we have completed a review of the Construction Drawings for the Osprey Estates Subdivision #3. The following comments relating to this development are based on the Highway Standards & Development Procedures for the Association of Canyon County Highway Districts:

Sheet C0.01-General Note #2 – Include the Nampa Highway District #1 Supplementals.

Sheet C0.01-Sewer Note #1 – Include the Nampa Highway District #1 Supplementals.

Sheet C0.01-Sewer Note #6 – Include Nampa Highway District #1". 48" minimum depth.

Sheet C0.01-Sewer Note #12 – Add per 2022 ACCHD Standards Manual, Sec. 4000-600.1 and 600.2.

Sheet C0.01-Storm Drainage Note #1 – Include the Nampa Highway District #1 Supplementals.

Sheet C0.01-Storm Drainage Note #2 – C900 shall be installed within roadway section.

Sheet C0.01-Storm Drainage Note #5 – A variance request will be required for seepage beds per Sec. 3070.050.

Sheet C0.01-Storm Drainage Note #6 – There is no General Note #24.

Sheet C0.01-Water Note #5 – Add "Per ACCHD Standards".

4507 12th Avenue Road, Nampa, ID 83686 Phone (208) 467-6576 Fax (208) 467-9916

Sheet C0.01-Water Note #15 - Include the Nampa Highway District #1 Supplementals.

Sheet C0.01-Water Note #19 – Add 2022 ACCHD Standards Manual sec. 4000.600.1 and 600.2.

Sheet C0.01-Roadway Note #1 – Add per 2022 ACCHD Standards Manual.

Sheet C0.01-Roadway Note #4 – Add Nampa Highway District #1 Supplementals.

Sheet C0.01-Roadway Note #11 – Note should read Highway District or Nampa Highway District #1

Sheet C0.01-P.I. Note #1 – Include the Nampa Highway District #1 Supplementals.

Sheet C0.01-P.I. Note #11 – Add “48” minimum cover in road right-of-way”.

Sheet C1.00-Plat Note #5 – Storm drainage note shall read exactly as written in Sec. 3070.100.

Sheet C1.00 – Add plat plat note stating subject to License Agreement Inst. #2023-009978.

Sheet C3.00 – No barricade at the end of Red Kite St.

Sheet C3.00 – Section 3064.010 – Water valves appear to be in the wheel path.

Sheet C3.00 – Section 3065.010 – Sewer valves appear to be in the wheel path.

Sheet C3.00 – P.I. crossing sleeve shall extend beyond the road right-of-way.

Sheet C3.00 – Section 3066.020 – All Crossings shall be as close to 90 degrees to the roadway centerline as practical and in no case shall the skew be greater than 20 degrees from perpendicular. P.I. crossings to not meet this standard.

Sheet C3.00 – Section 3070.050.A.3 – Design infiltration rates shall be based on percolation tests conducted by the Applicants Engineer at the location of the proposed subsurface drainage facility, but in no case shall a rate exceeding 8” per hour be used. We need to see perc tests at the pond sites.

Sheet C5.00 – Storm drain pipe should be C900.

4507 12th Avenue Road, Nampa, ID 83686 Phone (208) 467-6576 Fax (208) 467-9916

Sheet C5.01 – Top of Storm drain pipe is at subgrade level. It should be deeper than, or at least 24” deep.

Sheet C5.04 – Section 3070.050 – Subsurface (Infiltration) storm water disposal: Subsurface storm water disposal methods (Including dry wells and seepage beds) may only be used in special circumstances where approved by the District. The District’s approval shall be based on an analysis prepared by the Applicants Engineer of all other possibilities for disposal of storm water and determination that there is no other feasible alternate to subsurface disposal. A variance request will be required.

Sheet C6.00 – Section 3064.010 – Water valves appear to be in the wheel path.

Sheet C6.00 – Section 3065.010 – Sewer valves appear to be in the wheel path.

Sheet C6.00 – Storm drain pipe should be C900.

Sheet C6.00 – Section 3066.020 - All Crossings shall be as close to 90 degrees to the roadway centerline as practical and in no case shall the skew be greater than 20 degrees from perpendicular. P.I. crossings to not meet this standard.

Sheet C6.01– Section 3064.010 – Water valves appear to be in the wheel path.

Sheet C6.01 – Storm drain pipe should be at least 24” deep.

Sheet C6.01 – Storm drain pipe should be C900.

Sheet C6.02 – Section 3064.010 – Water valves appear to be in the wheel path.

Sheet C6.02 - Section 3065.010 – Sewer valves appear to be in the wheel path.

Sheet C60.02 – Section 3066.020 - All Crossings shall be as close to 90 degrees to the roadway centerline as practical and in no case shall the skew be greater than 20 degrees from perpendicular. P.I. crossings to not meet this standard.

Sheet C6.03 – Section 3064.010 – Water valves appear to be in the wheel path.

Sheet C6.03 - Section 3065.010 – Sewer valves appear to be in the wheel path.

Sheet C7.00 – Section 3066.020 - All Crossings shall be as close to 90 degrees to the roadway centerline as practical and in no case shall the skew be greater than 20 degrees from perpendicular. P.I. crossings to not meet this standard.

4507 12th Avenue Road, Nampa, ID 83686 Phone (208) 467-6576 Fax (208) 467-9916

Drainage Comment – Per Sec. 3070.090 – Design infiltration rates shall be based on percolation tests conducted by the Applicants Engineer at the location of the proposed infiltration facility.

General Comment – Throughout the plans it appears to show valves in the wheel path. Per Sec. 3064.010 and 3065.010, no valves or manholes are allowed in the wheel path.

General Comment – Please provide comments from the City of Nampa to incorporate into our comments.

We recommend these comments be addressed prior to approval of the Final Plat. If you have any questions or need additional information, please give us a call.

Sincerely,

Eddy Thiel
Right-of-Way Tech

4507 12th Avenue Road, Nampa, ID 83686 Phone (208) 467-6576 Fax (208) 467-9916

ORGANIZED 1904

Nampa & Meridian Irrigation District

1503 FIRST STREET SOUTH
FAX #208-463-0092

NAMPA, IDAHO 83651-4395
nmid.org

OFFICE: Nampa 208-466-7861
SHOP: Nampa 208-466-0663

March 31, 2025

J.D. Lyle
Ardurra
322 N. Broadmore Way
Nampa, Id. 83687
O: 208-442-6300
[redacted]

RE: Osprey Sub No. 3, PUIS Connection Burke Lateral, Date Stamp 01/08/2025
NMID #2025.001

Dear J.D.,
Nampa & Meridian Irrigation District (NMID) has finished its review of this proposed project in Nampa, Idaho to connect to the District's Osprey Estates Pump #91 adjacent to the Burke Lateral. The Burke Lateral easement is a minimum fifty feet (50') total with twenty-five feet (25') on each side of centerline.

Plans indicate that all storm water will be retained on site with no encroachments identified in the easement. A tube steel fence will be placed on the southern limits of the easement. Pressurized irrigation will be provided by a connection to the Osprey Estates Pump #91 with a full operations and maintenance contract with upgrades to the pump as required by the Water Superintendent. Landscape plans submitted with date stamp 01/15/2025 show no proposed landscaping in the easement.

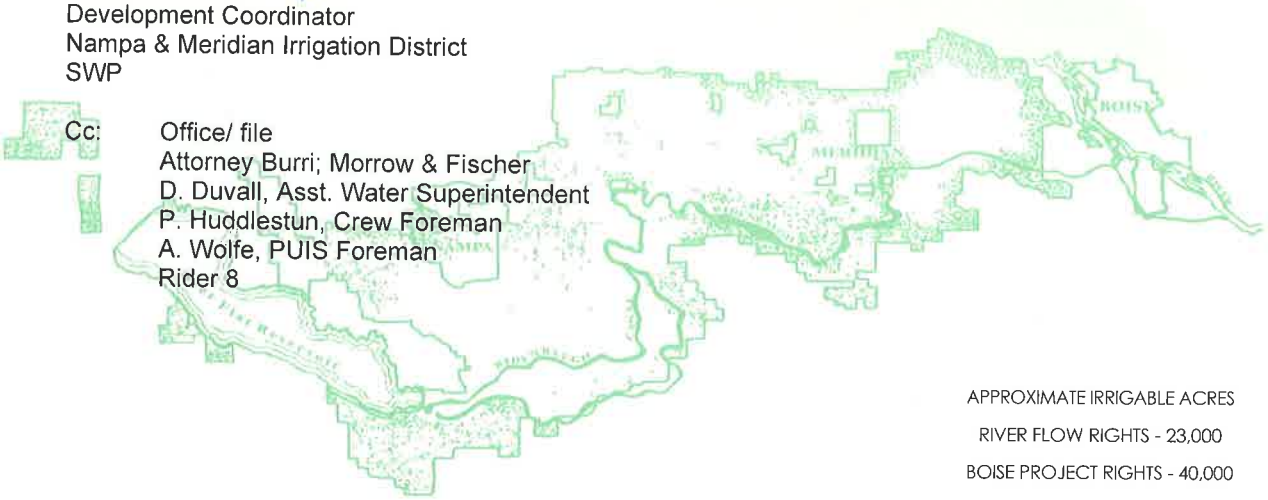
This PUIS connection will be acceptable to NMID providing an Urban Contract is obtained for the delivery of pressurized irrigation water. Please contact Attorney Laura Burri at (208) 475-2200, with Morrow & Fischer, Address: 4 Ogden Ave. Nampa, ID 83651 and ask that she prepare this document. It must be presented to and approved by the District before any work begins. **Please coordinate all pressurized irrigation construction, upgrades and connections with Alex Wolfe at NMID by calling the shop at 208-466-0663 with a minimum 72 hour notice for on-site inspections and meetings.**

Should you have any further questions regarding this letter, please give me a call at 208-466-0663.

Sincerely,

Steve Pardew
Development Coordinator
Nampa & Meridian Irrigation District
SWP

Cc: Office/ file
Attorney Burri; Morrow & Fischer
D. Duvall, Asst. Water Superintendent
P. Huddlestun, Crew Foreman
A. Wolfe, PUIS Foreman
Rider 8



APPROXIMATE IRRIGABLE ACRES
RIVER FLOW RIGHTS - 23,000
BOISE PROJECT RIGHTS - 40,000

FINDINGS, CONCLUSIONS, & ORDER

Osprey Estates Subdivision, SD2019-0036

1. T-O Engineers, on behalf of Westpark Company Inc., submitted a Preliminary Plat for Osprey Estates Subdivision proposing 202 lots (184 residential lots, 17 common lots and 1 community sewer lot) to be served by city water and community sewer treatment facility and to be completed in four phases (Attachment C). The properties totaling 147.65 acres are located adjacent to 9601 Southside Boulevard and 2525 E. Lewis Lane, Nampa; also referenced as a portion of the NE & SE¼ of Section 14, Township 2N, Range 2W; Canyon County, Idaho.
2. The property is currently zoned "A" (Agricultural). The "R-1" zone (Single Family Residential) is being considered concurrent with this preliminary plat request (CR2019-0009).
3. The subdivision contains 184 residential lots on approximately 147 acres (Attachment A).
4. The average residential lot size is 0.53 acres.
5. Approximately 119 acres of the subject property is located within the Nampa Area of City Impact. The comment letter from the City of Nampa's finds the project consistent with Nampa's subdivision requirements and landscaping requirements. City review included review of the submitted Traffic Impact Study, Geotechnical Report, Storm Drainage Report and Landscaping Plan (Attachments B, D, E & F). See Attachment G for Nampa's review, requirements and conditions of approval.
6. The subdivision will connect to and extend the City of Nampa water system. The City's system has sufficient capacity to serve this development. Water mains in Southside Blvd. and E. Lewis Lane shall be 12" while internal mains shall be 8". As a condition of approval, the developer shall enter into an agreement with the City of Nampa to connect to city water services (Attachment G).
7. The subject property is located within Nampa & Meridian Irrigation District (NMID). The Irrigation District does not oppose the plat subject to conditions of approval (Attachment H). The preliminary plat proposes pressurized irrigation to all residential lots (Attachment A).
8. The subdivision proposes to construct a private community wastewater collection and treatment system. The system will require permitting through the Idaho Department of Environmental Quality and Southwest District Health. The system will be designed to accommodate the residential subdivision with future option to connection to city sanitary services when sanitary services are available. Typical sewer services and mainlines will be located within the internal public roads. As a condition of approval, the Developer, Nampa Highway District No. 1, and the City shall enter into a joint agreement for construction and maintenance of public roads and public/private utilities within the public right-of-way (Attachment G).
9. A Preliminary Strom Drainage Report was provided (Attachment D). Storm drainage will be directed to engineered storage percolation ponds. All drainage will remain on-site. The proposed drainage plan and report was reviewed by the City of Nampa. The report demonstrates consistency with Nampa design standards. "However, drainage Facility G is reflected as having a historical discharge. If this is the case, final plans will need to reflect where this release is being conveyed to. Any discharge to an Irrigation District managed drain will require a License Agreement for the discharge. In addition, detention facilities need to be designed in accordance with Section 113 of the Nampa Drainage Policy, including inflow and outflow hydrograph analysis" (Attachment G).
10. The subject property is located within the Nampa Highway District #1. The proposed plat shows three access points into the proposed subdivision (Attachment A). Nampa Highway District #1 approved an access variance to allow new access points on arterial roads. As a result of the variance, the two access points along Southside Boulevard will require turn lanes in order not to impede traffic when entering and exiting the subdivision. The variance also requires the Developer, Nampa Highway District No. 1, and the City shall enter into a joint

agreement for construction and maintenance of public roads and public/private utilities within the public right-of-way (Attachment G).

11. The development is not located within a mapped floodplain (Flood Zone X).

12. Notice of the public hearing was provided in accordance with CCZO §07-05-01. Agency and City of Nampa notice was provided on July 13, 2020. A full political notice was provided on March 13, 2020. Newspaper notice was provided on July 17, 2020. Property owners within 300' were notified by mail on July 13, 2020 and June 2, 2020. The property was posted on July 28, 2020.

13. The record includes all testimony, the staff report, exhibits, and documents in Case File No. OR2019-0009, CR2019-0009 and SD2019-0036.

Conclusions of Law

Section 07-17-09(5): Board Action:

A. The board shall consider the commission's recommendation at a noticed public hearing.

B. The board shall base its findings upon the evidence presented at the board's public hearing, and within thirty (30) calendar days declare its findings. It may sustain, modify or reject the recommendations of the commission and make such findings as are consistent with the provisions of this chapter and the Idaho Code. The findings shall specify:

1. The ordinance and standards used in evaluating the application;

2. The reasons for approval or denial; and

3. If denied, the actions, if any, that the applicant could take to gain approval of the proposed subdivision.

On June 17, 2020, the Planning and Zoning Commission recommend approval of the plat subject to conditions of approval as enumerated below. The plat consistent with the following subject to conditions of approval:

- Idaho Code, Sections 67-6509 and 67-6513 (Subdivisions, Hearings, Decisions);
- Idaho Code, Sections 50-1301 through 50-1329 (Platting);
- Idaho Code, Section 31-3805 (Irrigation);
- Canyon County Zoning Ordinance, Chapter 7, Article 17 (Subdivision Regulations); and
- Canyon County Code, Chapter 9, Article 11 (Area of City Impact, Nampa)

The preliminary plat was reviewed by DSD staff and Keller Associates, County consulting surveyor and engineer (attachment J) and City of Nampa Engineering Division (Attachment G). All conditions of approval have been applied to the list of conditions enumerated below.

Conditions of Approval

1. All subdivision improvements (public roads, community wastewater system, city water, irrigation, and drainage facilities) and amenities shall be bonded or completed prior to the Board of County Commissioner's signature on the final plat at each phase. Prior to installation of improvements, a construction plan must be reviewed and approved by the County engineer. The construction plans shall incorporated all recommendations of the Geotechnical Evaluation Report (Attachment F). Upon installation of improvements, a letter of certification shall be submitted from a licensed professional engineer demonstrating the improvements were installed per the approved construction plans.

2. Finish grades at subdivision boundaries shall match existing finish grades (Attachment J).

3. Prior to final plat approval, a final storm drainage report and plans shall be submitted. Review by the City of Nampa Engineering Division is required (Attachment G).

4. The development shall comply with Nampa & Meridian Irrigation District requirements (Attachment H). Historic irrigation lateral, drain, and ditch flow patterns shall be maintained and protected. Modification shall be approved in writing by Nampa & Meridian Irrigation District.

5. The private community sewer treatment system shall comply with Idaho Department of Environmental Quality (DEQ) and Southwest District Health requirements. Prior to Final Plat approval of each phase, DEQ and

Southwest District Health shall review the community wastewater system to ensure capacity and necessary improvements are made to accommodate each phase of the subdivision.

6. The development shall comply with all applicable standards and variance requirements of Nampa Highway District #1.
7. The development shall comply with subdivision requirements and conditions requested by the City of Nampa (Attachment G).
8. Prior to Final Plat approval of Phase 3 (Attachment C), the parcels that make up Phase 3 (Parcels R29554013 and R29554013A) shall be located within the Nampa Area of City Impact.
9. Prior to Final Plat approval for each phase, the Developer/Applicant shall work with Nampa School District to ensure residential lots are served by Ronald Reagan Elementary, East Valley Middle School and Columbia High School through a school boundary amendment and that safe bus waiting areas are identified and established (Attachment I).
10. Development of the property shall be in compliance with Idaho Department of Environmental Quality requirements and BMPs for dust control during construction and stormwater pollution prevention plan.
11. Easements for sewer/water facilities will be required where placed outside of public right of way (Attachment J)

Order

Based upon the Findings of Fact, Conclusions of Law contained herein for Case No. SD2019-0036, the Board of County Commissioners **approves** the Preliminary Plat, Irrigation, and Drainage Plans for Osprey Estates Subdivision subject to the conditions of approval as enumerated herein.

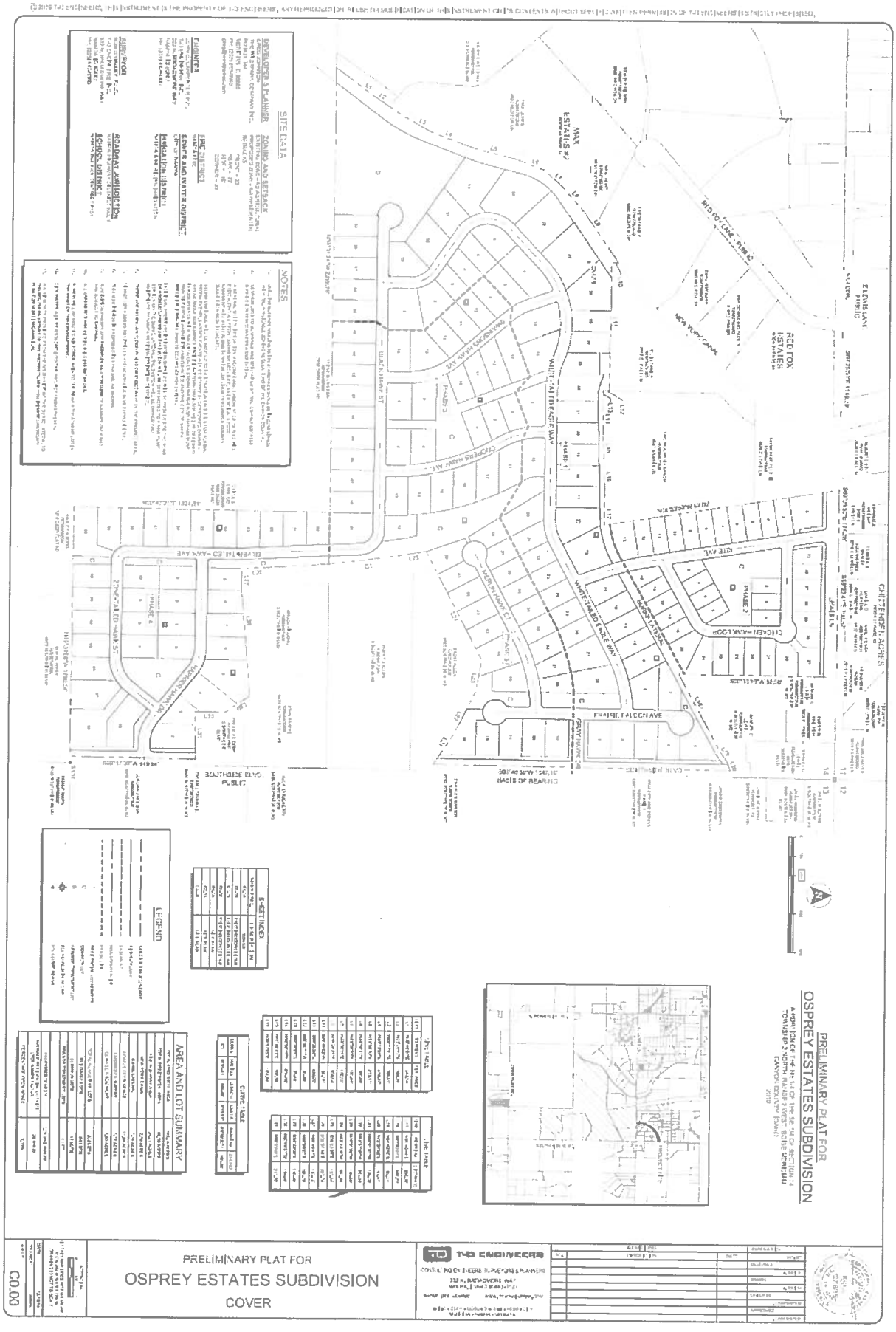
APPROVED this 4 day of August, 2020.

	Yes	No	Did Not Vote
Commissioner Pamela White	✓		
Commissioner Tom Dale	✓		
Commissioner Leslie Van Beek			

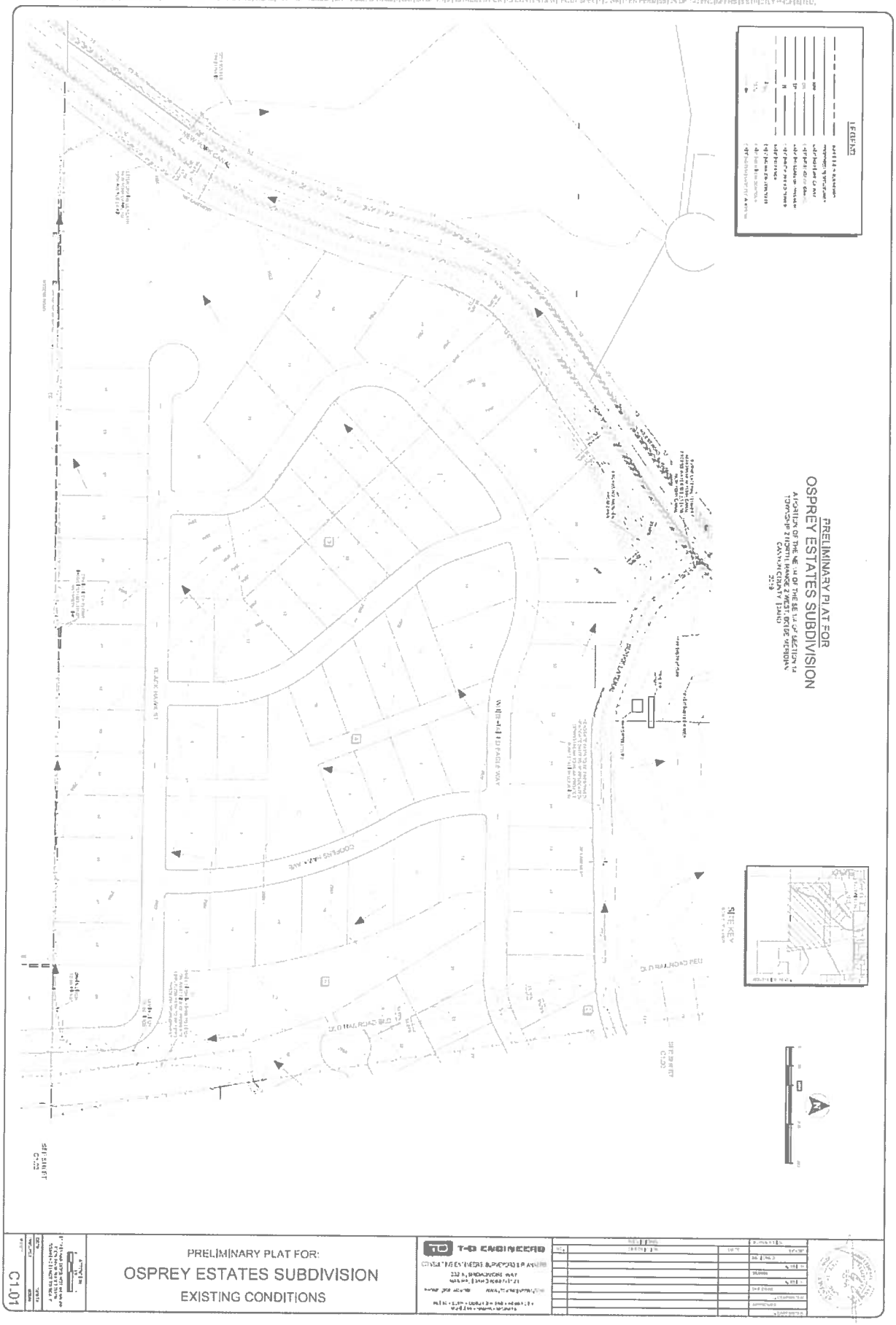
Attest: Chris Yamamoto, Clerk

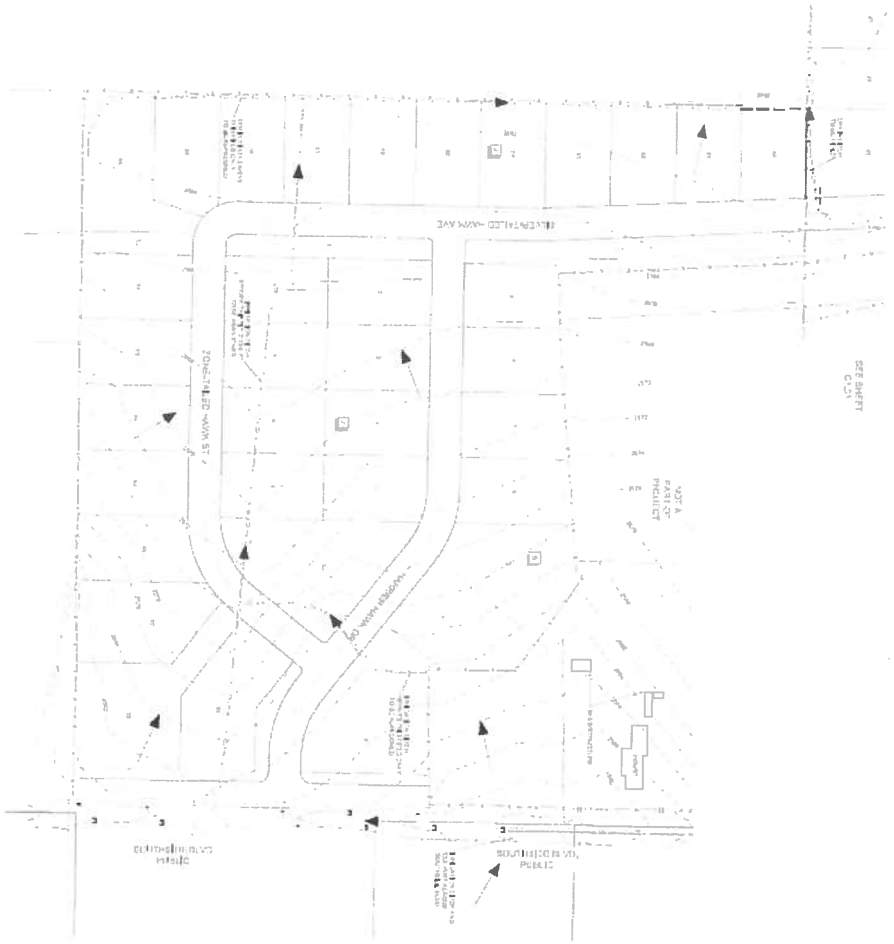
By: _____ Date: 8-4-20
Deputy

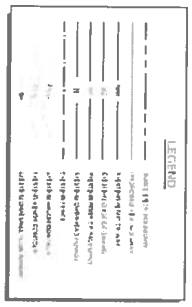
ATTACHMENT A

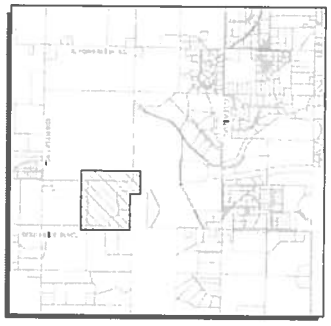


PRELIMINARY PLAT FOR
OSPREY ESTATES SUBDIVISION
LEGEND
SITE AREA
OLD RAILROAD BED
PRAIRIE FALCON AVE
SOUTHSIDE BLVD
PRELIMINARY PLAT FOR:
OSPREY ESTATES SUBDIVISION
EXISTING CONDITIONS
C1.00


PRELIMINARY PLAT FOR
OSPREY ESTATES SUBDIVISION
PRELIMINARY PLAT FOR:
OSPREY ESTATES SUBDIVISION
EXISTING CONDITIONS
C1.01







PRELIMINARY PLAT FOR
OSPREY ESTATES SUBDIVISION



PRELIMINARY PLAT FOR:
OSPREY ESTATES SUBDIVISION
EXISTING CONDITIONS

T-O ENGINEERS

PRELIMINARY PLAT FOR
OSPREY ESTATES SUBDIVISION
SITE PLAN
T-D ENGINEER
C2.00

PRELIMINARY PLAT FOR
OSPREY ESTATES SUBDIVISION
PHASE 1
PHASE 3
NOTES
SITE KEY
PRELIMINARY PLAT FOR:
T-O ENGINEERS

PHASE 4
NOTES
LEGEND
PRELIMINARY PLAT FOR
OSPREY ESTATES SUBDIVISION
PRELIMINARY PLAT FOR:
OSPREY ESTATES SUBDIVISION
SITE PLAN
T-D ENGINEER
C2.02

ATTACHMENT B

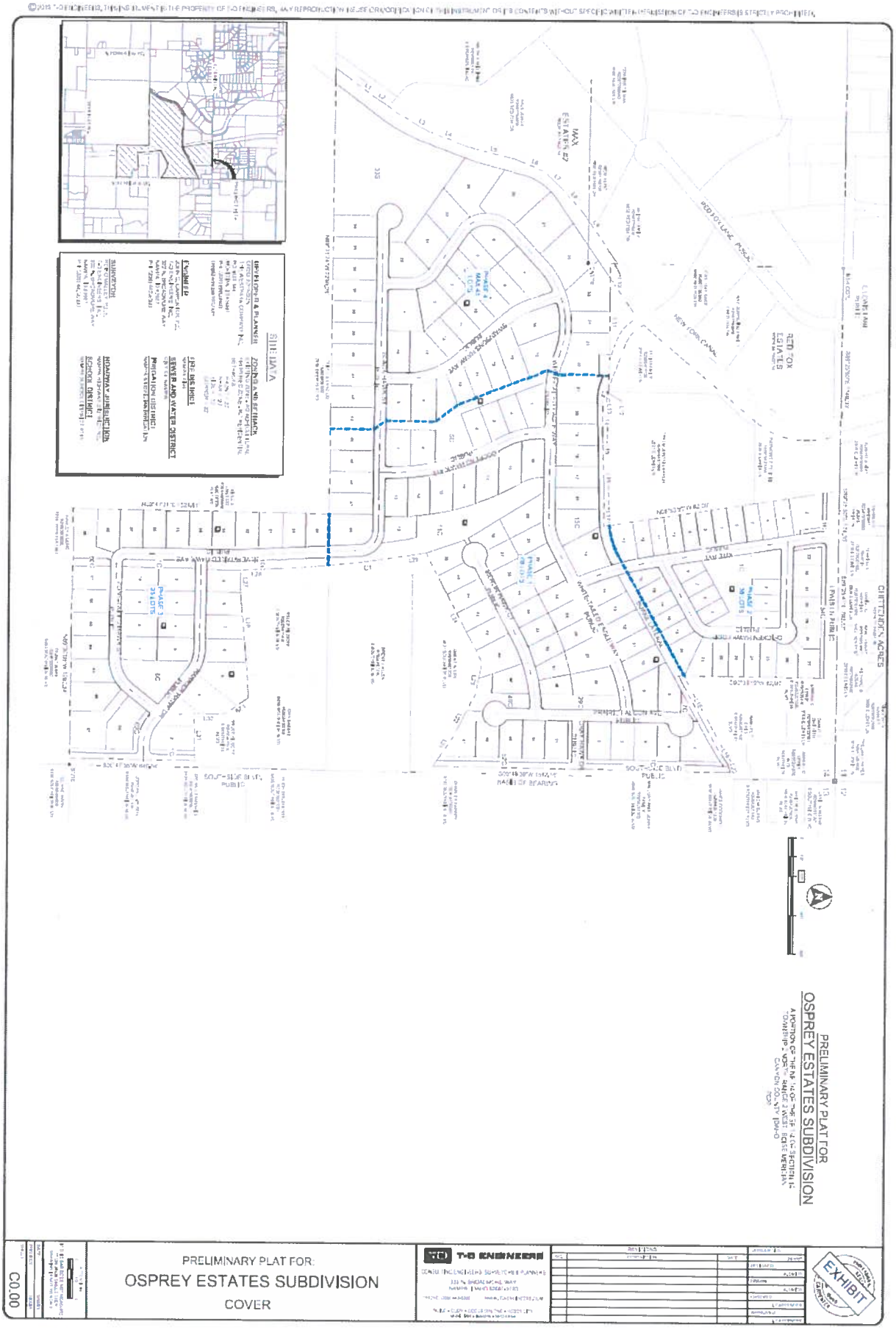
DRYLAND SEEDING REQUIREMENTS
PLANT SCHEDULE
LANDSCAPE REQUIREMENTS
LANDSCAPE LEGEND
CALLOUT LEGEND
KEY MAP
LANDSCAPE PLAN - AREA ONE
OSPREY MEADOWS SUBDIVISION
E LEWIS LN AND SOUTHSIDE BLVD
NAMPA, IDAHO 83686
LANDSCAPE PLAN - AREA ONE
BRECKON
L1.1
PRELIMINARY PLAT

PLANT SCHEDULE
LANDSCAPE REQUIREMENTS
LANDSCAPE PLAN - AREA TWO
KEY MAP
LANDSCAPE LEGEND
CALLOUT LEGEND
OSPREY MEADOWS SUBDIVISION
E LEWIS LN AND SOUTHSIDE BLVD
NAMPA, IDAHO 83686
LANDSCAPE PLAN - AREA TWO
BRECKON
L12

PLANT SCHEDULE
LANDSCAPE REQUIREMENTS
SHRUB PLANTING
PERENNIAL & GROUNDCOVER PLANTING
PLANTER BED CUT EDGE
LANDSCAPE PLAN - AREA THREE
KEY MAP
LANDSCAPE LEGEND
CALLOUT LEGEND
OSPREY MEADOWS SUBDIVISION
E LEWIS LN AND SOUTHSIDE BLVD
NAMPA, IDAHO 83686
LANDSCAPE PLAN - AREA THREE
BRECKON
L1.3

PLANT SCHEDULE
LANDSCAPE REQUIREMENTS
SOUTHSIDE BLVD BUFFER
E LEWIS LN BUFFER
EXTERIOR FENCING REQUIREMENTS
1 DECIDUOUS TREE PLANTING
2 CONIFEROUS TREE PLANTING
1 LANDSCAPE PLAN - AREA FOUR
KEY MAP
LANDSCAPE LEGEND
CALLOUT LEGEND
OSPREY MEADOWS SUBDIVISION
E LEWIS LN AND SOUTHSIDE BLVD
NAMPA, IDAHO 83686
LANDSCAPE PLAN - AREA FOUR
BRECKON
L1.4

ATTACHMENT C



ATTACHMENT D

Preliminary Storm Drainage Report

for

Osprey Estates Subdivision

Canyon County, ID

Prepared for:

The Westpark Company Inc.
PO box 344
Meridian, ID 83680
208-888-9940

Prepared By:

T-O ENGINEERS
332 N. Broadmore Way, Suite 101
Nampa, ID 83687
[redacted]



Date Prepared: 12/18/2019

Storm Drainage Summary

The following is a summary of the preliminary storm drainage design for the proposed Osprey Estates Subdivision. Osprey Estates is a single-family residential development consisting of approximately 146 acres south and west of the intersection of Southside Boulevard and Lewis Lane.

The site is currently composed of two drainage basins. Irrigation and storm runoff north of the Burke Lateral flows to the northwest corner of the property, where it is carried across Lewis Ln via a culvert before releasing into the New York Canal. Irrigation and storm runoff south of the Burke Lateral generally flows towards a drainage ditch located along the southern boundary of basins D and E, before passing under the New York canal and into the 12th Ave drain. See Figure 1 for more information.

Storm runoff will be contained on site in seven separate storage facilities. Historical release into existing drainage ditches may be maintained where possible. The proposed locations of the storage facilities, as well as their contributing basins can be seen in Figure 2.

The storage facilities for this development will be mixed-use percolation ponds, except for one percolation pond/percolation bed combination. See Table 1 for a summary of the proposed storage facilities.

Table 1

STORAGE FACILITY SUMMARY						
Name	Req' Storage (CF)	Surface Storage (CF)	Subsurface Storage (CF)	Total Storage (CF)	Max Side Slope	Historical Release (CFS)
Facility A	45,209	46,645	-	46,645	4:1	-
Facility B	26,827	30,169	-	30,169	4:1	-
Facility C	38,005	39,417	-	39,417	4:1	-
Facility D	76,010	83,579	-	83,579	4:1	-
Facility E	49,183	50,661	-	50,661	4:1	-
Facility F	15,401	18,480	-	18,480	4:1	-
Facility G*	38,336	30,824	8,234	39,058	4:1	0.9

*Composed of two hydraulically-connected storage facilities

Facility volumes were calculated using the modified rational method with a 15% increase in volume for sedimentation per the City of Nampa's Stormwater Design Standards. See Figure 3 for volume calculations.

This design is preliminary and subject to updates during final design. The storm drainage facilities shown on the plans are worst case scenarios for footprint and depth. Final design will seek to minimize ponding and make the open spaces as usable as feasible. All facilities will be designed in accordance with the most recent version of the City of Nampa's Stormwater Design Standards.

Figure 1 – Existing Conditions Map

OSPREY ESTATES SUBDIVISION

EXISTING DRAINAGE MAP



Figure 2 – Proposed Conditions Map

OSPREY ESTATES SUBDIVISION

PROPOSED PRELIMINARY DESIGN MAP



DRAINAGE BASIN SUMMARY		
BASIN	C VALUE	AREA
A	0.44	19.4 AC
B	0.44	10.5 AC
C	0.41	22.3 AC
D	0.41	33.7 AC
E	0.40	16.8 AC
F	0.43	7.5 AC
G	0.40	22.7 AC

LEGEND

PROPOSED FLOW DIRECTION

FLOOD ROUTING DIRECTION

Figure 3 – Volume Calculations

+ Create New Storage Facility

General

Facility ID:	**Facility A**
Detention/Retention:	Retention
Facility description:	Storage for Basin A
Design storm:	100 year
Contributing subbasin ID:	Basin A
Tributary area:	19.40 acres
Runoff coefficient:	0.44

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	6197.136 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MTI
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Draining elevation:	2395.0 ft
Percolation area:	20790 sf

Outlet

Outlet device ID:	
Overflow elevation:	ft
Release from outlet device:	cfs
Allowable release:	0.00 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	19.40	26.46	0.0	0.48	25.98	15588	17926	10.4
15	2.60	19.40	22.19	0.0	0.48	21.71	19539	22470	13.0
20	2.33	19.40	19.89	0.0	0.48	19.41	23292	26786	15.5
25	2.07	19.40	17.67	0.0	0.48	17.19	25785	29653	17.2
30	1.80	19.40	15.36	0.0	0.48	14.88	26784	30802	17.8
35	1.68	19.40	14.34	0.0	0.48	13.86	29106	33472	19.4
40	1.57	19.40	13.40	0.0	0.48	12.92	31008	35659	20.6
45	1.45	19.40	12.38	0.0	0.48	11.90	32130	36950	21.4
50	1.33	19.40	11.35	0.0	0.48	10.87	32610	37502	21.7
55	1.22	19.40	10.41	0.0	0.48	9.93	32769	37684	21.8
60	1.10	19.40	9.39	0.0	0.48	8.91	32076	36887	21.3
120	0.63	19.40	5.38	0.0	0.48	4.90	35280	40572	23.5
180	0.45	19.40	3.84	0.0	0.48	3.36	36288	41731	24.1
360	0.27	19.40	2.30	0.0	0.48	1.82	39312	45209	26.2
720	0.14	19.40	1.20	0.0	0.48	0.72	31104	35770	20.7
1440	0.09	19.40	0.77	0.0	0.48	0.29	25056	28814	16.7

Facility A

T·O ENGINEERS

+ Create New Storage Facility

General

Facility ID:	**Facility A**
Detention/Retention:	Retention
Facility description:	Storage for Basin A
Design storm:	100 year
Contributing subbasin ID:	Basin A
Tributary area:	19.40 acres
Runoff coefficient:	0.44

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	6197.136 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MTI
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Draining elevation:	2395.0 ft
Percolation area:	20790 sf

Outlet

Outlet device ID:	
Overflow elevation:	ft
Release from outlet device:	cfs
Allowable release:	0.00 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	19.40	26.46	0.0	0.48	25.98	15588	17926	10.4
15	2.60	19.40	22.19	0.0	0.48	21.71	19539	22470	13.0
20	2.33	19.40	19.89	0.0	0.48	19.41	23292	26786	15.5
25	2.07	19.40	17.67	0.0	0.48	17.19	25785	29653	17.2
30	1.80	19.40	15.36	0.0	0.48	14.88	26784	30802	17.8
35	1.68	19.40	14.34	0.0	0.48	13.86	29106	33472	19.4
40	1.57	19.40	13.40	0.0	0.48	12.92	31008	35659	20.6
45	1.45	19.40	12.38	0.0	0.48	11.90	32130	36950	21.4
50	1.33	19.40	11.35	0.0	0.48	10.87	32610	37502	21.7
55	1.22	19.40	10.41	0.0	0.48	9.93	32769	37684	21.8
60	1.10	19.40	9.39	0.0	0.48	8.91	32076	36887	21.3
120	0.63	19.40	5.38	0.0	0.48	4.90	35280	40572	23.5
180	0.45	19.40	3.84	0.0	0.48	3.36	36288	41731	24.1
360	0.27	19.40	2.30	0.0	0.48	1.82	39312	45209	26.2
720	0.14	19.40	1.20	0.0	0.48	0.72	31104	35770	20.7
1440	0.09	19.40	0.77	0.0	0.48	0.29	25056	28814	16.7

Storage

Total depth:	3.0 ft
Total storage:	46645 cf
Max 100-year WSE:	2.00
Freeboard:	1.0 ft
Volume retained:	46645 cf
Percent retained:	100%

Design Checks

Freeboard: *1.0' provided, min. 1.0' req'd* OK

Drain time: *26.2 hrs provided, max 72 hrs allowed* OK

First-flush: *46645 CF retained, min. 6197.136 CF req* OK

Stage storage table

Contour Elev. (ft)	Contour Area (SF)	Incremental Depth (ft)	Void Ratio	Incremental Vol. (CF)	Cumulative Vol. (CF)	Stage Description
0.00	20790	0	0%	0	0	Bottom
2.00	25950	2.00	100%	46645	46645	WSEL

Facility B

T-O ENGINEERS

+ Create New Storage Facility

General

Facility ID:	**Facility B**
Detention/Retention:	Retention
Facility description:	Storage for basin B
Design storm:	100 year
Contributing subbasin ID:	Basin B
Tributary area:	10.50 acres
Runoff coefficient:	0.44

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	3354.12 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MT1
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Draining elevation:	2395.0 ft
Percolation area:	7195 sf

Outlet

Outlet device ID:	
Overflow elevation:	ft
Release from outlet device:	cfs
Allowable release:	0.00 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	10.50	14.32	0.0	0.17	14.15	8490	9764	16.0
15	2.60	10.50	12.01	0.0	0.17	11.84	10656	12254	20.0
20	2.33	10.50	10.76	0.0	0.17	10.59	12708	14614	23.9
25	2.07	10.50	9.56	0.0	0.17	9.39	14085	16198	26.5
30	1.80	10.50	8.32	0.0	0.17	8.15	14670	16871	27.6
35	1.68	10.50	7.76	0.0	0.17	7.59	15939	18330	30.0
40	1.57	10.50	7.25	0.0	0.17	7.08	16992	19541	31.9
45	1.45	10.50	6.70	0.0	0.17	6.53	17631	20276	33.1
50	1.33	10.50	6.14	0.0	0.17	5.97	17910	20597	33.7
55	1.22	10.50	5.64	0.0	0.17	5.47	18051	20759	33.9
60	1.10	10.50	5.08	0.0	0.17	4.91	17676	20327	33.2
120	0.63	10.50	2.91	0.0	0.17	2.74	19728	22687	37.1
180	0.45	10.50	2.08	0.0	0.17	1.91	20628	23722	38.8
360	0.27	10.50	1.25	0.0	0.17	1.08	23328	26827	43.8
720	0.14	10.50	0.65	0.0	0.17	0.48	20736	23846	39.0
1440	0.09	10.50	0.42	0.0	0.17	0.25	21600	24840	40.6

Storage

Total depth:	4.0 ft
Total storage:	30169 cf
Max 100 year WSE:	3.00
Freeboard:	1.0 ft
Volume retained:	30169 cf
Percent retained:	100%

Design Checks

Freeboard: *1.0' provided, min. 1.0' req'd* OK

Drain time: *43.8 hrs provided, max 72 hrs allowed* OK

First-flush: *30169 CF retained, min. 3354.12 CF req'* OK

Stage storage table

Contour Elev. (ft)	Contour Area (SF)	Incremental Depth (ft)	Void Ratio	Incremental Vol. (CF)	Cumulative Vol. (CF)	Stage Description
0.00	7195	0	0%	0	0	Bottom
3.00	13221	3.00	100%	30169	30169	WSEL

+ Create New Storage Facility

General

Facility ID:	**Facility C**
Detention/Retention:	Retention
Facility description:	Storage for Basin C
Design storm:	100 year
Contributing subbasin ID:	Basin C
Tributary area:	22.30 acres
Runoff coefficient:	0.41

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	6637.818 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MTI
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Draining elevation:	2395.0 ft
Percolation area:	50500 sf

Outlet

Outlet device ID:	
Overflow elevation:	ft
Release from outlet device:	cfs
Allowable release:	0.00 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	22.30	28.34	0.0	1.17	27.17	16302	18747	4.5
15	2.60	22.30	23.77	0.0	1.17	22.60	20340	23391	5.6
20	2.33	22.30	21.30	0.0	1.17	20.13	24156	27779	6.6
25	2.07	22.30	18.93	0.0	1.17	17.76	26640	30636	7.3
30	1.80	22.30	16.46	0.0	1.17	15.29	27522	31650	7.5
35	1.68	22.30	15.36	0.0	1.17	14.19	29799	34269	8.1
40	1.57	22.30	14.35	0.0	1.17	13.18	31632	36377	8.6
45	1.45	22.30	13.26	0.0	1.17	12.09	32643	37539	8.9
50	1.33	22.30	12.16	0.0	1.17	10.99	32970	37916	9.0
55	1.22	22.30	11.15	0.0	1.17	9.98	32934	37874	9.0
60	1.10	22.30	10.06	0.0	1.17	8.89	32004	36805	8.7
120	0.63	22.30	5.76	0.0	1.17	4.59	33048	38005	9.0
180	0.45	22.30	4.11	0.0	1.17	2.94	31752	36515	8.7
360	0.27	22.30	2.47	0.0	1.17	1.30	28080	32292	7.7
720	0.14	22.30	1.28	0.0	1.17	0.11	4752	5465	1.3
1440	0.09	22.30	0.82	0.0	1.17	-0.35	-30240	-34776	-8.3

Storage

Total depth:	1.8 ft
Total storage:	39417 cf
Max 100-year WSE:	1.75
Freeboard:	1.0 ft
Volume retained:	39417 cf
Percent retained:	100%

Design Checks

Freeboard: *1.0' provided, min. 1.0' req'd* OK

Drain time: *9.0 hrs provided, max 72 hrs allowed* OK

First-flush: *39417 CF retained, min. 6637.818 CF req* OK

Stage storage table

Contour Elev. (ft)	Contour Area (SF)	Incremental Depth (ft)	Void Ratio	Incremental Vol. (CF)	Cumulative Vol. (CF)	Stage Description
1.00	50500	0	0%	0	0	Bottom
1.75	54640	0.75	100%	39417	39417	WSEL

Facility D

T-O ENGINEERS

+ Create New Storage Facility

General

Facility ID:	**Facility D**
Detention/Retention:	Retention
Facility description:	Storage for basin D
Design storm:	100 year
Contributing subbasin ID:	Basin D
Tributary area:	33.70 acres
Runoff coefficient:	0.41

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	10031.142 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MTI
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Draining elevation:	2395.0 ft
Percolation area:	28955 sf

Outlet

Outlet device ID:	
Overflow elevation:	ft
Release from outlet device:	cfs
Allowable release:	0.00 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	33.70	42.83	0.0	0.67	42.16	25296	29090	12.1
15	2.60	33.70	35.92	0.0	0.67	35.25	31725	36484	15.1
20	2.33	33.70	32.19	0.0	0.67	31.52	37824	43498	18.0
25	2.07	33.70	28.60	0.0	0.67	27.93	41895	48179	20.0
30	1.80	33.70	24.87	0.0	0.67	24.20	43560	50094	20.8
35	1.68	33.70	23.21	0.0	0.67	22.54	47334	54434	22.6
40	1.57	33.70	21.69	0.0	0.67	21.02	50448	58015	24.1
45	1.45	33.70	20.03	0.0	0.67	19.36	52272	60113	24.9
50	1.33	33.70	18.38	0.0	0.67	17.71	53130	61100	25.3
55	1.22	33.70	16.86	0.0	0.67	16.19	53427	61441	25.5
60	1.10	33.70	15.20	0.0	0.67	14.53	52308	60154	24.9
120	0.63	33.70	8.70	0.0	0.67	8.03	57816	66488	27.6
180	0.45	33.70	6.22	0.0	0.67	5.55	59940	68931	28.6
360	0.27	33.70	3.73	0.0	0.67	3.06	66096	76010	31.5
720	0.14	33.70	1.93	0.0	0.67	1.26	54432	62597	26.0
1440	0.09	33.70	1.24	0.0	0.67	0.57	49248	56635	23.5

Storage

Total depth:	3.5 ft
Total storage:	83579 cf
Max 100-year WSE:	2.50
Freeboard:	1.0 ft
Volume retained:	83579 cf
Percent retained:	100%

Design Checks

Freeboard: *1.0' provided, min. 1.0' req'd* OK
Drain time: *31.5 hrs provided, max 72 hrs allowed* OK

First-flush: *83579 CF retained, min. 10031.142 CF re* OK

Stage storage table

Contour Elev. (ft)	Contour Area (SF)	Incremental Depth (ft)	Void Ratio	Incremental Vol. (CF)	Cumulative Vol. (CF)	Stage Description
0.00	28955	0	0%	0	0	Bottom
2.50	38118	2.50	100%	83579	83579	WSEL

+ Create New Storage Facility

General

Facility ID:	Facility E
Detention/Retention:	Retention
Facility description:	Storage for basin E
Design storm:	100 year
Contributing subbasin ID:	Basin C
Tributary area:	22.30 acres
Runoff coefficient:	0.41

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	6637.818 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MTI
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Free-draining elevation:	2395.0 ft
Percolation area:	21190 sf

Outlet

Outlet device ID:	
Overflow elevation:	ft
Release from outlet device:	cfs
Allowable release:	0.00 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	22.30	28.34	0.0	0.49	27.85	16710	19217	10.9
15	2.60	22.30	23.77	0.0	0.49	23.28	20952	24095	13.7
20	2.33	22.30	21.30	0.0	0.49	20.81	24972	28718	16.3
25	2.07	22.30	18.93	0.0	0.49	18.44	27660	31809	18.0
30	1.80	22.30	16.46	0.0	0.49	15.97	28746	33058	18.7
35	1.68	22.30	15.36	0.0	0.49	14.87	31227	35911	20.4
40	1.57	22.30	14.35	0.0	0.49	13.86	33264	38254	21.7
45	1.45	22.30	13.26	0.0	0.49	12.77	34479	39651	22.5
50	1.33	22.30	12.16	0.0	0.49	11.67	35010	40262	22.8
55	1.22	22.30	11.15	0.0	0.49	10.66	35178	40455	22.9
60	1.10	22.30	10.06	0.0	0.49	9.57	34452	39620	22.5
120	0.63	22.30	5.76	0.0	0.49	5.27	37944	43636	24.7
180	0.45	22.30	4.11	0.0	0.49	3.62	39096	44960	25.5
360	0.27	22.30	2.47	0.0	0.49	1.98	42768	49183	27.9
720	0.14	22.30	1.28	0.0	0.49	0.79	34128	39247	22.2
1440	0.09	22.30	0.82	0.0	0.49	0.33	28512	32789	18.6

Storage

Total depth:	3.0 ft
Total storage:	50661 cf
Max 100-year WSE:	2.00
Freeboard:	1.0 ft
Volume retained:	50661 cf
Percent retained:	100%

Design Checks

Freeboard: *1.0' provided, min. 1.0' req'd* OK

Drain time: *27.9 hrs provided, max 72 hrs allowed* OK

First-flush: *50661 CF retained, min. 6637.818 CF req* OK

Stage storage table

Contour Elev. (ft)	Contour Area (SF)	Incremental Depth (ft)	Void Ratio	Incremental Vol. (CF)	Cumulative Vol. (CF)	Stage Description
0.00	21190	0	0%	0	0	Bottom
2.00	29710	2.00	100%	50661	50661	WSEL

Facility F

T-O ENGINEERS

+ Create New Storage Facility

General

Facility ID:	**Facility F**
Detention/Retention:	Retention
Facility description:	Storage for basin F
Design storm:	100 year
Contributing subbasin ID:	Basin F
Tributary area:	7.50 acres
Runoff coefficient:	0.43

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	2341.35 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MTI
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Draining elevation:	2395.0 ft
Percolation area:	10700 sf

Outlet

Outlet device ID:	
Overflow elevation:	ft
Release from outlet device:	cfs
Allowable release:	0.00 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	7.50	10.00	0.0	0.25	9.75	5850	6728	7.5
15	2.60	7.50	8.39	0.0	0.25	8.14	7326	8425	9.4
20	2.33	7.50	7.51	0.0	0.25	7.26	8712	10019	11.1
25	2.07	7.50	6.68	0.0	0.25	6.43	9645	11092	12.3
30	1.80	7.50	5.81	0.0	0.25	5.56	10008	11509	12.8
35	1.68	7.50	5.42	0.0	0.25	5.17	10857	12486	13.9
40	1.57	7.50	5.06	0.0	0.25	4.81	11544	13276	14.8
45	1.45	7.50	4.68	0.0	0.25	4.43	11961	13755	15.3
50	1.33	7.50	4.29	0.0	0.25	4.04	12120	13938	15.5
55	1.22	7.50	3.93	0.0	0.25	3.68	12144	13966	15.5
60	1.10	7.50	3.55	0.0	0.25	3.30	11880	13662	15.2
120	0.63	7.50	2.03	0.0	0.25	1.78	12816	14738	16.4
180	0.45	7.50	1.45	0.0	0.25	1.20	12960	14904	16.6
360	0.27	7.50	0.87	0.0	0.25	0.62	13392	15401	17.1
720	0.14	7.50	0.45	0.0	0.25	0.20	8640	9936	11.0
1440	0.09	7.50	0.29	0.0	0.25	0.04	3456	3974	4.4

Storage

Total depth:	2.5 ft
Total storage:	18480 cf
Max 100-year WSE:	1.50
Freeboard:	1.0 ft
Volume retained:	18480 cf
Percent retained:	100%

Design Checks

Freeboard: *1.0' provided, min. 1.0' req'd* OK

Drain time: *17.1 hrs provided, max 72 hrs allowed* OK

First-flush: *18480 CF retained, min. 2341.35 CF req'd* OK

Stage storage table

Contour Elev. (ft)	Contour Area (SF)	Incremental Depth (ft)	Void Ratio	Incremental Vol. (CF)	Cumulative Vol. (CF)	Stage Description
0.00	10700	0	0%	0	0	Bottom
1.50	14015	1.50	100%	18480	18480	WSEL

Facility G

T-O ENGINEERS

+ Create New Storage Facility

General

Facility ID:	**Facility G**
Detention/Retention:	Detention
Facility description:	Storage for basin G
Design storm:	100 year
Contributing subbasin ID:	Basin G
Tributary area:	22.70 acres
Runoff coefficient:	0.40

Design Criteria

Min. freeboard:	1.0 ft
Max drain time:	72 hrs
Water quality depth:	0.2 in
Water quality volume:	6592.08 cf
Increase for sedimentation:	15%
Increase for carryover storm:	0%
Min. separation to groundwater:	3 ft

Percolation

Soil test ID:	MTI
Measured perc rate:	1 in/hr
Perc rate safety factor:	1
Design perc rate:	1 in/hr
Groundwater elevation:	2390 ft
Draining elevation:	2395.0 ft
Percolation area:	8234 sf

Outlet

Outlet device ID:	Historical
Overflow elevation:	1.15 ft
Release from outlet device:	0.90 cfs
Allowable release:	0.91 cfs

Modified Rational Method runoff calculations

Duration (min)	Intensity (in/hr)	Area (acres)	Q=CIA (cfs)	Release Flowrate (cfs)	Perc Flowrate (cfs)	Net Flowrate (cfs)	Runoff Vol. (cf)	Total Req'd Storage (cf)	Time to Perc (hr)
10	3.10	22.70	28.15	0.9	0.19	27.06	16236	18671	27.3
15	2.60	22.70	23.61	0.9	0.19	22.52	20268	23308	34.1
20	2.33	22.70	21.16	0.9	0.19	20.07	24084	27697	40.5
25	2.07	22.70	18.80	0.9	0.19	17.71	26565	30550	44.7
30	1.80	22.70	16.34	0.9	0.19	15.25	27450	31568	46.2
35	1.68	22.70	15.25	0.9	0.19	14.16	29736	34196	50.0
40	1.57	22.70	14.26	0.9	0.19	13.17	31608	36349	53.1
45	1.45	22.70	13.17	0.9	0.19	12.08	32616	37508	54.8
50	1.33	22.70	12.08	0.9	0.19	10.99	32970	37916	55.4
55	1.22	22.70	11.08	0.9	0.19	9.99	32967	37912	55.4
60	1.10	22.70	9.99	0.9	0.19	8.90	32040	36846	53.9
120	0.63	22.70	5.72	0.9	0.19	4.63	33336	38336	56.0
180	0.45	22.70	4.09	0.9	0.19	3.00	32400	37260	54.5
360	0.27	22.70	2.45	0.9	0.19	1.36	29376	33782	49.4
720	0.14	22.70	1.27	0.9	0.19	0.18	7776	8942	13.1
1440	0.09	22.70	0.82	0.9	0.19	-0.27	-23328	-26827	-39.2

Storage

Total depth:	5.5 ft
Total storage:	39058 cf
Max 100-year WSE:	4.50
Freeboard:	1.0 ft
Volume retained:	39058 cf
Percent retained:	100%

Design Checks

Freeboard: *1.0' provided, min. 1.0' req'd* OK
Drain time: *56.0 hrs provided, max 72 hrs allowed* OK

First-flush: *39058 CF retained, min. 6592.08 CF req'* OK

Stage storage table

Contour Elev. (ft)	Contour Area (SF)	Incremental Depth (ft)	Void Ratio	Incremental Vol. (CF)	Cumulative Vol. (CF)	Stage Description
0.00	8234	0	0%	0	0	Bottom
2.50	8234	2.50	40%	8234	8234	
4.50	23957	4.50	100%	30824	39058	WSEL

ATTACHMENT E

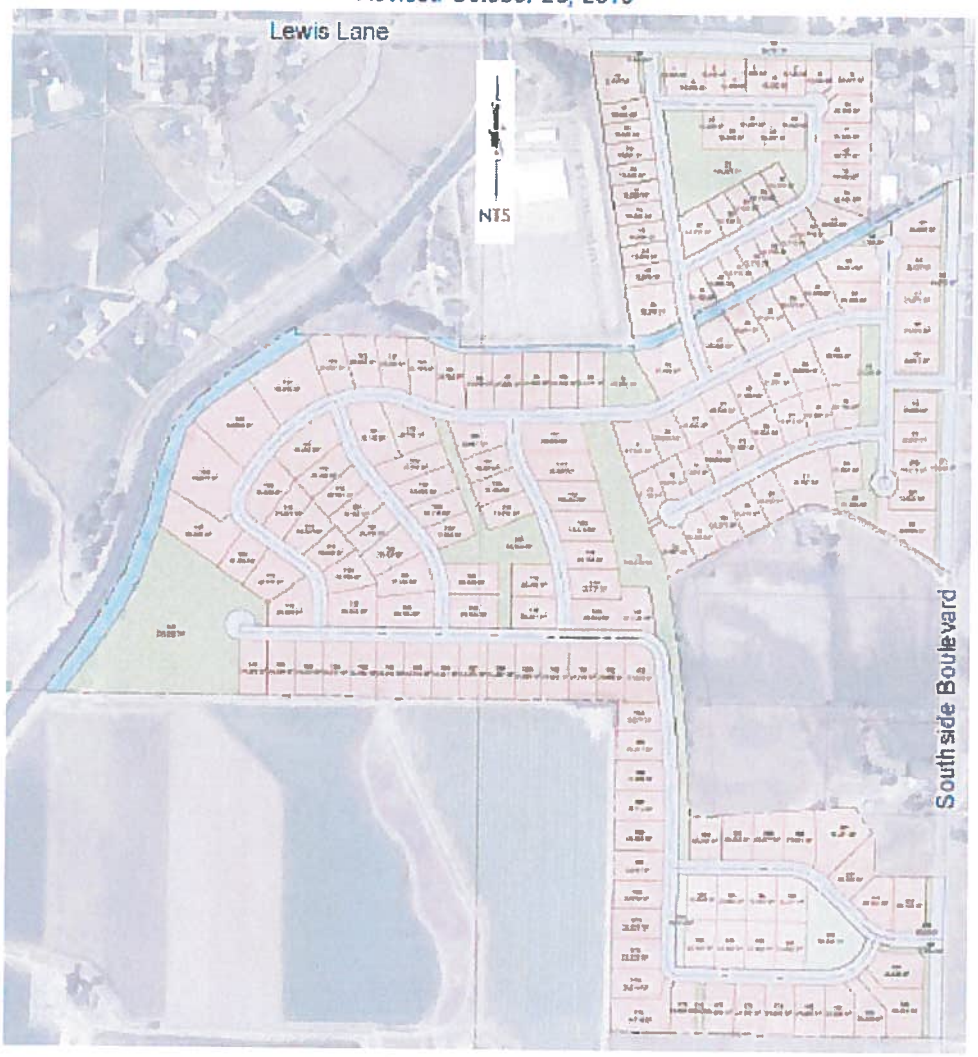
TRAFFIC IMPACT STUDY

OSPREY ESTATES SUBDIVISION

Nampa, Idaho

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Prepared For:

THE WESTPARK COMPANIES

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EXECUTIVE SUMMARY

CR Engineering, Inc. has been retained to prepare a traffic impact study (TIS) for the proposed Osprey Estates Subdivision located southwest of the Lewis Lane and Southside Boulevard intersection south of Nampa, Idaho, as shown in **Figure 1.1**. The scope of this report was determined through coordination with Nampa Highway District No. 1 (NHD1).

The TIS evaluates the potential traffic impacts resulting from background traffic growth, off-site developments in the area, and the proposed development, and identifies improvements to mitigate the impacts if needed. Traffic impacts were evaluated under weekday AM and PM peak hours traffic conditions. **Table 1** summarizes the improvements needed to mitigate the traffic impacts for the following analysis years traffic conditions:

- 2018/2019 Existing traffic
- 2025 Build-out year background traffic
- 2025 Build-out year total traffic

1.0 Proposed Development

1.1 At full build-out, Osprey Estates Subdivision is estimated to include 189 single-family dwelling units. The expected full build-out year is 2025 but may change depending on the market conditions.

1.2 Based on the Institution of Transportation Engineers (ITE) Trip Generation Manual 10th Edition, Osprey Estates Subdivision is estimated to generate approximately 1,784 trips per weekday, 140 trips during the AM peak hour, and 187 trips during the PM peak hour.

- The development is not expected to retain a significant amount of internally capture trips within the site based on ITE methodologies. No trip reduction for internal capture trips was assumed in the analysis.
- The development is not expected to generate pass-by trips based on ITE pass-by rates. No pass-by trips were assumed in the analysis.
- All trips generated by the development were assumed to be made by personal or commercial vehicles.
- The estimated site traffic distribution patterns are:
  - 70% north of the site
    - 10% along Powerline Road
    - 45% along Southside Boulevard
    - 15% along Happy Valley Road
  - 15% west of the site
    - 5% along Locust Lane
    - 10% along Lewis Lane
  - 10% east of the site
    - 5% along Lewis Lane
    - 5% along Deer Flat Road
  - 5% south of the site along Southside Boulevard

Table 1 – Intersection Improvements Summary

Intersection		2018/2019 Existing	2025 Build-Out Year	
			Background	Total
1	Locust Lane and Southside Boulevard	None (All-way stop installed in May 2019)	Single-lane roundabout or Signal	None beyond prior improvements
2	Lewis Lane and Powerline Road	None	None	None
3	Lewis Lane and Southside Boulevard	None	None	None
4	Lewis Lane and Happy Valley Road	None	None	None
5	Deer Flat Road and Southside Boulevard	None	None	None
6	West Access and Lewis Lane	na	na	None
7	North Access and Southside Boulevard	na	na	None
8	South Access and Southside Boulevard	na	na	None

2.0 Proposed Access

2.1 Osprey Estates Subdivision is proposing three full access approaches; one on Lewis Lane, a minor arterial, and two on Southside Boulevard, a principal arterial. All three proposed access approaches are on arterial roadways and will need a variance from the Association of Canyon County Highway Districts (ACCHD) to permit access onto the roadway network:

- Proposed west access on Lewis Lane
  - Located approximately 60 feet east of Rogers Drive, a private driveway north of Lewis Lane
  - Located approximately 1,250 feet west of Southside Boulevard
  - The access is not expected to require turn lanes
  - The access is expected to meet minimum operational thresholds as a stop-controlled intersection
- Proposed north access on Southside Boulevard
  - Located approximately 1,350 feet south of Lewis Lane
  - The access is offset from a private driveway 30 feet to the south and east of Southside Boulevard
  - The access is not expected to require turn lanes
  - The access is expected to meet minimum operational thresholds as a stop-controlled intersection
- Proposed south access on Southside Boulevard
  - Located approximately 1,700 feet north of Deer Flat Road
  - Located approximately 150 feet south of a private driveway on the opposite side of Southside Boulevard
  - The access is not expected to require turn lanes
  - The access is expected to meet minimum operational thresholds as a stop-controlled intersection

2.2 All proposed internal roadways are expected to carry less than 1,000 vehicles per day.

3.0 Improvements Needed to Mitigate 2018/2019 Existing Traffic

3.1 All study area intersections currently meet minimum operational thresholds with 2018/2019 existing traffic analyzed with the existing intersection control and lane configuration. No additional improvements are proposed to mitigate existing traffic conditions

3.2 None of the study area intersections meet turn-lane guidelines from the National Cooperative Highway Research Program (NCHRP) Report 457 *Evaluating Intersection Improvements: An Engineering Study Guide*. As a result, no turn lanes are needed on the major road (unstopped) approaches under existing traffic conditions as safety considerations.

4.0 Improvements Needed to Mitigate 2025 Background Traffic

4.1 All study area intersections are expected to meet minimum operational thresholds with 2025 background traffic analyzed with the existing intersection control and lane configuration or with the intersection control improvement discussed above, with the exception of one intersection. The intersection and proposed capacity improvements are:

- Locust Lane and Southside Boulevard intersection (two options)
  - Single-lane roundabout
  - Traffic signal with left-turn lanes on all approaches
    - According to the 2012 City of Nampa Citywide Transportation Plan, a signal is recommended at the intersection by year 2025

4.2 None of the other study area intersection is expected to meet NCHRP Report 457 turn-lane guidelines. As a result, no turn lanes are needed under 2025 background traffic conditions.

5.0 Improvements Needed to Mitigate 2025 Build-Out Year Total Traffic

5.1 All study area intersections are expected to meet minimum operational thresholds with 2025 total traffic analyzed with the existing intersection control and lane configuration or with the improvements needed under 2025 background traffic conditions.

5.2 None of the study area intersections are expected to meet NCHRP Report 457 turn-lane guidelines. As a result, no additional improvements are needed to mitigate 2025 total traffic impacts.

1.0 INTRODUCTION

CR Engineering, Inc. has been retained to prepare a traffic impact study (TIS) update for the proposed Osprey Estates Subdivision development located west of Southside Boulevard between Lewis Lane and Deer Flat Road south of Nampa, Idaho. The original study was prepared in February 20, 2019 by CR Engineering, Inc. **Figure 1.1** shows the site location and its vicinity. The TIS evaluates the potential traffic impacts resulting from background traffic growth, off-site developments in the area, and proposed development, and identifies improvements to mitigate the impacts if needed.

Figure 1.1 – Site Location and Vicinity



1.1 Proposed Development

Osprey Estates Subdivision is a proposed residential development estimated to contain 189 single-family dwelling units. The expected build-out year is 2025 but may change depending on the market conditions. Figure 1.2 shows the preliminary site development plan with the three proposed access locations. One full access approach is proposed on Lewis Lane and two full access approaches are proposed on Southside Boulevard.

Figure 1.2 – Preliminary Site Plan



1.2 Study Approach

The study area, specific parameters, and requirements for the study were coordinated with the Nampa Highway District No. 1 (NHD1). Summary of the email correspondence is included in the appendix. This study was prepared in accordance with the NHD1's guidelines.

1.3 Study Area

The following study area intersections were identified for collecting peak hour turning movement counts and traffic impact analysis:

1. Locust Lane and Southside Boulevard
2. Lewis Lane and Powerline Road
3. Lewis Lane and Southside Boulevard
4. Lewis Lane and Happy Valley Road
5. Deer Flat Road and Southside Boulevard
6. All proposed site access points

1.4 Study Period

The analysis periods will be weekday AM and PM peak hours of operation of the transportation system from 7-9 AM and 4-6 PM, respectively. The analysis years are:

- 2018/2019 existing traffic
- 2025 build-out year background traffic
- 2025 build-out year total traffic

1.5 Analysis Methods and Performance Measure Thresholds

Intersection capacity analysis was performed using Synchro 10 (Version 10.3.122.0), which utilizes the 6th Edition Highway Capacity Manual (HCM6) methodologies. All parameters used in the analysis were based on existing data when available or Synchro default values, when not available. The level of service for the intersection is based on the average delay of vehicles traveling through the intersection. For this study, the minimum acceptable level of service is LOS D for the worst movement.

2.0 EXISTING TRAFFIC CONDITIONS

2.1 Roadway Network, Intersection Control and Lane Configuration

Table 2.1 summarizes the study area roadway characteristics. The roadway functional classification is based on the COMPASS 2040 and City of Nampa 2035 Functional Classification Maps. Figure 2.1 summarizes the intersection control and lane configuration for the study area intersections. The Locust Lane and Southside Boulevard intersection was converted to an all-way stop in May 2019.

Table 2.1 – Existing Roadway Characteristics

Roadway	Functional Classification	Number of Lanes	Posted Speed Limit (mph)	Pedestrian Facilities
Southside Boulevard	Principal Arterial	2	35 north of Lewis Ln 55 south of Lewis Ln	• Partial sidewalks along developed frontages
Locust Lane	Principal Arterial	2	45	• Partial sidewalks along developed frontages
Powerline Road	Collector	2	35	• None within study area limits
Lewis Lane	Minor Arterial	2	45 west of Southside Blvd 50 east of Southside Blvd	• None within study area limits
Happy Valley Road	Collector	2	50	• None within study area limits
Deer Flat Road	Collector	2	50	• None within study area limits

2.2 Existing Traffic Volumes

Weekday AM and PM peak hour traffic counts were obtained from previous studies collected at different times between August and September 2018 with an additional intersection counted in June 2019:

- Locust Lane and Southside Boulevard intersection – September 25, 2018
- Lewis Lane and Powerline Road intersection – June 4, 2019
- Lewis Lane and Southside Boulevard intersection – August 23, 2018
- Lewis Lane and Happy Valley Road intersection – August 23, 2018
- Deer Flat Road and Southside Boulevard intersection – August 23, 2018

The peak hour intersection turning movement counts were collected on a weekday for a 2-hour period at 15-minute intervals between 7:00 and 9:00 during the AM peak hour and between 4:00 and 6:00 during the PM peak hour. Existing turning movement counts are included in the appendix. Figure 2.2 and Figure 2.3 summarize the existing peak hour traffic volumes.

Figure 2.1 – Existing Intersection Control and Lane Configuration

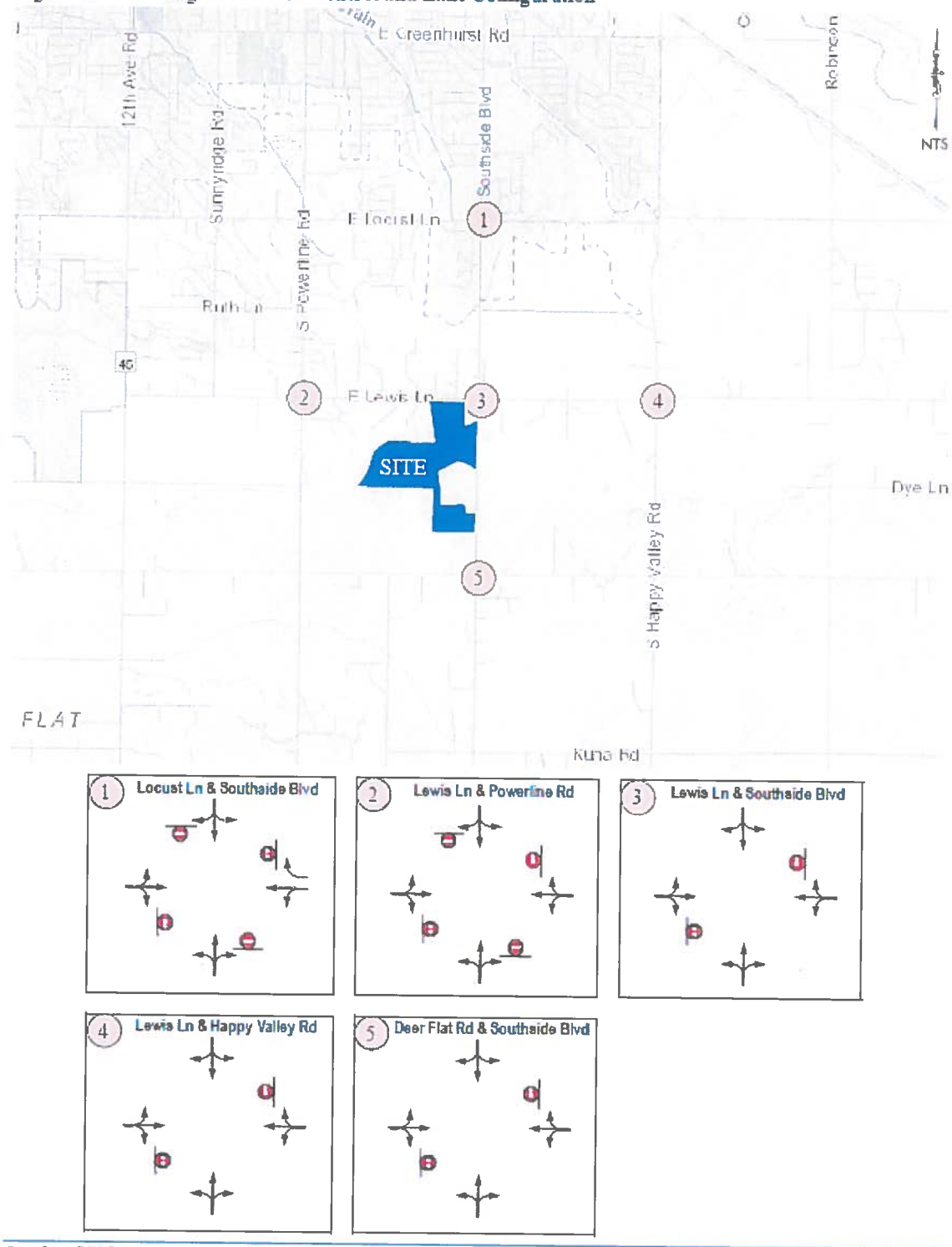


Figure 2.2 – 2018/2019 Existing AM Peak Hour Traffic

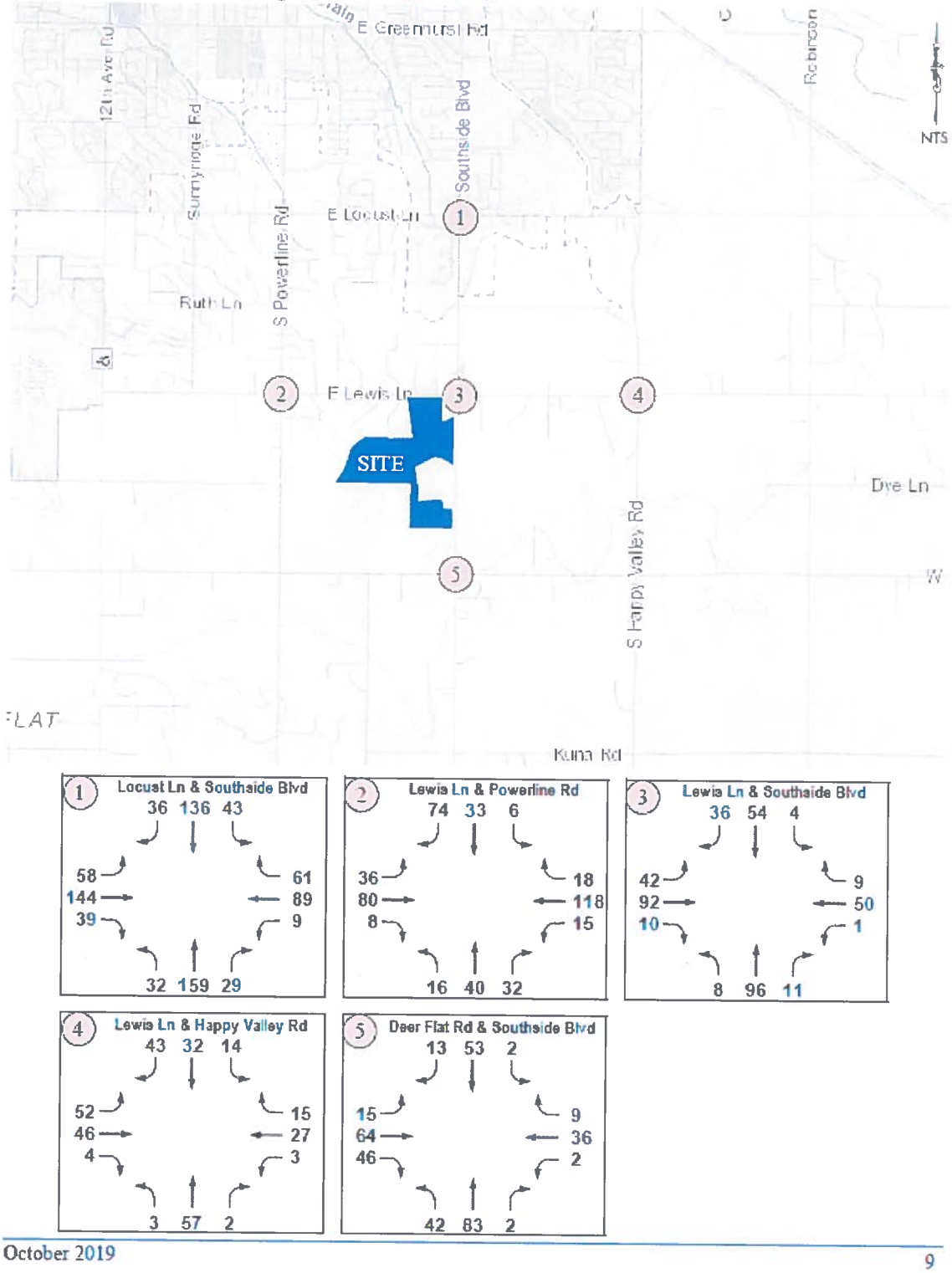
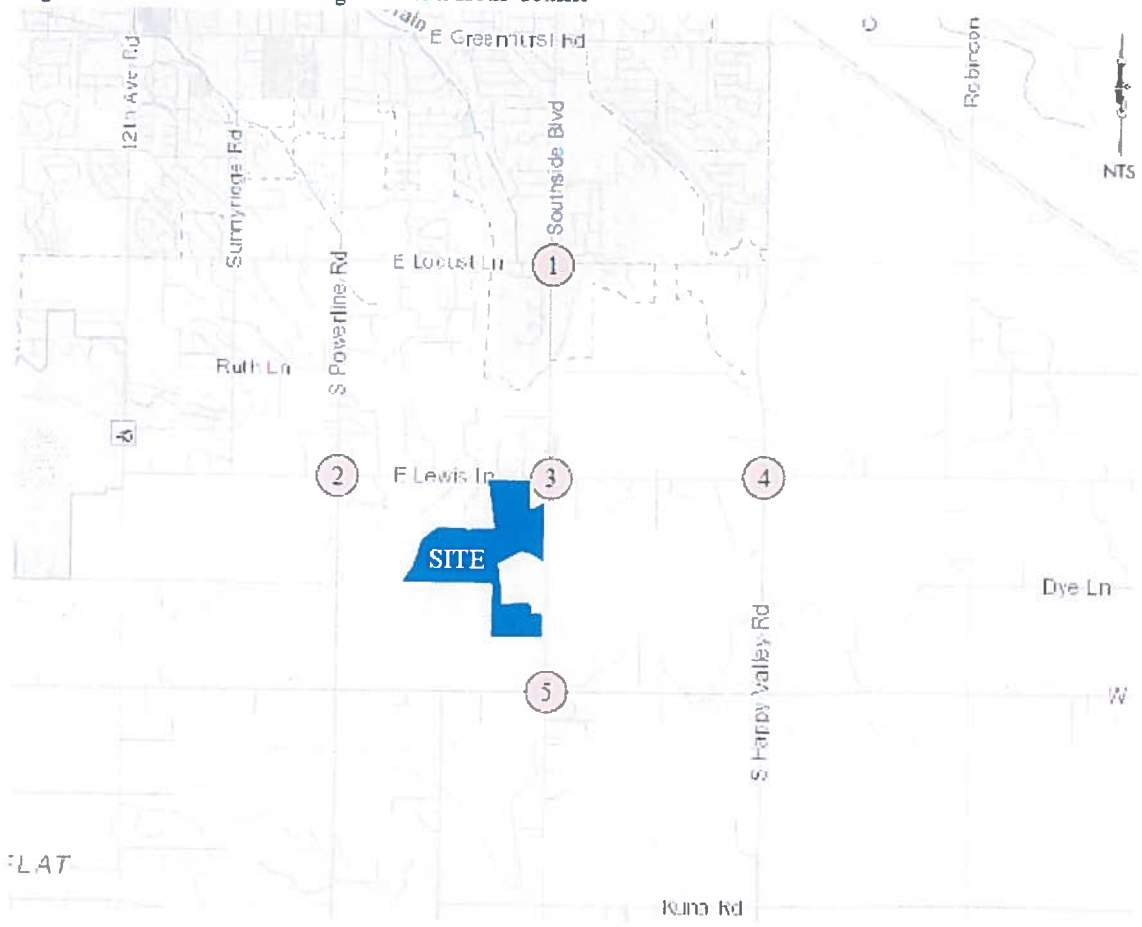
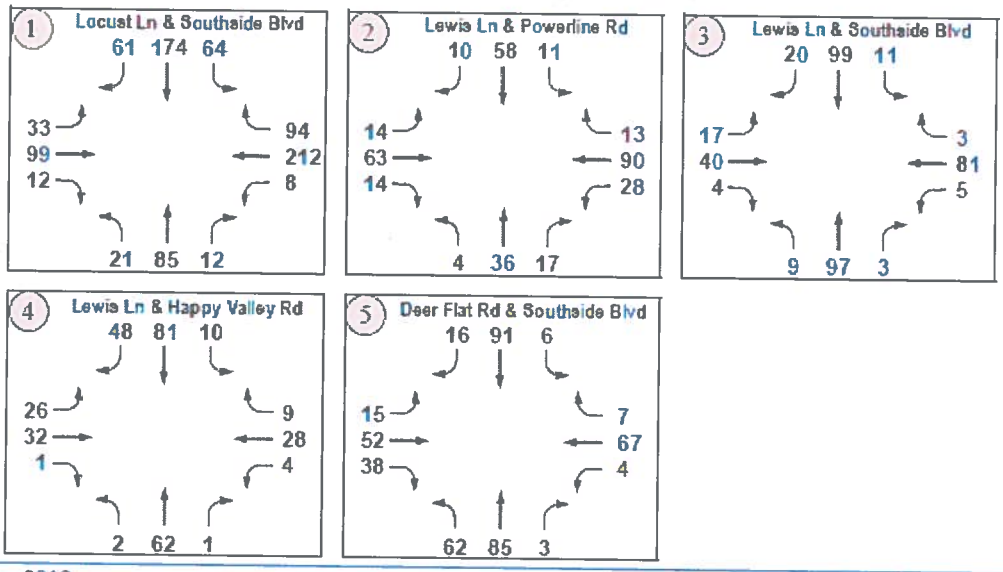


Figure 2.3 – 2018/2019 Existing PM Peak Hour Traffic





2.3 Intersection Crash Data

The most current five-year crash data (2013-2017) was obtained from the Local Highway Technical Assistance Council (LHTAC) website (http://gis.lhtac.org/safety/). Table 2.2 summarizes the crash data statistics for the study area intersections. There were no fatal crashes reported at the study area intersections for the five-year period. Most of the crashes were angle and turning crashes, which are expected at unsignalized intersections. Based on the number of crashes and crash types, all study area intersections do not seem to have safety issues to require mitigations with the exception of the Locust Lane and Southside Boulevard intersection. There were 19 crashes reported at the Locust Lane and Southside Boulevard intersection between 2013 and 2017. Eighteen of the crashes were related to angle/turning crashes due to failing to yield/stop and/or inattention. In May 2019, the intersection was converted to an all-way stop-controlled intersection with advanced warning signs and flashing lights around the stop signs, which is expected to reduce crashes.

Table 2.2 – Intersection Crash Data (2013-2017)

Intersection		Total Crashes	Crash Severity		
			PDOs	Injury	Fatal
1	Locust Lane and Southside Boulevard	19	7	12	0
2	Lewis Lane and Powerline Road	8	3	5	0
3	Lewis Lane and Southside Boulevard	6	3	3	0
4	Lewis Lane and Happy Valley Road	0	No crashes reported at this intersection		
5	Deer Flat Road and Southside Boulevard	7	6	1	0

2.4 Intersection Measures of Effectiveness

To determine the existing traffic impacts, the study area intersections were analyzed with the existing intersection control and lane configuration and existing peak hour traffic. The Locust Lane and Southside Boulevard intersection was evaluated as an all-way stop. Copies of the analysis reports are included in the appendix. Table 2.3 summarizes the intersection capacity analysis results. All study area intersections currently meet minimum operation thresholds.

Table 2.3 – Intersection MOEs – 2018/2019 Existing Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
1	Locust Lane and Southside Boulevard	All-Way Stop	Intersection LOS	B	B
			Intersection Delay [s/veh]	13	13
			Worst Movement MOEs	B / 0.47 (EB)	B / 0.52 (SB)
2	Lewis Lane and Powerline Road	All-Way Stop	Intersection LOS	A	A
			Intersection Delay [s/veh]	9	8
			Worst Movement MOEs	A / 0.23 (WB)	A / 0.21 (WB)
3	Lewis Lane and Southside Boulevard	Two-Way Stop (Lewis)	EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	12 / 11	12 / 12
			Worst Movement MOEs	B / 0.23 (EB)	B / 0.16 (WB)
4	Lewis Lane and Happy Valley Road	Two-Way Stop (Lewis)	EB / WB LOS	B / A	B / B
			EB / WB Delay [s/veh]	11 / 10	11 / 10
			Worst Movement MOEs	B / 0.15 (EB)	B / 0.10 (EB)
5	Deer Flat Road and Southside Boulevard	Two-Way Stop (Deer Flat)	EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	12 / 12	12 / 13
			Worst Movement MOEs	B / 0.24 (EB)	B / 0.15 (WB)

2.5 Intersection Mitigation

All study area intersections currently meet minimum operational thresholds. No additional intersection capacity improvements are needed to mitigate 2019/2019 existing traffic conditions.

3.0 2025 BACKGROUND TRAFFIC CONDITIONS

3.1 Roadway Network

The study area roadways and intersections are expected to remain the same as the existing conditions. According to the NHD1 Long Range Transportation Plan (June 2019), there are no roadway or intersection capacity improvements within the study area.

The City of Nampa identified the following projects within the study area according to their 2012 Nampa Citywide Transportation Plan:

- Locust Lane – widen from two lanes to five lanes from Midland Boulevard to McDermott Road (2025)
- Southside Boulevard – widen from two lanes to three lanes from Bowmont Road to Greenhurst Road (2035)
- Locust Lane and Southside Boulevard intersection – add signal (2025)

The City of Nampa is currently in the process of updating their long-range transportation plan. According to their anticipated Capital Improvement Projects, there are no roadway or intersection capacity improvements within the study area.

3.2 Background Traffic

Future traffic forecasts were obtained from COMPASS to estimate the background traffic growth for the study area roadways and intersections. COMPASS traffic forecasts are included in the appendix. Based on COMPASS traffic forecasts, a 2.0% annual growth rate was used on all study area roadways. In addition to the traffic growth, off-site traffic generated by four developments in the vicinity was also included in the background traffic. Figure 3.1 shows the off-site developments' locations and are describe below:

- Southern Ridge Subdivision
  - 385 single-family dwelling units with a projected build-out year in 2023
  - Located east of Southside Boulevard between Oklahoma Avenue and Locust Lane
  - Construction of the development began in 2017 using existing roadways north of Locust Lane
  - At the time traffic counts were collected at the intersection Locust Lane and Southside Boulevard, approximately 35 dwelling units had been constructed. These dwelling units were excluded from the off-site traffic
- Lava Springs Subdivision
  - 244 single-family dwelling units
  - Located in the southwest corner of Locust Lane and Southside Boulevard intersection
  - At the time of the 2018 traffic counts were collected, 194 dwelling units were constructed or under construction. The remaining 50 homes are assumed to be built by 2025.
- New York Landing Subdivision
  - 408 single-family dwelling units with a projected build-out year in 2025
  - Located north of Alma Lane between Southside Boulevard and Happy Valley Road
  - At the time of this TIS, construction has not commenced
- Happy Valley Place Subdivision
  - 80 single-family dwelling units with a projected build-out year in 2025
  - Located east of Happy Valley Road centered around Farin Lane
  - At the time of this TIS, construction has not commenced

Figure 3.2 and Figure 3.3 summarize the 2025 build-out year AM and PM peak hour background traffic, respectively.

Figure 3.1 – Off-Site Developments Within the Vicinity

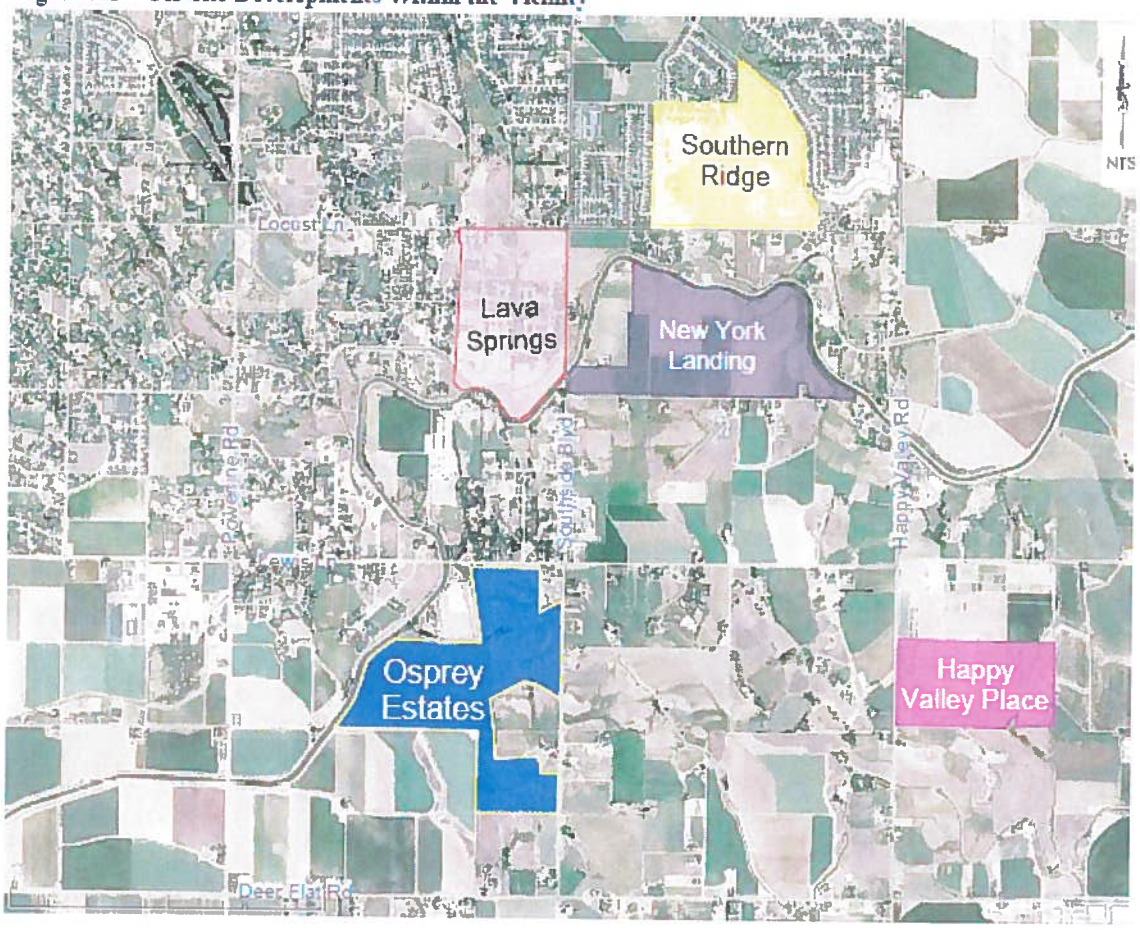


Figure 3.2 – 2025 Build-Out Year AM Peak Hour Background Traffic

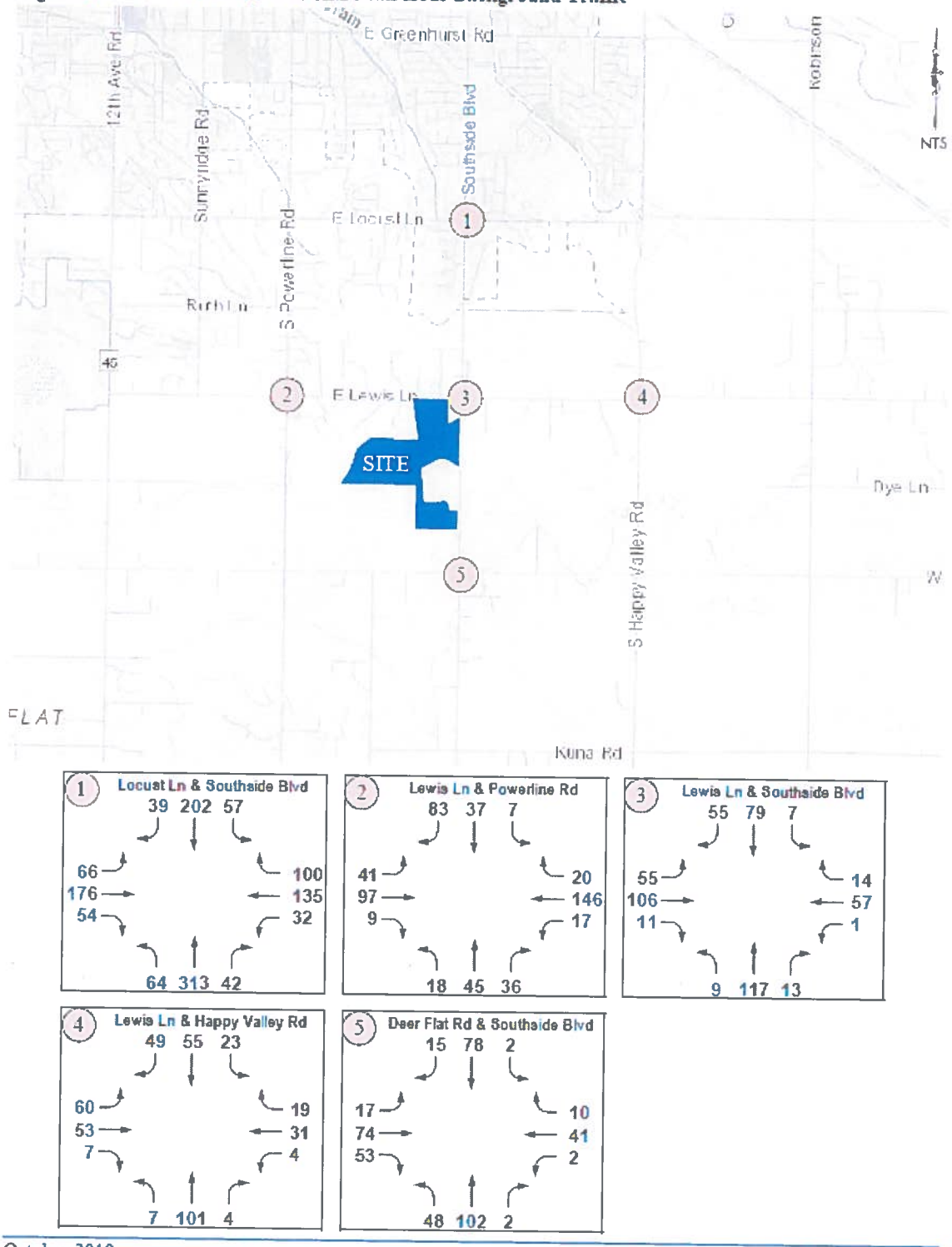
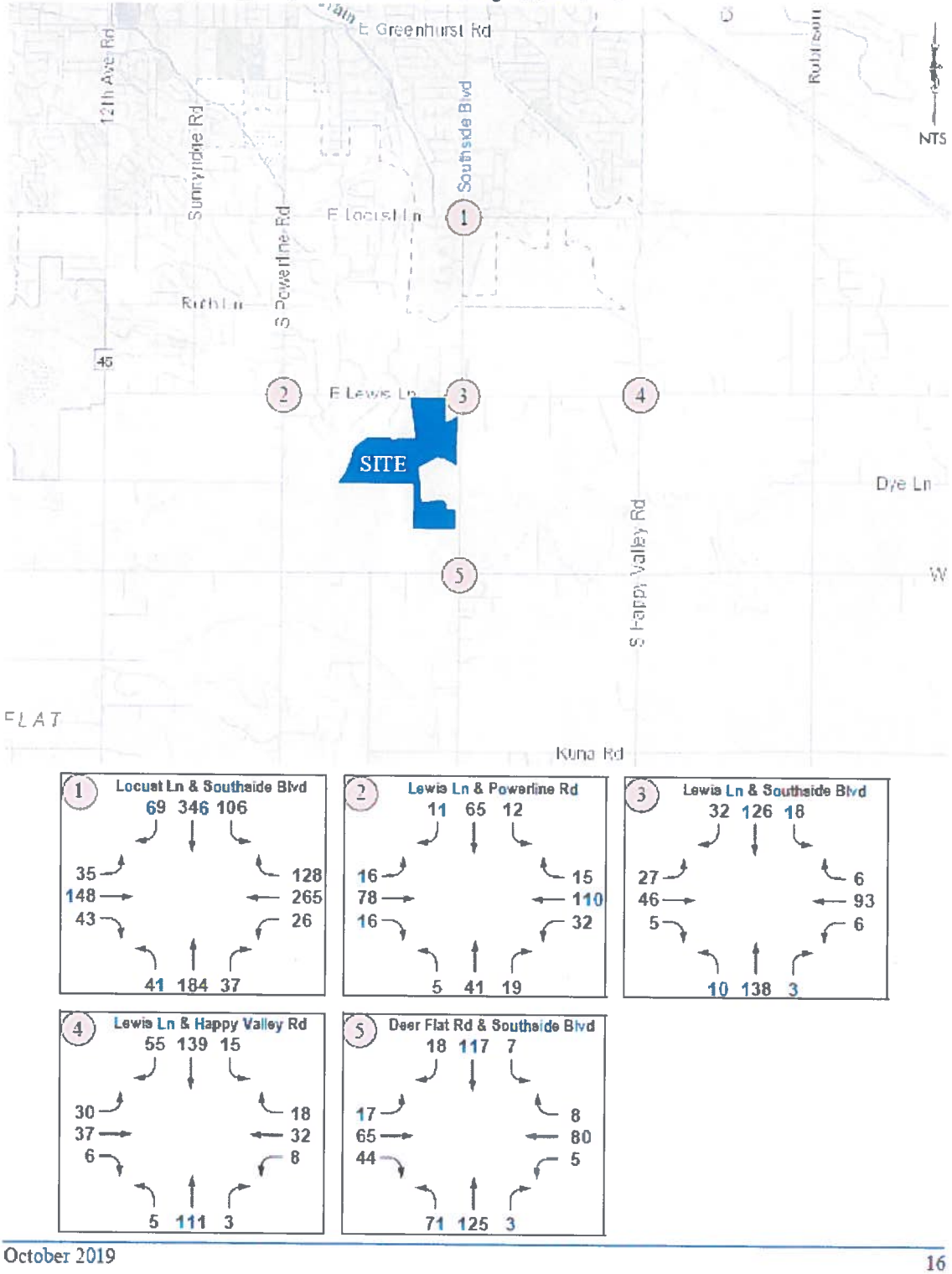


Figure 3.3 – 2025 Build-Out Year PM Peak Hour Background Traffic



3.3 Intersection Measures of Effectiveness

To determine the 2025 background traffic impacts, the study area intersections were analyzed with the existing intersection control and lane configuration or with the preceding improvements needed to mitigate 2018 existing traffic. Copies of the analysis reports are included in the appendix. Table 3.1 summarizes the intersection capacity analysis results. All study area intersections are expected to meet minimum operational thresholds with the exception of one intersection:

- Locust Lane and Southside Boulevard intersection

Table 3.1 – Intersection MOEs – 2025 Build-Out Year Background Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
1	Locust Lane and Southside Boulevard	All-Way Stop	Intersection LOS	E	F
			Intersection Delay [s/veh]	39	67
			Worst Movement MOEs	F / 0.97 (NB)	F / 1.21 (SB)
2	Lewis Lane and Powerline Road	All-Way Stop	Intersection LOS	A	A
			Intersection Delay [s/veh]	9	9
			Worst Movement MOEs	A / 0.27 (WB)	A / 0.25 (WB)
3	Lewis Lane and Southside Boulevard	Two-Way Stop (Lewis)	EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	14 / 12	14 / 14
			Worst Movement MOEs	B / 0.31 (EB)	B / 0.22 (WB)
4	Lewis Lane and Happy Valley Road	Two-Way Stop (Lewis)	EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	12 / 11	13 / 12
			Worst Movement MOEs	B / 0.21 (EB)	B / 0.14 (EB)
5	Deer Flat Road and Southside Boulevard	Two-Way Stop (Deer Flat)	EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	13 / 12	14 / 14
			Worst Movement MOEs	B / 0.29 (EB)	B / 0.21 (WB)

3.4 Intersection Mitigation

The Locust Lane and Southside Boulevard intersection is expected to exceed minimum operational thresholds as an all-way stop-controlled intersection. According to the City of Nampa's transportation plan, a signal is identified at the intersection. As a result, two improvement options are proposed to mitigate background traffic conditions:

- Traffic signal with left-turn lanes on all approaches
- Single-lane roundabout

Table 3.2 summarizes the mitigation analysis results.

None of the other study area intersections require turn lanes based on NCHRP Report 457 guidelines under 2025 background traffic conditions.

Table 3.2 – Intersection MOEs – 2025 Build-Out Year Background Traffic Mitigation

Intersection		Improvements	MOEs	AM Peak Hour	PM Peak Hour
①	Locust Lane and Southside Boulevard	Single-lane Roundabout	Intersection LOS	A	B
			Intersection Delay [s/veh]	9	11
			Worst Movement MOEs	B / 0.51 (NB)	B / 0.65 (SB)
		Traffic Signal with left-turn lanes on all approaches	Intersection LOS	B	B
			Intersection Delay [s/veh]	11	12
			Worst Movement MOEs	B / 0.19 (EBL)	B / 0.14 (EBL)

4.0 2025 BUILD-OUT YEAR TOTAL TRAFFIC CONDITIONS

4.1 Roadway Network Improvements

The study area roadways and intersections are expected to remain the same as the existing conditions with the exception of the intersection improvements needed to mitigate 2018 existing traffic and 2025 background traffic as discuss in the previous sections. These preceding intersection improvements were included in the 2025 total traffic impact analysis.

4.2 Site Traffic

4.2.1 Trip Generation

Site trip generation is estimated using the procedures recommended in the latest edition of the Trip Generation Manual (10th edition), published by ITE. The site trip generation is obtained by applying the trip generation rates obtained from the manual for the proposed land uses within the development. **Table 4.1** summarizes the site trip generation. The proposed development is estimated to generate approximately 1,784 weekday daily trips with 140 trips during the AM peak hour and 187 trips during the PM peak hour.

Table 4.1 – Build-Out Site Trip Generation Summary

Land Use	ITE Code	Size	Unit	Period	Trip Rate Per Unit	Total Trips	Entering		Exiting	
Single-Family Detached Housing	210	189	DU	Weekday Daily (vpd)	9.44	1,784	50%	892	50%	892
				AM Peak Hour (vph)	0.74	140	25%	35	75%	105
				PM Peak Hour (vph)	0.99	187	63%	118	37%	69

4.2.2 Trip Capture

Based on the proposed land use, the development is not expected to retain a significant amount of the trips within the site. No reduction for internal capture trips was assumed in the traffic analysis.

4.2.3 Pass-by Trips

Based on the proposed land use, the development is not expected to attract pass-by trips. No pass-by trips were assumed in the traffic analysis.

4.2.4 Modal Split

For the traffic analysis purposes, all trips generated by the development were assumed to be made by personal and commercial vehicles.

4.2.5 Trip Distribution and Assignment

Site traffic was distributed and assigned to the external roadway system based on the current travel patterns, site layout, historical traffic counts at the study area intersections, and the general location of the site within the area. **Figure 4.1** summarizes the expected site traffic distribution patterns. **Figure 4.2** and **Figure 4.3** summarize the estimated 2025 peak hour site traffic with the proposed accesses as shown in the preliminary site plan.

4.3 Total Traffic

The 2025 site traffic is then added to the 2025 background traffic as determined above to obtain the 2025 total traffic. **Figure 4.4** and **Figure 4.5** summarize the estimated 2025 weekday AM and PM peak hour total traffic, respectively. **Table 4.2** summarizes the build-out site traffic percentage estimate at each study area intersection.

Table 4.2 – Build-Out Site Traffic Percentage of 2025 Total Traffic

Intersection		% Site Traffic of 2025 Total Traffic		
		AM Peak	PM Peak	Average
1	Locust Lane and Southside Boulevard	5.2%	6.2%	5.7%
2	Lewis Lane and Powerline Road	4.8%	8.3%	6.5%
3	Lewis Lane and Southside Boulevard	17.5%	21.4%	19.5%
4	Lewis Lane and Happy Valley Road	6.3%	7.6%	7.0%
5	Deer Flat Road and Southside Boulevard	3.1%	2.9%	3.0%

Figure 4.1 – Site Traffic Distribution Patterns

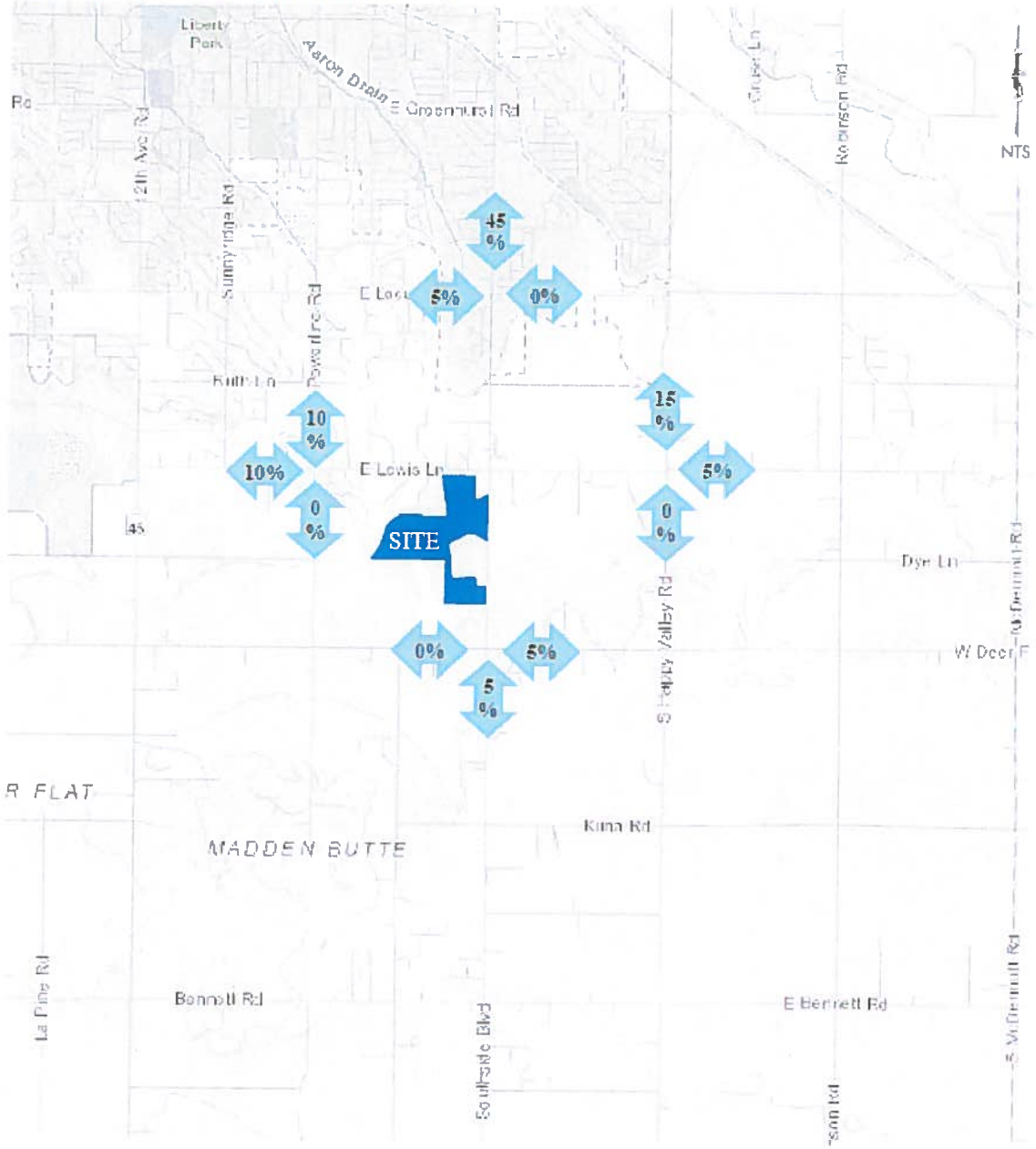


Figure 4.2 – 2025 Build-Out Year AM Peak Hour Site Traffic

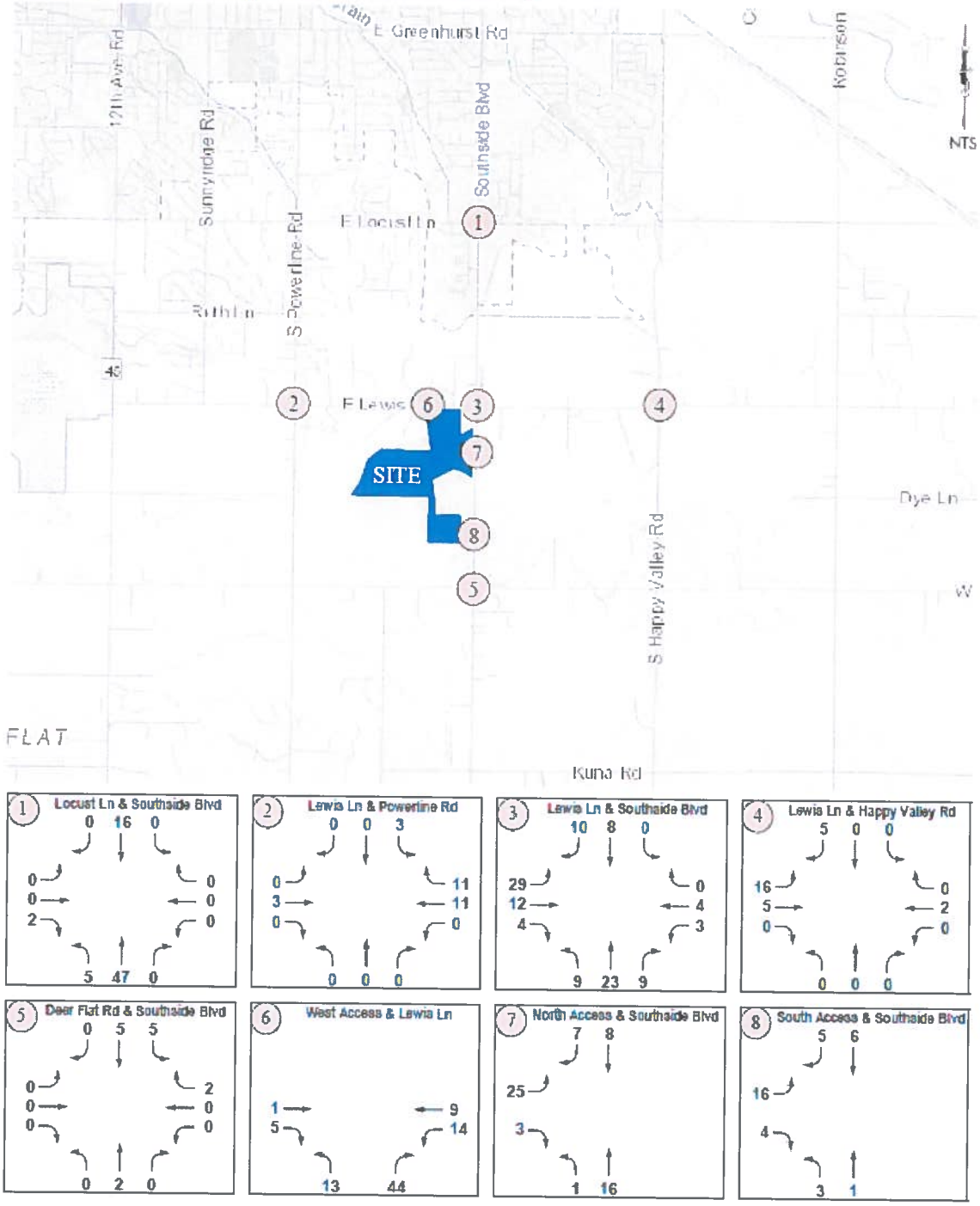


Figure 4.3 – 2025 Build-Out Year PM Peak Hour Site Traffic

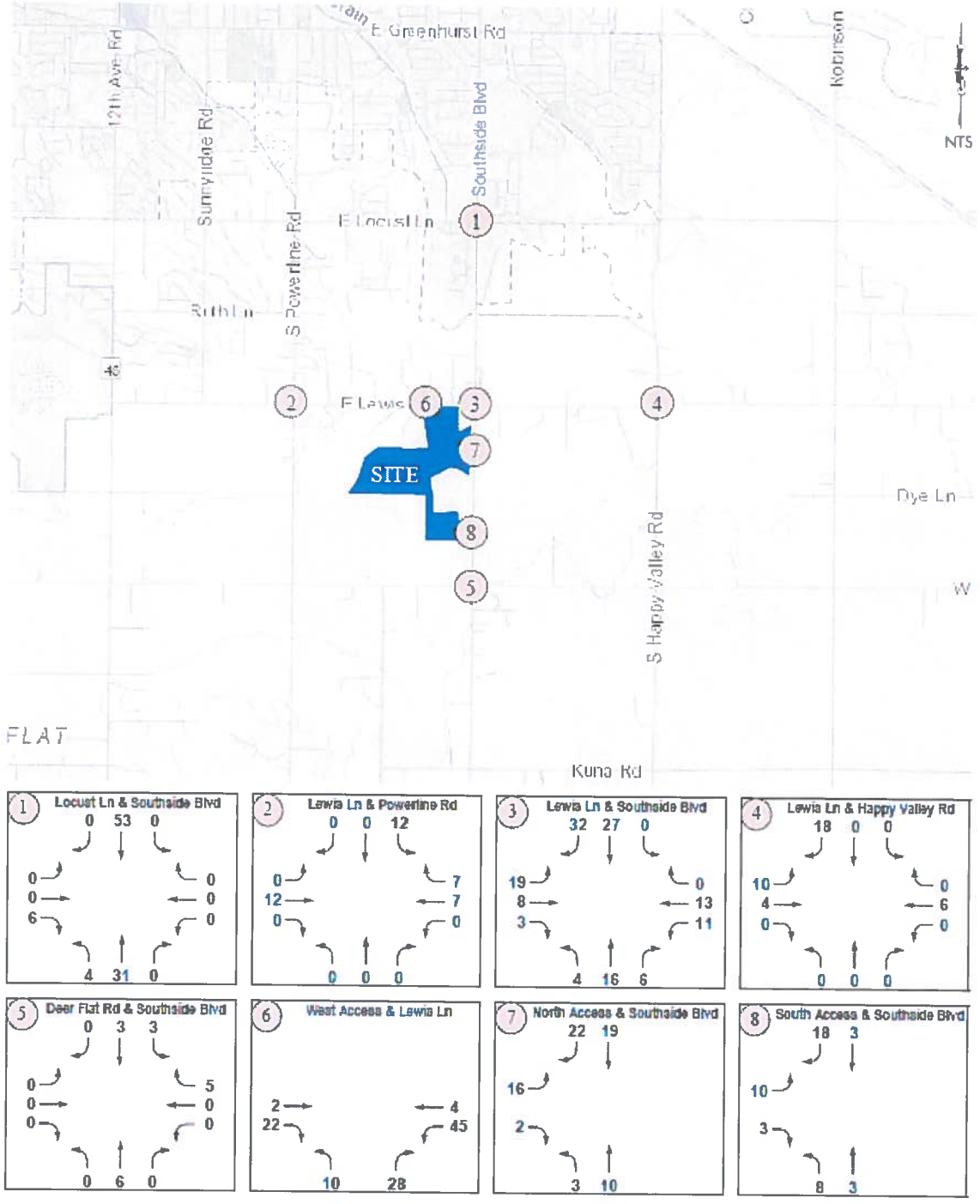


Figure 4.4 – 2025 Build-Out Year AM Peak Hour Total Traffic

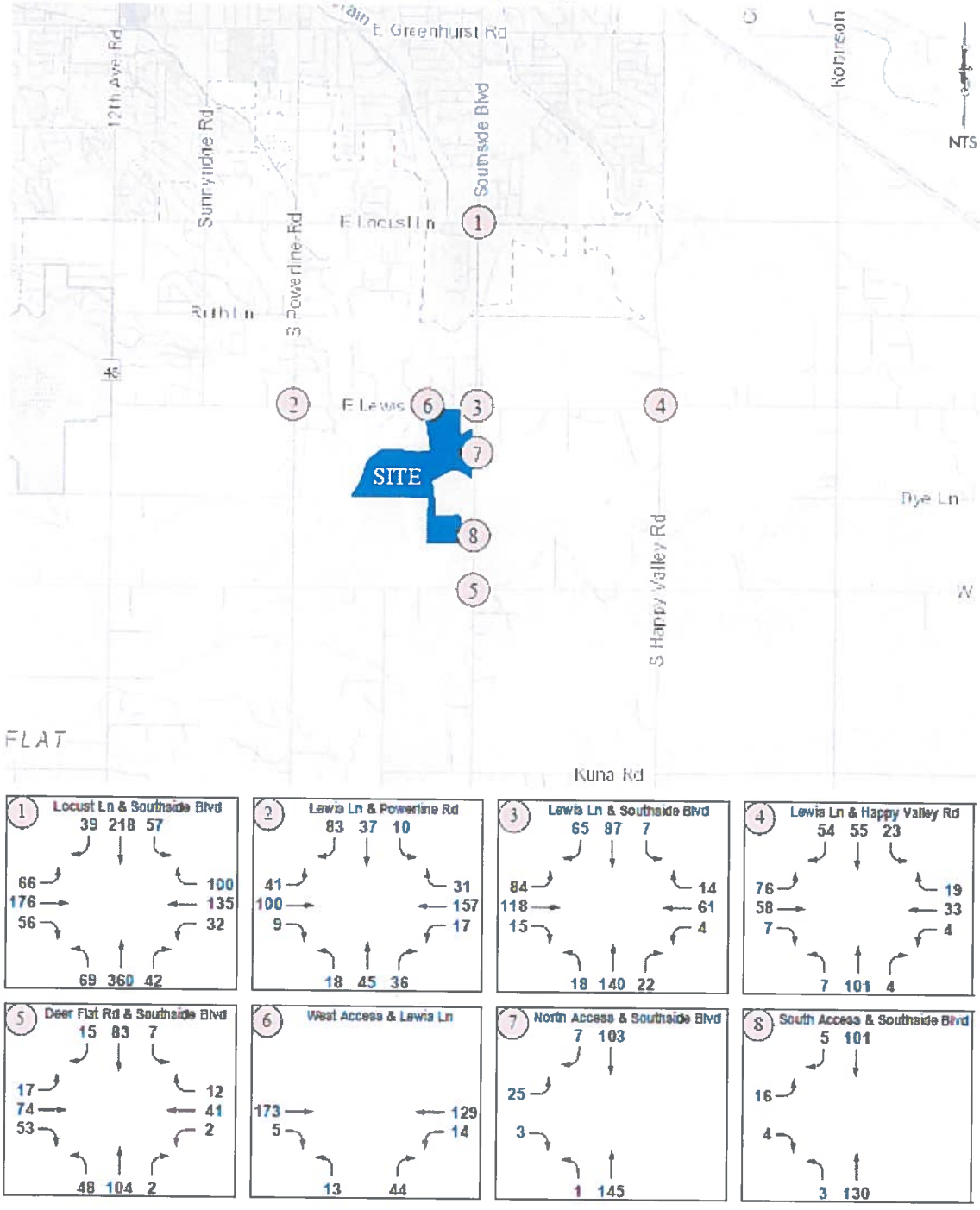
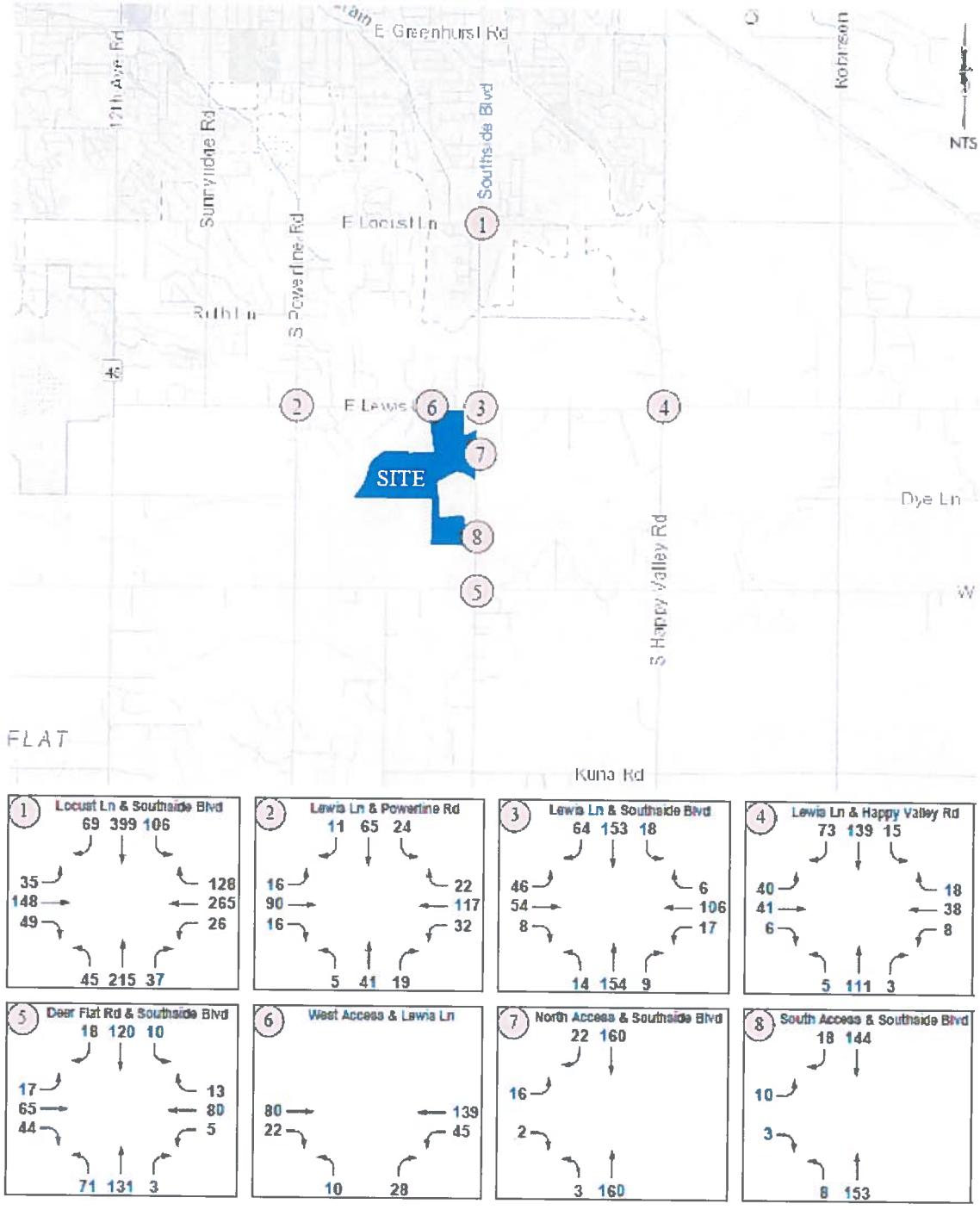


Figure 4.5 – 2025 Build-Out Year PM Peak Hour Total Traffic



4.4 Intersection Measures of Effectiveness

To determine the 2025 total traffic impacts, the study area intersections were analyzed with the existing intersection control and lane configuration or with the preceding improvements needed to mitigate 2018 existing and 2025 background traffic. Copies of the analysis reports are included in the appendix. Table 4.3 summarizes the intersection capacity analysis results. All study area intersections are expected to meet minimum operational thresholds.

Table 4.3 – Intersection MOEs – 2025 Build-Out Year Total Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
①	Locust Lane and Southside Boulevard	Single-Lane Roundabout	Intersection LOS	A	B
			Intersection Delay [s/veh]	10	13
			Worst Movement MOEs	B / 0.57 (NB)	C / 0.72 (SB)
		Traffic Signal	Intersection LOS	B	B
			Intersection Delay [s/veh]	11	13
			Worst Movement MOEs	B / 0.20 (EBL)	B / 0.15 (EBL)
②	Lewis Lane and Powerline Road	All-Way Stop	Intersection LOS	A	A
			Intersection Delay [s/veh]	9	9
			Worst Movement MOEs	A / 0.30 (WB)	A / 0.28 (WB)
③	Lewis Lane and Southside Boulevard	Two-Way Stop (Lewis)	EB / WB LOS	C / B	C / C
			EB / WB Delay [s/veh]	17 / 13	17 / 16
			Worst Movement MOEs	C / 0.44 (EB)	C / 0.28 (EB)
④	Lewis Lane and Happy Valley Road	Two-Way Stop (Lewis)	EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	13 / 11	13 / 12
			Worst Movement MOEs	B / 0.25 (EB)	B / 0.18 (EB)
⑤	Deer Flat Road and Southside Boulevard	Two-Way Stop (Deer Flat)	EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	13 / 12	14 / 15
			Worst Movement MOEs	B / 0.30 (EB)	B / 0.22 (WB)

4.5 Intersection Mitigation

All study intersections are expected to meet minimum operational thresholds with 2025 total traffic. In addition, none of the study area intersections are expected to meet NCHRP Report 457 turn-lane guidelines. As a result, no improvements are needed to mitigate 2025 total traffic.

4.6 Site Access and Circulation

Lewis Lane and Southside Boulevard segments along the site frontages are outside the City of Nampa's limits. These roadway segments are arterial roadways under the NHD1's jurisdiction. The roadway and driveway spacing requirements on these roadways segments are based on the *2017 Edition of the Highway Standards and Development Procedures Policy for the Association of Canyon County Highway Districts, §3061 Intersection and Approach Policy*. According to the policy, no new private approaches or local roads are allowed on arterial roadways. Collector streets are allowed on a principal arterial roadway at 2,000 feet spacing, and 1,300 feet spacing on a minor arterial.

Figure 4.6 shows the proposed site access locations. The proposed west access on Lewis Lane is located approximately 1,250 feet west of Southside Boulevard and is offset approximately 60 feet east of Rogers Drive, a private roadway serving approximately 10 dwelling units. The north access on Southside Boulevard is located approximately 1,350 feet south of Lewis Lane and 30 feet south of a private driveway. The south access on Southside Boulevard is located approximately 1,700 feet north of Deer Flat Road and 150 feet south of a private driveway. The proposed access locations do not meet NHD1 intersection and approach spacing requirements, and will need variance to the policy.

The proposed accesses are located in generally straight segments of the adjacent roadways. Based on field review, all proposed site access intersections have adequate sight distance exceeding 500 feet along Lewis Lane and 610 feet along Southside Boulevard. Photos from field review and sight distance field worksheets are included in the appendix. There existing vertical curves on Lewis Lane and Southside Boulevard in the vicinity of the proposed site access intersections. However, these vertical curves are relatively flat and do not obstruct sight distance to less than the minimum requirements for the posted speeds. Building setback and landscaping should be located and designed to ensure adequate intersection sight distance of 500 feet for the access intersection on Lewis Lane, a 45 mph roadway west of Southside Boulevard, and 610 feet for access intersection on Southside Boulevard, a 55 mph roadway south of Lewis Lane.

Turn lane analysis was evaluated at the proposed site access intersections using guidelines from the NCHRP Report 457. See the appendix for turn lane worksheets. None of the proposed site access intersections are expected to meet NCHRP Report 457 turn-lane guidelines with 2025 total traffic. Table 4.4 summarizes the intersection capacity analysis results for the proposed site access intersections. All proposed site access intersections are expected to operate at LOS B or better with 2025 total traffic.

All proposed internal roadways are expected to carry less than 1,000 vehicles per day.

Table 4.4 – Site Access Intersection MOEs – 2025 Build-Out Year Total Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
6	West Access and Lewis Lane	Stop (Access)	NB LOS	B	A
			NB Delay [s/veh]	10	10
			Worst Movement MOEs	B / 0.08 (NB)	A / 0.05 (NB)
7	North Access and Southside Boulevard	Stop (Access)	EB LOS	B	B
			EB Delay [s/veh]	10	11
			Worst Movement MOEs	B / 0.04 (EB)	B / 0.03 (EB)
8	South Access and Southside Boulevard	Stop (Access)	EB LOS	A	B
			EB Delay [s/veh]	10	10
			Worst Movement MOEs	A / 0.03 (EB)	B / 0.02 (EB)

Figure 4.6 – Proposed Site Access Locations and Expected ADTs



4.7 School Routes

Osprey Estates Subdivision is located within walking distance to the exist New Horizons Magnet Elementary School located on Southside Boulevard north of the site. Some children residing within the development are expected to walk/bike to school. The most likely school routes will be along the southside of Lewis Lane and west side of Southside Boulevard. School children will have to cross Lewis Lane and Southside Boulevard along the school route.

Currently, there is existing sidewalk on Southside Boulevard along the school frontage and the Southside Boulevard Methodist Church in the northeast corner of the Southside Boulevard and Lewis Lane intersection. However, there are no sidewalks along Lewis Lane or Southside Boulevard south or west of the intersection. Osprey Estates Subdivision will be constructing sidewalks along their frontages on Lewis Lane and Southside Boulevard. However, there will still be sidewalk gaps between the site and school. The segments of Lewis Lane and Southside Boulevard that are missing sidewalks do have paved/gravel shoulder.

Based on the roadway characteristics (2 lanes with 35 mph speed limit on Southside Boulevard north of Lewis Lane, 2 lanes with 45 mph speed limit on Lewis Lane west of Southside Boulevard) and projected traffic volumes, unsignalized crosswalks are recommended on the west and north legs of the Lewis Lane and Southside Boulevard intersection to accommodate pedestrian crossing. Appropriate pedestrian/school crossing signs (MUTCD S1-1 and W16-7P) should also be installed at these crosswalks. Based on the Ada County Highway District pedestrian crossing treatment guidelines, neither a pedestrian actuated beacon or signal is warranted with the roadway characteristics and projected volumes, less than 4,000 vehicles per day. Pedestrian crossing treatment should be reevaluated if traffic on Lewis Lane or Southside Boulevard adjacent to the site increase significantly due to potential off-site developments in the area.

(THE COMPLETE 134 PAGE DOCUMENT CAN BE VIEWED AT THE DSD OFFICE, EXHIBIT 21 OF THIS STAFF REPORT)

ATTACHMENT F

PRELIMINARY GEOTECHNICAL EVALUATION FOR "OSPREY ESTATES SUBDIVISION" – A ±147 ACRE SITE - LOCATED SOUTH OF EAST LEWIS LANE AND WEST OF SOUTHSIDE BOULEVARD, NAMPA, IDAHO

August 27, 2019

GTI-Project No. 2054-ID

Prepared For:

WESTPARK COMPANIES
1710 S. Wells Avenue, Suite 110
Meridian, Idaho 83680

GeoTek, Inc.

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GeoTek, Inc.
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August 27, 2019
Project No. 2054-ID

WESTPARK COMPANIES
1710 S. Wells Avenue, Suite 110
Meridian, Idaho 83680

Attention: Mr. Taylor Merrill

Subject: **Preliminary Geotechnical Evaluation** for "Osprey Estates Subdivision" – a 147± acre site – Located South of East Lewis Lane and West of Southside Boulevard, Nampa, Idaho

Reference: **Geotechnical Engineering Report – Revised** – of Osprey Estates Subdivision – Southwest of Southside Boulevard and Lewis Lane, Nampa, ID, MTI File Number B181542g, dated November 15, 2018

In accordance with your request, GeoTek, Inc. (GTI) has completed a geotechnical evaluation of the subject property for the construction of a single-family residential development with associated improvements. This report is preliminary in nature due to the fact that GTI was requested to perform field exploratory test pits on only approximately two-thirds of the site. Note that Materials Testing and Inspection (MTI) previously performed field exploratory borings to identify basalt rock depth in the eastern and southern sections of the site. Reference the attached report for further information (Appendix E). GeoTek will excavate additional exploratory test pits, upon the notice and direction from our client, on the central, western, and southern portions of the property and supply a complete Geotechnical Evaluation with updated findings and design recommendations at that time. The purpose of our study was to evaluate the soils underlying the site and to provide recommendations for project design and construction based on our findings. This report outlines the geologic and geotechnical conditions of the site based on current data and provides earthwork and construction recommendations with respect to those conditions.

SCOPE OF SERVICES

The scope of our services has included the following:

1. Review of soils and geologic reports and maps for the site (Appendix A).
2. Site reconnaissance.
3. Review of aerial photographs.
4. Excavating and logging of twenty-five (25) exploratory test pits (Appendix B).

5. Obtaining samples of representative soils, as the exploratory test pits were advanced.

6. Performing laboratory testing on representative soil samples (Appendix D).

7. Assessment of potential geologic constraints.

8. Engineering analysis regarding foundation design/construction, foundation settlement, and site preparation.

9. Preparation of this report.

SITE DESCRIPTION

The project site consists of irregularly shaped parcels, totaling approximately 147± acres, and is bound by East Lewis Lane and single-family homes to the north, Southside Boulevard and an industrial storage yard along with single-family homes to the east, undeveloped agricultural land to the south, as well as agricultural land and the Aaron Drain to the west (Figures 1 and 2). Currently, the property consists of multiple pastures used for ranching and raising livestock. The Burke Lateral irrigation channel bisects the site running east to west. The Aaron Drain – a large, concrete lined irrigation canal, approximately 6 feet wide – borders the western side of the site's western-most parcel and runs northeast to southwest. Access to the site is possible from East Lewis Lane and Southside Boulevard. From topographic maps, the site's elevation is approximately 2,545± feet to 2,590± feet above mean sea level. Historically, topography generally directs surface water to the southwest.

PROPOSED DEVELOPMENT

It is our understanding that site development would consist of performing typical cut and fill earthwork to attain the desired graded configuration(s) for the construction of a residential subdivision consisting of one- to two-story detached single-family residential structures with associated improvements. It is further assumed that final site grade will be within 5 feet of existing site grade.

FIELD STUDIES

Subsurface conditions at the site were explored by using a rubber-tired backhoe. Twenty-five (25) test pits were advanced onsite for the Test Pit Logs in August of 2019. A log of the site exploration is included with this report in Appendix B. Four (4) percolation tests were performed on the subject site, as well as four (4) initial ground water measurements (Appendix C). Field studies were completed during August of 2019 by field personnel who conducted field excavation location mapping, logged the excavations, and obtained samples of representative soils for laboratory testing.

The approximate locations of the explorations are indicated on the enclosed Site Exploration Plan (Figure 2). The Unified Soil Classification System (USCS) Classification was used to visually classify the subgrade soils during the field evaluation.

REGIONAL GEOLOGY

The subject site is situated within the Boise River Valley, which comprises the northwestern portion of the Snake River Plain physiographic province. The western portion of the Snake River Plain is aligned in a northwest-southeast direction and generally divides the Owyhee mountains to the south from the Central Idaho mountains toward the north (Wood and Clemens, 2004). The headwaters of the Boise River are located in the Central Idaho mountains east of Boise, Idaho. The river leaves the central mountains and enters the Snake River Plain near Barber and drains toward the west into the Snake River near Parma. The Owyhee mountains and the Central Idaho Mountains are composed predominantly of volcanic and igneous rocks. The western portion of the Snake River Plain is a northwest trending complex graben formed by extension and regional uplift along the northern boundary of the basin and range province (Wood and Clemens, 2004). The graben generally forms a basin which has been partially filled with younger sedimentary and volcanic rocks (Malde, 1991).

The Boise River Valley is bounded on the northeast by the Boise Front, which is a northwest trending topographic high extending generally from Boise to Emmett, Idaho. The Boise Front consists of Cretaceous aged granitic and metamorphic rocks cut by Tertiary aged rhyolite and overlain with Miocene aged lake sediments (Wood and Clemens, 2004). These units have been cut by northwest trending faults which down drop these units toward the southwest. The faults also provide conduits for Quaternary aged basalt intrusions and flows (Malde, 1991).

The depositional environment for the valley floor is dominantly lake laid deposits of sand, silt and clay. These materials were deposited during two periods of lake activity, one during the Miocene and the other during the Pleistocene. This valley infilling process has been subsequently truncated by down faulting within the valley ranging in height from a few feet to over 50 feet. Younger alluvium has been, and continues to be, transported dominantly by water and deposited on the basins gently sloping valley floor and within low-level flood plains. Portions of the alluvial deposits are being down cut by intermittent streams to the flood plain, and as a result stream terraces are being formed.

SITE SOILS

Artificial Fill

Based on field studies, some spread fills were observed along the perimeter of the site and on the interior maintenance roadways. This fill is generally associated with the construction of the roadways and irrigation laterals. This spread fill shall be considered artificial fill. The majority of the property has been cultivated for ranching use and the upper 12 inches of material has been disturbed and consists of silts and sandy silts with a moderate amount of organics. This shall be considered artificial fill. Deeper fills may be encountered onsite. The "Artificial Fills" are soft, contain

organics/roots, and are not considered suitable for support of foundations. All artificial fill material should be removed as described in the "Removals" section of this report.

Native Alluvial Soils

Alluvial soils encountered generally consisted surficial layers of silts and sandy silts, underlain by sandy silts, silty sands, and basalt. The moisture content within the alluvial materials was generally slightly moist near surface and at depth. The consistency of these soils ranged from soft to firm near surface and moderately dense/firm to dense/stiff at depth. We anticipate that the onsite soils can be excavated with conventional earthwork equipment. Basalt rock was encountered in most of the excavations. Special excavation equipment and techniques may be necessary, dependent upon depths of cuts and whether or not these harder materials are encountered during construction.

Much of the property has been used for ranching and livestock grazing, causing the upper 12 inches of soil to be disturbed. The soil consists of brown to dark brown silts and sandy silts with a moderate amount of organics and roots overlying layers of sandy silts and silty sands. Deeper fills may be encountered onsite. The upper 12 inches of soil across the site is soft and contains organics/roots. This soil layer is not considered suitable for support of foundations. All upper soils should be removed as described in the "Removals" section of this report.

After the upper 12 inches of soil is removed, the underlying 12 inches of the native alluvium soil will require, at a minimum, some removal and/or processing efforts to be considered suitable for the support of the proposed site improvements. Locally deeper processing/removals may be necessary. Refer to the "Recommendations Earthwork Construction" section of this report for specific site preparation recommendations.

SURFACE & GROUND WATER

Ground water was not encountered in any of the excavations. According to the State of Idaho Department of Water Resources Well Drillers' logs, ground water in the vicinity is approximately 53 to 54 feet below the existing ground surface. Irrigation ditches exist adjacent to the site and they transmit water on a periodic basis. Generally, irrigation ditches and canals will locally influence ground water during the irrigation season (i.e., May through October). If encountered, wet materials should be spread out and air-dried or mixed with drier soils to reduce their moisture content as appropriate for fill placement. Ground water is not anticipated to adversely affect planned development, provided that earthwork construction methods comply with recommendations contained in this report or those made subsequent to review of the improvement plan(s). GTI assumes that the design civil engineer on record will evaluate the site for potential flooding and set grades such that the improvements are adequately protected. These observations reflect conditions at the time of this investigation and do not preclude changes in local ground water conditions in the future from natural causes, damaged structures (lines, pipes etc.), or heavy irrigation.

TECTONIC FAULTING AND REGIONAL SEISMICITY

The site is situated in an area of active as well as potentially active tectonic faults, however no faults were observed during the field evaluation. There are a number of faults in the regional area, which are considered active and would have an affect on the site in the form of ground shaking, should they be the source of an earthquake. It is reasonable to assume that structures built in this area will be subject to at least one seismic event during their life, therefore, it is recommended that all structures be designed and constructed in accordance with the International Building Code (IBC). Based on experience in the general vicinity, library references, and a field evaluation of the site – a Seismic Design Site Class Designation of 'C' may be used for seismic design.

Secondary Seismic Constraints

The following list includes other potential seismic related hazards that have been evaluated with respect to the site, but in our opinion, the potential for these seismically related constraints to affect the site is considered negligible.

- Liquefaction
- Dynamic Settlements
- Surface Fault Rupture
- Ground Lurching or Shallow Ground Rupture

Summary:

It is important to keep in perspective that if a seismic event were to occur on any major fault, intense ground shaking could be induced to this general area. Potential damage to any settlement sensitive structures would likely be greatest from the vibrations and impelling force caused by the inertia of the structures mass than that created from secondary seismic constraints. Considering the subsurface soil conditions and local seismicity, it is estimated that the site has a low risk associated with the potential for these phenomena to occur and adversely affect surface improvements. These potential risks are no greater at this site than they are for other structures and improvements developed on the alluvial materials in this vicinity.

RESULTS OF LABORATORY TESTING

Laboratory tests were performed on representative samples of the onsite earth materials in order to evaluate their physical and chemical characteristics. The tests performed, and the results obtained are presented in Appendix D.

CONCLUSIONS

Based on our field exploration, laboratory testing and engineering analyses, it is our opinion that the subject site is suited for development from a geotechnical engineering viewpoint. The recommendations presented herein should be incorporated into the final design, grading, and construction phases of development. The engineering analyses performed concerning site

preparation and the recommendations presented below have been completed using the information provided to us regarding site development. In the event that the information concerning proposed development is not correct, the conclusion and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and conclusions of this report are modified or approved in writing by this office.

RECOMMENDATIONS - EARTHWORK CONSTRUCTION

General

All grading should conform to the International Building Code (IBC) and the requirements of the City of Nampa except where specifically superseded in the text of this report. During earthwork construction all removals, drain systems, slopes, and the general grading procedures of the contractor should be observed and the fill selectively tested.

If unusual or unexpected conditions are exposed in the field, they should be reviewed by this office and if warranted, modified and/or additional recommendations will be offered. It is recommended that the earthwork contractor(s) perform their own independent reconnaissance of the site to observe field conditions firsthand. If the contractor(s) should have any questions regarding site conditions, site preparation, or the remedial recommendations provided, they should contact an engineer at GeoTek for any necessary clarifications prior to submitting earthwork bids. All applicable requirements of local and national construction and general industry safety orders, the Occupational Safety and Health Act, and the Construction Safety Act should be met.

Demolition

The following recommendations are provided as guidelines in the event a structure is encountered that are not intended to remain.

1. All existing surface or subsurface structures (not intended to remain), within the area to be developed, should be razed and moved off site.

2. If a septic tank (to be abandoned or below a proposed improvement) is located within the project site, it is recommended that it be pumped out and with few exceptions likely removed. Any leach lines, seepage pits, or other pipes associated with this structure should also be removed or properly abandoned.

3. If any wells are encountered, an attempt should be made to identify the owner and purpose of the well. Well abandonment should adhere to the recommendations provided by the Idaho Department of Water Resources, the Public Health Department, or any other government agencies. If the well is located in the area of a proposed structure, these recommendations should be reviewed by GTI and if warranted, additional geotechnical recommendations will be offered.

Removals/Processing - General

Presented below are removal/processing recommendations for the various earth materials encountered on the project. Debris, vegetation, and other deleterious material should be stripped/removed from areas proposed for structural improvements.

Based on a review of the exploratory logs and our site reconnaissance, after the upper 12 inches of surficial soils are removed and disposed of offsite, a minimum removal/processing depth of 12 inches into underlying alluvial materials should be accomplished across the site. If the left in place soils can be scarified to encounter a competent layer below; they may be processed in place; otherwise, they should be removed to competent material. Locally deeper removals/processing may be necessary based on the field conditions exposed

We recommend that all surficial clays and deleterious soils be removed from beneath the foundations and building pads and replaced with a low expansive structural fill. The exposed ground surface should be moisture conditioned and compacted a minimum depth of 12 inches to provide uniform foundation support. Also, a minimum of 12 inches of compacted structural fill below the bottom of footings should be provided. A minimum relative compaction of 90 percent of the laboratory maximum modified density (ASTM D 1557), at a moisture content of optimum or above, is necessary to generate any near surface settlements. Locally deeper removals/processing may be necessary based on the conditions exposed. Removal bottoms should be checked by a representative of GeoTek, Inc. to see if deeper removals are necessary.

If very hard basalt rock or cemented materials are encountered during over-excavation, excavation may potentially be terminated, but this will need to be determined on a case by case basis by a representative of GTI. Foundations for the proposed structures may be founded on basalt rock or cemented material; however, in order to avoid the potential for differential settlement, the entire foundation would need to be supported entirely by this material. If this is not possible, basalt rock or cemented materials should be removed to a minimum depth of 12 inches below the bottom of the footing and replaced with compacted structural fill. This can best be determined in the field based upon the conditions exposed. Termination of any excavation on basalt rock or cemented soils will need to be reviewed by GTI and the owner. If existing improvements or property line restrictions limit removals, condition specific recommendations would be provided on a case-by-case basis. During earthwork construction, care should be taken by the contractor so that adverse ground movements or settlements are not generated affecting existing improvements.

Transitional Pads

Transitional pads are defined in this report as pads which are partially cut and partially fill. To mitigate some of the differential settlement which will occur on transitional pads, the cut side should be over-excavated/processed to a minimum depth equal to 2 feet below the bottom of the footings or to the depth of the fill, whichever is less. On transitional pads with more than 7.5 feet of fill, plans need to be reviewed by GTI and site-specific recommendations will be provided.

Excavation Difficulty

Basalt rock was encountered in most of our excavations. Moderately hard to hard materials that are 24 inches thick or less may be excavated with heavy equipment. It should be expected that excavation of these materials would produce oversized material requiring special fill placement techniques. GTI could provide additional consultation regarding rock-soil fills upon request. It should be anticipated that in some areas blasting may be necessary to attain the desired graded configurations and that a trencher will be necessary to achieve the desired trench depth for utilities. Personnel from our office should be onsite to observe the excavation process. As an alternative, we would suggest raising the grades in areas to avoid costly excavation.

Frozen soils, if encountered, should be removed and allowed to thaw prior to any fill placement or construction. Removal bottoms should be checked by a representative of GTI to see if deeper removals are necessary.

Fill Placement

Subsequent to completing removals/processing and ground preparation, the excavated onsite and/or imported soils may be placed in relatively thin lifts (less than 8 inches thick), cleaned of vegetation and debris, brought to at least optimum moisture content, and compacted to a minimum relative compaction of 90 percent of the laboratory standard (ASTM D 1557).

Import Material

Potentially, soils will be imported to the site for earthwork construction purposes. A sample of any intended import material should first be submitted to GTI so that, if necessary, additional laboratory or chemical testing can be performed to verify that the intended import material is compatible with onsite soils. In general, import material should be within the following minimum guidelines:

* Free of organic matter and debris.
* Maintain less than 0.2 percent sulfate content.
* Maintain less than 3.0 percent soluble material.
* Maintain less than 0.02 percent soluble chlorides.
* Maintain less than 0.2 percent sodium sulfate content.
* Maintain a Plasticity Index less than 12 (i.e., low expansive).
* One hundred percent passing the six-inch screen.
* At least seventy-five percent passing a three-inch screen.
* Maintain between 5 and 20 percent passing the No. 200 screen.
* Maintain at least 20 percent retained on the No. 4 screen.

Observation and Testing

During earthwork construction, all removal/processing and the general grading procedures should be observed and the fill selectively tested by a representative(s) of GTI. If unusual or unexpected conditions are exposed in the field, they should be reviewed by GTI and, if warranted, modified and/or additional recommendations will be offered.

Ground Water

Ground water was not encountered in any of our excavations. According to the State of Idaho Department of Water Resources Well Drillers' logs, ground water in the vicinity is approximately 53 to 54 feet below the existing ground surface. Based on site conditions in the future, a transient high ground water condition could develop over a clay or less permeable layer and this condition could generate down gradient seepage. The possible effect these layers could have on this and adjacent sites should be considered and can best be evaluated in the field during grading. If warranted by exposed field conditions, it may be recommended that a drainage system be established to collect and convey any subsurface water to an appropriate location for drainage. Typically, potential areas of seepage are difficult to identify prior to their occurrence; therefore, it is often best to adopt a "wait and see" approach to determine if any seepage conditions do develop, at which time specific recommendation to mitigate an identified condition can be provided.

Earthwork Settlements

Ground settlement should be anticipated due to primary consolidation and secondary compression. The total amount of settlement and time over which it occurs is dependent upon various factors, including material type, depth of fill, depth of removals, initial and final moisture content, and in-place density of subsurface materials. Compacted fills, to the heights anticipated, are not generally prone to excessive settlement. However, some settlement of the left in-place alluvium is expected, and the majority of this settlement is anticipated to occur during grading.

RECOMMENDATIONS – FOUNDATIONS

General

Foundation design and construction recommendations are based on preliminary laboratory testing and engineering analysis performed on near surface soils. The proposed foundation systems should be designed and constructed in accordance with the guidelines contained herein and in the International Building Code.

Based on our experience in the area, the soils onsite should have a negligible corrosive potential to concrete and metal, materials selected for construction purposes should be resistant to corrosion. Where permitted by building code, PVC pipe should be utilized. All concrete should be designed, mixed, placed, finished, and cured in accordance with the guidelines presented by the Portland Cement Association (PCA) and the American Concrete Institute (ACI).

Based on our grading recommendations, the soils beneath the foundations are anticipated to have low expansion potential. Therefore, foundation recommendations for low expansive soil conditions are provided below. If more expansive soils are encountered, the pad(s) will either need to be regraded and the more expansive soils removed by the contractor or increased foundation recommendations will need to be provided.

Conventional Foundation Recommendations

Column loads are anticipated to be 50 kips or less, while wall loads are expected to be 3 kips per linear foot or less. The conventional recommendations provided are from a geotechnical

engineering perspective (i.e., for expansive conditions) and are not meant to supersede the design by the project's structural engineer.

Preliminary recommendations for foundation design and construction are presented below. The specific criteria to be used should be verified on evaluation of the proposed buildings, structural loads, and expansion and chemical testing performed after grading is complete.

The bearing values indicated are for the total dead, plus frequently applied live loads and may be increased by one third for short duration loading – which includes the effects of wind or seismic forces. When combining passive pressure and friction for lateral resistance, the passive component should be reduced by one third. A grade beam, reinforced as below and a minimum of 12 inches wide, should be utilized across all large entrances. The base of the grade beam should be at the same elevation as the bottom of the adjacent footings. Footings should be founded at a minimum depth of 24 inches below the lowest adjacent ground surface, as required by local codes, to extend below the frost line. Reinforcement for spread footings should be designed by the project's structural engineer.

For foundations systems including a crawl space, it is recommended that the foundation be designed so that water is not allowed to penetrate the under-floor area. Proper grading and backfill for the foundations are critical and should adhere to the "fill placement" and "drainage" recommendations of this evaluation, as well as local building codes.

Footing Type	Minimum Structural Fill Depth Below Footing Bottom (inches)	Minimum Footing Depth (inches)	Allowable Bearing Pressure (psf)	Coefficient of Friction	Passive Earth Pressure (psf/ft)	Maximum Earth Pressure (psf)
Strip/Spread	12	24	2,000	0.35	250	3,000

The coefficient of friction and passive earth pressure values recommended are working values. Strip footings should have a minimum width of one (1) foot and spread footings should have a minimum soil to concrete area of four (4) square feet. Increases are allowed for the bearing capacity of the footings at a rate of 250 pounds per square foot for each additional foot of width and 250 pounds per square foot for each additional foot of depth into the recommended bearing material, up to the maximum outlined. If the bearing value exceeds 3,000 psf, an additional review by GTI is recommended. As mentioned previously, the exposed ground surface should be moisture conditioned and compacted a minimum depth of 12 inches below bottom of footings.

Foundation Settlement

Provided that the recommendations contained in this report are incorporated into final design and construction phase of development, total settlement is estimated to be less than one inch and differential settlement is estimated to be less than 0.75 inches for a 25-foot span. Two-way angular

distortions due to settlements are not estimated to exceed 1/400. The structures should be loaded uniformly, thus avoiding any localized settlements.

SUBSURFACE DISPOSAL SYSTEM FOR STORMWATER

It is the understanding of GTI that subsurface stormwater storage facilities will be constructed on site. The facilities should be designed in accordance with the City of Nampa requirements. During our field reconnaissance, bedrock was encountered sporadically across the site and was found to vary significantly in depth encountered (i.e. basalt was encountered as shallow as 0.5 feet in TP-4 and was not encountered at a depth of 12.0 feet in TP-6). Reference Figure 3 – "Basalt Depth Map". GTI recommends locating subsurface disposal systems for stormwater in areas of the site where deeper basalt was encountered which would correlate to higher infiltration rates.

A minimum clearance of 3 feet is required between the bottom of the proposed infiltration facility and any condition that would inhibit downward flow such as bedrock. If stormwater storage facilities will be constructed in areas of basalt that will not meet an infiltration rate of greater than 0.5 inch/hour, GTI recommends drilling and blasting to a minimum of 10 feet into the basalt bedrock materials. Additional feasibility infiltration testing can be conducted by GTI once facility locations are planned.

A blasting contractor should be contacted for specific recommendations, however based on our preliminary research, it should be anticipated that drilling and blasting spacing be approximately 4-foot on centers in order to produce the necessary void ratio and to produce material less than 2 feet in size. It is recommended that GeoTek, Inc. perform a field percolation test upon completion of the drilling and blasting operation to verify proper infiltration.

If bedrock is encountered during construction at an elevation higher than that shown on the design plans, the Design Professional of Record shall be contacted to redesign the facility based on the higher elevation. An infiltration test shall be performed to verify the design infiltration rate is met.

PAVEMENT SECTIONS

Pavement sections presented in the following table are based on an R-value of 20, assumed traffic index(s) for industrial development and estimated traffic index(s) for residential construction. These pavement sections are presented for planning purposes only and should be verified based on specific laboratory testing performed subsequent to rough grading of the site.

Pavement Construction and Maintenance

All section changes should be properly transitioned. If adverse conditions are encountered during the preparation of subgrade materials, special construction methods may need to be employed. All subgrade materials should be processed to a minimum depth of 12 inches and compacted to a minimum relative compaction of 90 percent near optimum moisture content. All aggregate base

should be compacted to a minimum relative compaction of 95 percent at optimum moisture content. The recommended pavement sections provided are meant as minimums. If thinner or highly variable pavement sections are constructed, increased maintenance and repair should be expected. If the ADT (average daily traffic) or ADTT (average daily truck traffic) increases beyond that intended, as reflected by the traffic index(s) used for design, increased maintenance and repair could be required for the pavement section.

Positive site drainage should be maintained at all times. Water should not be allowed to pond or seep into the ground. If planters or landscaping are adjacent to paved areas, measures should be taken to minimize the potential for water to enter the pavement section.

ASSUMED TRAFFIC RIGHT-OF-AWAY	SUBGRADE R-VALUE	MINIMUM ASPHALT THICKNESS (in.)	MINIMUM AGGREGATE THICKNESS (in.)	
			Aggregate Base (3/4" minus)*	Subbase (Pitrun)*
Residential Normal Traffic TI = 6.0	20	2.5	4.0	10.0
Collector Normal Traffic TI = 8.0	20	3.0	6.0	14.0

*Aggregate Base and Subbase gradation specification requirement per the current edition of the Idaho Standards for Public Works Construction (ISPWC) Manual. Asphalt mix design shall meet the requirements of ISPWC, Section 810 Class III Plant mix. Materials shall be placed in accordance with ISPWC Standard Specifications for Highway Construction.

OTHER RECOMMENDATIONS

Site Improvements

As is commonly known, expansive soils are problematic with respect to the design, construction, and long-term performance of concrete flatwork. Due to the nature of concrete flatwork, it is essentially impossible to totally mitigate the effects of soil expansion. Typical measures to control soil expansion for structures include: low expansive soil caps, deepened foundation system, increased structural design, and soil presaturation. As they are generally not cost effective, these measures are very seldom utilized for flatwork because it's less costly to simply replace any damaged or distressed sections than to "structurally" design them. Even if "structural" design parameters are applied to flatwork construction, there would still be relative movements between adjoining types of structures and other improvements (e.g., curb and sidewalk). This is particularly true as the level of care during construction of flatwork is often not as meticulous as that for structures. Unfortunately, it is fairly common practice for flatwork to be poured on subgrade soils, which have been allowed to dry out since site grading. Generally, after flatwork construction is completed, landscape irrigation begins, utility lines are pressurized, and drainage systems are utilized; presenting

the potential for water to enter the dry subgrade soils and causing the soil to expand.

Recommendations for exterior concrete flatwork design and construction can be provided upon request. If, in the future, any additional improvements are planned for the site, recommendations concerning the geological or geotechnical aspects of design and construction of said improvements could be provided upon request. This office should be notified in advance of any fill placement, grading, or trench backfilling after rough grading has been completed. This includes any grading, utility trench and retaining wall backfills.

Landscape Maintenance and Planting

Water has been shown to weaken the inherent strength of all earth materials. Slope stability is significantly reduced by overly wet conditions. Graded slopes constructed within and utilizing onsite materials would be erosive. Eroded debris may be minimized and surficial slope stability enhanced by establishing and maintaining a suitable vegetation cover as soon as possible after construction. Compaction to the face of fill slopes would tend to minimize short-term erosion until vegetation is established. Plants selected for landscaping should be lightweight, deep-rooted types, which require little water and are capable of surviving the prevailing climate. From a geotechnical standpoint, leaching is not recommended for establishing landscaping. If the surface soils are processed for the purpose of adding amendments, they should be recompacted to 90 percent compaction. Only the amount of irrigation necessary to sustain plant life should be provided. Over watering the landscape areas could adversely affect proposed site improvements. We recommend that any proposed open bottom planter areas adjacent to proposed structures be eliminated for a minimum distance of 5 feet and desert landscape, using xeriscape technology, be used outside of this buffer zone. As an alternative, closed-bottom type planters could be utilized. An outlet, placed in the bottom of the planter, could be installed to direct drainage away from structures or any exterior concrete flatwork. Irrigation timers should be adjusted on a monthly basis.

Soil Corrosion

Based on our experience in the area, the soils onsite should have a negligible corrosive potential to concrete and metal, materials selected for construction purposes should be resistant to corrosion. Where permitted by building code PVC pipe should be utilized. All concrete should be designed, mixed, placed, finished, and cured in accordance with the guidelines presented by the Portland Cement Association (PCA) and the American Concrete Institute (ACI).

Trench Excavation

All footing trench excavations should be observed by a representative of this office prior to placing reinforcement. Footing trench spoil and any excess soils generated from utility trench excavations should be compacted to a minimum relative compaction of 90 percent if not removed from the site. Considering the nature of the onsite soils, it should be anticipated that caving or sloughing could be a factor in excavations. Shoring or excavating the trench walls and slopes to the angle of repose (typically 25 to 45 degrees) may be necessary and should be anticipated in non-cemented soils. All excavations should be observed by one of our representatives and conform to national and local safety codes.

Onsite Utility Trench Backfill

Considering the overall nature of the soil encountered onsite, it should be anticipated that materials will need to be imported to the site for use as pipe bedding and pipe zone material. All utility trench backfill should be brought to near optimum moisture content and then compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard. Compaction testing and observation, along with probing should be performed to verify the desired results. Sand backfill, unless excavated from the trench, should not be used adjacent to perimeter footings or in trenches on slopes. Compaction testing and observation, along with probing should be performed to verify the desired results. Sand backfill, unless excavated from the trench, should not be used adjacent to perimeter footings or in trenches on slopes. Compaction testing and observation, along with probing should be performed to verify the desired results. Offsite utility trenches should be compacted to a minimum of 90 relative compaction. Compaction testing and observation, along with probing should be performed to verify the desired results.

Drainage

Positive site drainage should be maintained at all times in accordance with the IBC. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond and/or seep into the ground. Pad drainage should be directed toward the street or other approved area. The ground immediately adjacent to the foundation shall be sloped away from the building at a minimum of 5-percent for a minimum distance of 10 feet measured perpendicularly to the face of the wall. If physical obstructions prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternate method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 2-percent where located within 10 feet of the building foundation. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2-percent away from the building. Roof gutters and down spouts should be utilized to control roof drainage. Down spouts should outlet onto paved areas or a minimum of five feet from proposed structures or into a subsurface drainage system. Areas of seepage may develop due to irrigation or heavy rainfall. Minimizing irrigation will lessen this potential. If areas of seepage develop, recommendations for minimizing this effect could be provided upon request.

PLAN REVIEW

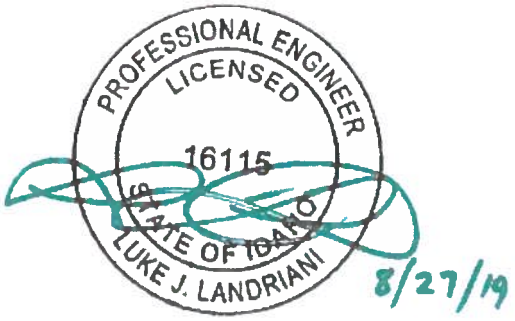
Final grading, foundation, and improvement plans should be submitted to this office for review and commented on as they become available in order to minimize any misunderstandings between the plans and recommendations presented herein. In addition, foundation excavations and earthwork construction performed on the site should be observed and tested by this office. If conditions are found to differ substantially from those stated, appropriate recommendations would be offered at that time.

LIMITATIONS

The materials encountered on the project site and utilized in our laboratory study are believed representative of the area; however, soil materials vary in character between excavations and conditions exposed during mass grading. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing, or recommendations performed or provided by others. Since our study is based upon the site materials observed, selective laboratory testing and engineering analysis, the conclusions and recommendations are professional opinions. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

The opportunity to be of service is greatly appreciated. If you have any questions concerning this report or if we may be of further assistance, please do not hesitate to contact the undersigned.

Respectfully submitted,
GeoTek, Inc.



Steven J. Huber, EI
Staff Professional

Luke J. Landriani, PE
Senior Engineer

Tyler S. Lydeen, EI
Staff Professional

(THE COMPLETE 103 PAGE DOCUMENT CAN BE VIEWED AT THE DSD OFFICE, EXHIBIT 22 OF THIS STAFF REPORT)

ATTACHMENT G

City Hall
411 3rd Street South
Nampa, Idaho 83651

(208) 468-5458
engineering@cityofnampa.us
cityofnampa.us/engineering

March 19, 2020

Dan Lister, Planner
Canyon County Development Services Department
111 North 11th Ave
Caldwell, ID 83605

RE: Case No. OR2019-0009, CR2019-0009, and SD2019-0036
Osprey Estates Subdivision

Dear Dan,

The City of Nampa Engineering Division and Planning Department have already performed a review of the Preliminary Plat for the Osprey Estates Subdivision (Case No. SD2019-0036) and provided comments and recommended conditions in a letter dated January 22, 2020. Said letter has been attached hereto for reference along with a copy of the previously recorded water hook-up agreement from 2008.

We request the County consider all previously supplied comments and conditions in their decision and have no new comments. A representative of the City of Nampa will plan to attend the public hearings associated with this development to be available for questions.

Please call me at (208) 468-5422 should you have any follow up questions or concerns.

Sincerely,

Caleb LaClair, P.E.
Assistant City Engineer

CC: File
CC: Daniel Badger, P.E., City Engineer
CC: Tom Points, P.E., Public Works Director
CC: Doug Critchfield, City of Nampa Senior Planner

Attachment 1 – City of Nampa Letter "RE: Case No. SD 2019-0036 – Osprey Estates Subdivision Preliminary Plat Review", dated January 22, 2020.

Attachment 2 – Agreement for Hookup of Two Mountains Subdivision to the City of Nampa Domestic Water System (Instrument No. 2008060589), dated October 30, 2008.

City Hall
411 3rd Street South
Nampa, Idaho 83651

(208) 468-5458
engineering@cityofnampa.us
cityofnampa.us/engineering

January 22, 2020

Dan Lister, Planner
Canyon County Development Services Department
111 North 11th Ave
Caldwell, ID 83605

RE: Case No. SD2019-0036 – Osprey Estates Subdivision
Preliminary Plat Review

Dear Dan,

The City of Nampa Engineering Division and Planning Department have reviewed the Preliminary Plat for the Osprey Estates Subdivision (Case No. SD2019-0036), a subdivision of property located southwest of the Southside Blvd and E Lewis Lane intersection. The subject property is in the City of Nampa Impact Area, but is not currently adjacent to City limits. The City limit is currently about 0.5-miles north of Lewis Lane, and therefore the property does not have a path to annexation.

Upon review of the submittal documents, we consider the application meets the City of Nampa Preliminary Plat requirements. We do however provide the following comments and recommended conditions of approval to addressed at time of Final Plat.

Planning Department Comments

1. **Comprehensive Plan:** The above referenced property is in the Nampa Area of City Impact and is designated as Low Density Residential in the Future Land Use Map of the Comprehensive Plan. The density range for this development is 1.01 to 2.5 dwelling units/acre. The project has indicated the density to be 1.26 dwelling units/acre, demonstrating compliance with the Comprehensive Plan.
2. **Landscape Buffer Requirements on Southside Blvd., E. Lewis Ln.:** Nampa City Code §10-33-4 requires a 25' landscape buffer with 1 tree located every 25 linear feet and 15 shrubs every 100 linear feet, with on both roadways. The plans demonstrate compliance with this requirement.
3. **Trees:** The trees selected appear to conform to the Nampa City Code. For additional or substitute trees, please refer to the 2018 Treasure Valley Tree Selection Guide, which can be found online at: https://id-nampaparksandrec.civicplus.com/DocumentCenter/View/923/2018-Treasure-Valley-Tree-Selection-Guide. Acer rubrum, Acer Freemanii and Liquidambar styraciflua are not approved tree selections.
4. **Pedestrian Pathway:** The Stoddard Public Pathway is planned to extend south through the project area coincident with the old railroad tracks as reflected in the City's adopted Bicycle & Pedestrian Master Plan. Regionally the trail is intended to continue south toward the Snake River. Per Nampa

Policy, the Developer should be required to construct a 10' wide pathway through the development to accommodate future connection to existing trail located north of the property and continued extension to the south. The pathway shall be contained within a 20' minimum wide parcel or easement that can be dedicated to the City at the time of future annexation.

Engineering Division Comments

Access:

1. The project will take access from the following roads and:
   - E Lewis Lane – classified as "Minor Arterial", speed limit 35-mph; and,
   - Southside Blvd – classified as "Principal Arterial", speed limit 55-mph.
2. The City requires a minimum of 50' public right-of-way dedication from Section Line for arterial roads. The Preliminary Plat complies with this requirement.
3. A Traffic Impact Study was prepared for the project by CR Engineering, and was reviewed and approved by the City. No project triggered impacts or mitigation improvements were identified.
4. The internal local streets are proposed to be public and are shown to be constructed to Nampa public standards with curb and sidewalk on both sides of the street. The streets will be maintained by Nampa Highway District No. 1 to eventually be taken over by the City when the property annexes in the future.
5. Since the local streets are proposed to have attached sidewalks, the City would support reducing the right-of-way width to 50' to meet the City's "Standard Local (2)" section.
6. Nampa City Code Section 9-3-1 requires construction of sidewalk and drainage ditches along Collector and Arterial roads. We request the Developer be required to construct sidewalk along the Southside Blvd and E Lewis Lane frontage at an elevation to support future road widening. The sidewalk can be located within the public right-of-way or landscape buffer.
7. We recommend construction of traffic calming measures to reduce vehicle speed along White-Tailed Eagle Way, Black Hawk Street, and Silver-Tailed Hawk Ave due to their long and straight alignments.
8. Our GIS Addressing team has reviewed the proposed street names and have noted a number of issues including duplicate names, absence of pre-directional denotation, and street type errors. The Developer should coordinate with the Nampa GIS Addressing coordinator, Daniel Wagoner (wagnerd@cityofnampa.us, 208-468-5475), to correct issues prior to Final Plat submittal.

Utilities:

9. The project proposes to connect to and extend the City of Nampa water system. The City's system has sufficient capacity to serve this development. Water mains in Southside Blvd and E Lewis Lane shall be 12" while internal mains shall be 8".
10. An agreement for hook-up to City water was established for the subject property in 2008 when the development was referred to as the "Two Mountains Subdivision" (Instrument No. 2008060589). An addendum to this agreement will need to be established prior to approval of the first phase to reflect current ownership, site layout, and current City codes and policies.
11. The City's sewer and pressure irrigation system are not within a reasonable distance to the property, and connection to these systems is not considered economically viable.

12. The project proposes to construct a private community wastewater collection and treatment system. All permitting for this system will be through the Idaho Department of Environmental Quality.

Drainage:

13. The applicant submitted a preliminary drainage report. The report appears to follow Nampa design standards. However, drainage Facility G is reflected as having a historical discharge. If this is the case, final plans will need to reflect where this release is being conveyed to. Any discharge to an Irrigation District managed drain will require a License Agreement for the discharge. In addition, detention facilities need to be designed in accordance with Section 113 of the Nampa Drainage Policy, including inflow and outflow hydrograph analysis.

Recommended Conditions of Approval

1. Developer shall construct a 10' wide pathway through the development in accordance with the City's adopted Bicycle & Pedestrian Master Plan to accommodate future connection to existing Stoddard Pathway located north of the property and continued extension to the south. The pathway shall be contained within a 20' minimum wide parcel or easement that can be dedicated to the City at the time of future annexation.
2. Developer shall dedicate a minimum of 50' from Section Line of public right-of-way along E Lewis Lane and Southside Blvd.
3. Developer shall construct sidewalks along the E Lewis Lane and Southside Blvd frontages in accordance with Nampa City Code Section 9-3-1.
4. Developer shall coordinate and address all street naming concerns with the Nampa GIS Addressing coordinator prior to submittal of the first Final Plat.
5. Developer shall enter into an amended agreement with the City for hook-up to the City's public water system prior to approval of the first Final Plat.
6. Developer, Nampa Highway District No. 1, and the City shall enter into a joint agreement for construction and maintenance of public roads and public/private utilities within the public right-of-way.

Please call me at (208) 468-5422 should you have any follow up questions or concerns. We also request notice of the scheduled public hearing so a City representative can attend and be available for questions.

Sincerely,

Caleb LaClair, P.E.
Assistant City Engineer

CC: File
CC: Daniel Badger, P.E., City Engineer
CC: Tom Points, P.E., Public Works Director

INSTRUMENT NO. 2008060589

AGREEMENT FOR HOOKUP OF TWO MOUNTAINS SUBDIVISION TO THE CITY OF NAMPA DOMESTIC WATER SYSTEM, AGREEMENT TO BE ANNEXED INTO THE CITY OF NAMPA, AND CONSENT TO COLLECTION OF SUBSTITUTE DEVELOPMENT IMPACT FEES PRIOR TO ANNEXATION

THIS AGREEMENT is made and entered into this 30 day of October, 2008, by and between the **CITY OF NAMPA**, a Municipal corporation of the State of Idaho, hereinafter referred to as "CITY", and CJSEV Holdings L.L.C., hereinafter referred to as "USER".

1. **RECITALS:**

1.1 **WHEREAS,** User is the sole owner in law and/or in equity of land in Canyon County, Idaho described on Exhibit A attached hereto and, by this reference, incorporated herein as if set forth in full, hereinafter referred to as the "Real Property"; and

1.2 **WHEREAS,** User is developing the Real Property to be known as the Two Mountains Subdivision; and

1.3 **WHEREAS,** the Real Property is located outside of the city limits of the City; and

1.4 **WHEREAS,** it would be advantageous to User to develop the Real Property with City of Nampa domestic water service; and

1.5 **WHEREAS,** the City is empowered to establish, create, develop, maintain and operate domestic water service system; and

1.6 **WHEREAS,** the City has enacted an ordinance governing its Water System codified in *Title 8, Chapter 1 of the Nampa City Code;* and

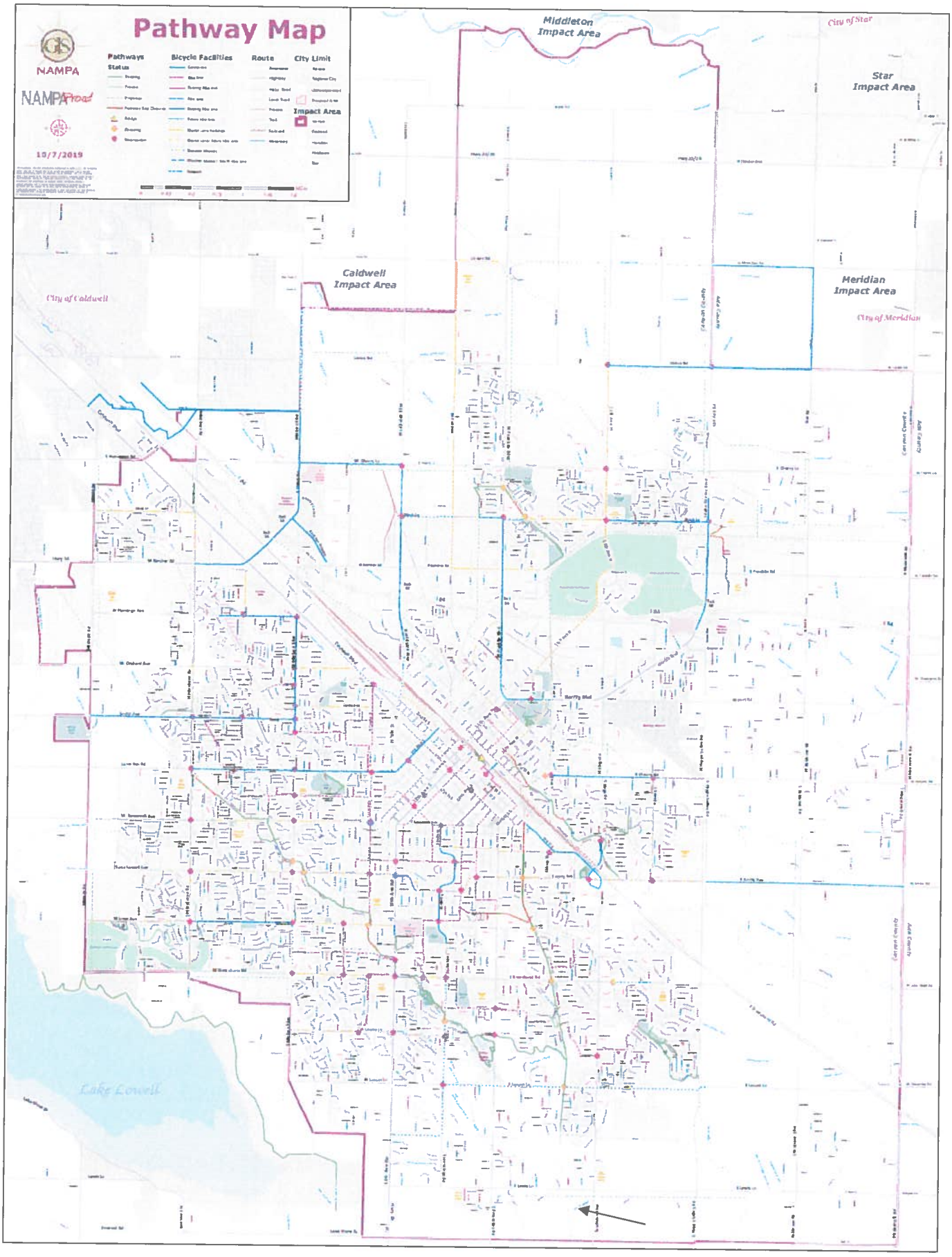
1.7 **WHEREAS,** it is in the best interests of both the City and the User that City domestic water services be extended to the Real Property; and

1.8 **WHEREAS,** the City is willing to allow the User to develop the Real Property by connecting the Real Property to City of Nampa

NAMPA CITY OF

2008 NOV 14 PM 2 43
RECORDED
CANYON COUNTY RECORDER
BY

2008060589


Pathway Map
NAMPA
NAMPA Road
10/7/2019
Pathways
Status
Bicycle Facilities
Route
City Limit
Impact Area
Middleton Impact Area
City of Star
Star Impact Area
Caldwell Impact Area
City of Caldwell
Meridian Impact Area
City of Meridian
Lake Lowell

ATTACHMENT H

Nampa & Meridian Irrigation District

1503 FIRST STREET SOUTH
FAX #208-463-0092

NAMPA, IDAHO 83651-4395
nmid.org

OFFICE: Nampa 208-466-7861
SHOP: Nampa 208-466-0663

February 25, 2020

Canyon County Development Services Department
111 North 11th Avenue, Suite 140
Caldwell, ID 83605

RE: OR2019-0009/ CR2019-0009/ SD2019-0036/ Lewis Lane & Southside Boulevard

Dear Development Services:

Nampa & Meridian Irrigation District (NMID) has no comment in regards to the proposed comprehensive plan amendment and conditional rezone.

In regards to the preliminary plat, the developer and NMID had entered into a license agreement for the piping of the District's Burke Canal, which runs through this property with a minimum easement of fifty feet (50') total, twenty-five feet (25') from centerline each side.

The construction of the piping of the Burke Lateral is nearly completed. However, revisions for a proposed pressurized irrigation system that the District will own and operate to provide irrigation water to this property are still in process.

The actual design for the proposed subdivision and other encroachments will require a Land Use Change Application and full review of plans before final plat is approved.

Should you have any further questions regarding this letter, please feel free to give me a call.

Sincerely,

Greg G. Curtis
Water Superintendent
Nampa & Meridian Irrigation District
GGC/ gnf

Cc: Office file
D. Duvall, Asst. Water Superintendent

RECEIVED
FEB 28 2020
CANYON COUNTY

APPROXIMATE IRRIGABLE ACRES
RIVER FLOW RIGHTS - 23,000
BOISE PROJECT RIGHTS - 40,000

ATTACHMENT I

To Whom It May Concern:

Nampa School District has reviewed Case OR2019-0009-CR2019-0009-SD2019-0036. This property is split between different home school zones. The children from the east side of the property will attend the following schools.

- Ronald Reagan Elementary
- East Valley Middle School
- Columbia High School

The children from the west side of the property (about 35 to 40 lots on the western edge) will attend the following schools:

- Lake Ridge Elementary
- South Middle School
- Skyview High School

This neighborhood would generate a need for a boundary change for the district. Lake Ridge Elementary is currently at or near capacity. We would need to consider directing all the students from this neighborhood to Ronald Reagan Elementary, East Valley Middle School, and Columbia High School. The district does allow for open enrollment at any school where capacity allows it.

We would expect 184 buildable lots to house between 85 and 100 students. These students would need to have a safe space for waiting for the bus. A safe space includes items like adequate sidewalk space for the group and lighting, so they are visible. The neighborhood design also needs to realize that parents will be bringing their cars to the entrance of the neighborhood to wait with their child or wait for their child. We would also advocate for sidewalks on both sides of the road within the community for student safety.

There are occasions when a bus needs to travel to a house within the neighborhood (e.g., Preschool busing and Special Education busing). Our full-size buses used for door to door service may not be able to navigate the community if cars are parked curbside.

Sincerely,
Peter Jurhs
Executive Director of Operations

ATTACHMENT J

KELLER ASSOCIATES

Meridian
(208)

February 3, 2020

Ms. Jennifer Almeida
Canyon County Planner
Development Services Department
111 North 11th Ave. #140
Caldwell, Idaho 83605

Re: Osprey Estates Subdivision Preliminary Plat Application

Dear Ms. Almeida:

Keller Associates, Inc. has reviewed the Preliminary Plat for the Osprey Estates Subdivision dated January 22, 2020. We reviewed the applicant's package for conformance with the Canyon County Code Ordinance Article 17. We have the following comments in order for the applicant to satisfy the County's requirements:

1. Historic irrigation lateral, drain, and ditch flow patterns shall be maintained unless approved in writing by the local irrigation district or ditch company.
2. Finish grades at subdivision boundaries shall match existing finish grades. Runoff shall be maintained on subdivision property unless otherwise approved.
3. Easements for sewer / water facilities will be required where placed outside of public right of way.
4. Plat shall comply with requirements of the local highway district.
5. Plat shall comply with irrigation district requirements.
6. Plat shall comply with Southwest District Health requirements.

We recommend that the preliminary plat be **APPROVED with the conditions listed above.** Any variance or waivers to the Canyon County standards, ordinances, or policies must be specifically approved in writing by the County. Approval of the above referenced preliminary plat does not relieve the Registered Professional Land Surveyor or the Registered Professional Engineer of those responsibilities.

If you have any questions, please do not hesitate to call Keller Associates at (208) 288-1992.

Sincerely,

KELLER ASSOCIATES, INC.

Ryan V. Morgan, P.E.
County Engineer
cc: File

From: Becky Yzaguirre
Sent: Monday, January 13, 2025 4:51 PM
To: Daniel Badger; Janet Weybright
Cc: Nakeata Gilliam; Candace Fry; Grant Gehring; JD Lyle
Subject: RE: Osprey Estates Phase 3

Hi Daniel,

Below is a link to the plans.
1st Submittal

Thank you!

ARDURRA

Becky Yzaguirre
Land Use Planner
[redacted]
1144 South Silverstone Way, Ste 300
[redacted] | www.ardurra.com

From: Daniel Badger <BadgerD@cityofnampa.us>
Sent: Monday, January 13, 2025 4:45 PM
To: Becky Yzaguirre [redacted]; Janet Weybright <weybrightj@cityofnampa.us>
Cc: Nakeata Gilliam <gilliamn@cityofnampa.us>; Candace Fry <fryc@cityofnampa.us>
Subject: RE: Osprey Estates Phase 3

Yes that works.

Daniel Badger, P.E.
City Engineer, Engineering
O: 208.468.5469, F: 208.465.2261
City of Nampa, Like us on Facebook

From: Becky Yzaguirre [redacted]
Sent: Monday, January 13, 2025 4:44 PM
To: Daniel Badger <BadgerD@cityofnampa.us>; Janet Weybright <weybrightj@cityofnampa.us>
Cc: Nakeata Gilliam <gilliamn@cityofnampa.us>; Candace Fry <fryc@cityofnampa.us>
Subject: RE: Osprey Estates Phase 3

CAUTION: This email originated OUTSIDE the City of Nampa domain. DO NOT click on links or open attachments unless you recognize the sender or are sure the content is safe. Highlight the suspect email and send using the Outlook Phish Alert Report button or call the IT Helpdesk at (208) 468-5454.

Daniel, should I just email the plans to you?

ARDURRA

Becky Yzaguirre
Land Use Planner
[redacted]
1144 South Silverstone Way, Ste 300
[redacted] | www.ardurra.com

From: Daniel Badger <BadgerD@cityofnampa.us>
Sent: Monday, January 13, 2025 4:40 PM
To: Janet Weybright <weybrightj@cityofnampa.us>
Cc: Becky Yzaguirre [redacted] Nakeata Gilliam <gilliamn@cityofnampa.us>; Candace Fry <fryc@cityofnampa.us>
Subject: RE: Osprey Estates Phase 3

Yes,
We can but we would not approve them for construction until you have your plat approvals through Canyon County.

Daniel Badger, P.E.
City Engineer, Engineering
O: 208.468.5469, F: 208.465.2261
City of Nampa, Like us on Facebook

From: Janet Weybright <weybrightj@cityofnampa.us>
Sent: Monday, January 13, 2025 4:14 PM
To: Daniel Badger <BadgerD@cityofnampa.us>
Cc: Becky Yzaguirre [redacted] Nakeata Gilliam <gilliamn@cityofnampa.us>; Candace Fry <fryc@cityofnampa.us>
Subject: FW: Osprey Estates Phase 3

Daniel,

Would you mind responding to Becky's question below?

Thanks,
Janet

Janet K. Weybright
Admin Specialist
208-468-4430
500 12th Ave South, Nampa, ID 83651
Citizen's Guide to Planning – Learn More About Planning!
NAMPA Ready

From: Becky Yzaguirre [redacted]
Sent: January 13, 2025 3:42 PM
To: Janet Weybright <weybrightj@cityofnampa.us>
Subject: Osprey Estates Phase 3

CAUTION: This email originated OUTSIDE the City of Nampa domain. DO NOT click on links or open attachments unless you recognize the sender or are sure the content is safe. Highlight the suspect email and send using the Outlook Phish Alert Report button or call the IT Helpdesk at (208) 468-5454.

Hi Janet,

I have a questions for you. Osprey Estates Phase 3 is located in Canyon County, but the city has plans to annex in the future, with the City providing water for the project. Can I submit construction documents without a final plat?

Thank you!

ARDURRA

Becky Yzaguirre
Land Use Planner
[redacted]
1144 South Silverstone Way, Ste 300
[redacted] | www.ardurra.com

From: Ron Johnson <johnsonrl@nampafire.org>
Sent: Thursday, February 20, 2025 4:43 PM
To: JD Lyle
Cc: Grant Gehring
Subject: RE: [EXTERNAL]Osprey Estates Subdivision No. 3 CD Review

Hi JD,
I acknowledge that I have received your plans. I put a screenshot of my signature of the acknowledgment form just in case.

Please let me know if you need anything else.

SIGNATURES DO NOT INDICATE APPROVAL OR COMPLETION OF OFF

The purpose of this form is to facilitate communication between applicants and age relevant requirements, application processes, and other feedback can be provided early in the planning process. Record of communication with an agency regarding t submitted instead of a signature. After the application is submitted, impacted agenc hearing notification by DSD staff and will have the opportunity to submit comments

Southwest District Health:
☐ Applicant submitted/met for informal review.

Date: _____ Signed: _____
Authorized Southwest District Health I
(This signature does not guarantee project or p

Fire District: District: Nampa Fire Dist.
☒ Applicant submitted/met for informal review.

Thanks, 2/20/25 Ron Johnson

Regards,

Ron Johnson - IAAI-CFI, CFM
Deputy Chief - Fire Marshal
9 12th Ave South, Nampa, ID
O: 208.468.5760
C: 208.250.7005
Nampa Fire Website - Facebook

From: JD Lyle <JLyle@ardurra.com>
Sent: Thursday, February 20, 2025 11:55 AM
To: Ron Johnson <johnsonrl@nampafire.org>
Cc: Grant Gehring <GGehring@ardurra.com>
Subject: [EXTERNAL]Osprey Estates Subdivision No. 3 CD Review

CAUTION: This email originated outside the Nampa Fire domain. DO-NOT CLICK on links or open attachments unless you recognize sender email or are sure content is safe.

Good Morning Ron,

I'm reaching out regarding Osprey Estates Subdivision No. 3 as part of the Osprey Estates Subdivision at the southwest corner of Lewis Ln and Southside Blvd in Nampa. As a part of our submittal process, Canyon County is asking us to provide proof of notice to applicable agencies regarding the construction drawings and Final Plat for this project. I've attached the Construction Drawings for review and/or approval by the district. If I can get a confirmation email that you have received and are aware of this project, that should be sufficient for the county.

To Nampa Fire District

Also, if you need anything else to complete your review of this project, please let me know.

SIGNATURES DO NOT INDICATE APPROVAL OR COMPLETION OF OFFICIAL REVIEW.

The purpose of this form is to facilitate communication between applicants and agencies so that relevant requirements, application processes, and other feedback can be provided to applicants early in the planning process. Record of communication with an agency regarding the project can be submitted instead of a signature. After the application is submitted, impacted agencies will be sent a hearing notification by DSD staff and will have the opportunity to submit comments.

Southwest District Health:

☐ Applicant submitted/met for informal review.

Date: _____ Signed: _____

Authorized Southwest District Health Representative
(This signature does not guarantee project or permit approval)

Fire District: District: _____

☐ Applicant submitted/met for informal review.

Date: _____ Signed: _____

Authorized Fire District Representative
(This signature does not guarantee project or permit approval)

Thanks,

ARDURRA

J.D. Lyle, P.E.
Engineer II
[redacted]
332 N Broadmore Way, Nampa, ID 83687
[redacted] | www.ardurra.com

From: Eddy Thiel <eddy@nampahighway1.com>
Sent: Wednesday, January 15, 2025 6:52 AM
To: JD Lyle
Subject: RE: Osprey Estates Subdivision No. 3 - CD Submittal

Good Morning J.D.

I received the items mentioned this morning on my desk.

Thank you,

Eddy

Eddy Thiel
ROW
eddy@nampahighway1.com
4507 12th Ave. Rd. • Nampa, id 83686
TEL 208.467.6576 • FAX 208.467.9916

From: JD Lyle <JLyle@ardurra.com>
Sent: Friday, January 10, 2025 10:04 AM
To: Eddy Thiel <eddy@nampahighway1.com>
Cc: Taylor Merrill <taylor@westparkco.com>; Grant Gehring <GGehring@ardurra.com>
Subject: Osprey Estates Subdivision No. 3 - CD Submittal

Morning Eddy,

Heads up, I am having a hard copy of all submittal documents for Osprey Estate Subdivision No. 3 delivered to your office this morning. That also includes a USB drive with digital copies of the CD's and Storm Drain Report. I'd appreciate a confirmation when you have received these items.

Thanks,

ARDURRA
J.D. Lyle, P.E.
Engineer II
[redacted]
332 N Broadmore Way, Nampa, ID 83687
[redacted] | www.ardurra.com

From: Anthony Lee <Anthony.Lee@swdh.id.gov>
Sent: Wednesday, February 12, 2025 4:10 PM
To: Grant Gehring
Subject: RE: Osprey Estates Subdivision-Phase 3-Southwest District Coordination

Hi Grant,

I am aware of the submittal of the final plat for Osprey Estates Subdivision Phase 3. However, sanitary restrictions must remain **in force** until the Wastewater Treatment Plant (WWTP) has the required upgrades and permits.

Please let me know if you have any questions.

Thank you,

SOUTHWEST DISTRICT HEALTH

Check out our new online self-service portal here! PORTAL

Anthony Lee, RS/BS | Land Development Senior
o 208.455.5384 | c 208.899.1285 | f 208.455.5300
anthony.lee@swdh.id.gov | SWDH.org
13307 Miami Ln., Caldwell, ID 83607

From: Grant Gehring <GGehring@ardurra.com>
Sent: Wednesday, February 12, 2025 10:01 AM
To: Anthony Lee <Anthony.Lee@swdh.id.gov>
Cc: JD Lyle <JLyle@ardurra.com>
Subject: Osprey Estates Subdivision-Phase 3-Southwest District Coordination

CAUTION: **This email originated outside the State of Idaho network. Verify links and attachments BEFORE you click or open, even if you recognize and/or trust the sender. Contact your agency service desk with any concerns.**

Hello Anthony,
Thanks for the call back. Attached are our construction drawings for the Phase 3 of Osprey Estates Subdivision that we have submitted to the City of Nampa, DEQ, and other jurisdictions for review.
Like I said, I am not exactly sure what the county will require, but this is the section of the final plat checklist that we need to address. The county engineer has requested that we submit a final plat application in order for them to review our construction drawings, so we just need proof that you have been notified about the project and are aware that the plat will be coming in the future. Whether that is in your court or someone else's, we'd appreciate something we can give to the county.

SIGNATURES DO NOT INDICATE APPROVAL OR COMPLETION OF OFFICIAL REVIEW.

The purpose of this form is to facilitate communication between applicants and agencies so that relevant requirements, application processes, and other feedback can be provided to applicants early in the planning process. Record of communication with an agency regarding the project can b submitted instead of a signature. After the application is submitted, impacted agencies will be sent a hearing notification by DSD staff and will have the opportunity to submit comments.

Southwest District Health:

☐ Applicant submitted/met for informal review.

Date: _____ Signed: _____

Authorized Southwest District Health Representative
(This signature does not guarantee project or permit approval)

Let me know if you have any questions, thanks!

ARDURRA

Grant Gehring, EI
Staff Engineer
[redacted]
332 N Broadmore Way, Nampa, ID 83687
[redacted] | www.ardurra.com