STORMWATER POLLUTION PREVENTION PLAN

Designed in accordance with the Missouri State Operating Permit

Discovery Park Zone 1-4 & Aria 1st Plat Lot 1

Permit Tracking # MORA23630

Owner/Operator:

Intrinsic Development
3622 Endeavor Avenue, Suite 101
Columbia, MO 65201
573.881.0280

Prepared by:

Olsson
1301 Burlington Street, Suite 100
North Kansas City, MO 64116
816.361.1177

March 2023

SWPPP Certification (to be signed by permittee):

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

olsson

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SECTION 1

Delegation Statements & Contractor Certifications

Delegation Statement(s) for applicable personnel should be kept in this section. Contractor Certification Statements that contain contact information for those responsible for specific activities on the project should also be kept here.

Delegation of Authority

I,_____, hereby designate the person(s) or specifically described position(s) below to be a duly authorized representative(s) for the purpose of overseeing compliance with environmental requirements, including the Missouri State Operating Permit.

Duly Authorized Representative:

Name or Position: _____

Company: _____

Address: _____

Phone: _____

Email: _____

By signing the certification below, I certify that I meet the signing requirements J.5.a of the Missouri State Operating Permit, 40 CFR 122.22 and 10 CSR 20-6.010 for this project.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Permittee Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

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Permittee Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Contractor/Subcontractor Certification

Project Name: _____

Permit Number: _____

Project Owner: _____

As a contractor/subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review upon request.

Each contractor/subcontractor engaged in activities at the construction site that could impact stormwater should be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the project named above:

Service Provided: _____

Company Name: _____

Address: _____

_____

Telephone: _____

Representative: _____

Title: _____

Signature: _____

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Service Provided: _____

Company Name: _____

Address: _____

_____

Telephone: _____

Representative: _____

Title: _____

Signature: _____

Date: _____

SECTION 2

Permit Authorization & Missouri State Operating Permit

Permit authorization from the MDNR and a copy of the Missouri State Operating Permit will be kept in this section.

The Application for Land Disturbance Stormwater General Permit was completed through the Missouri Gateway for Environmental Management at https://dnr.mo.gov/mogem/.

SECTION 3

SWPPP Narrative

SWPPP NARRATIVE CONTENTS

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1.0. PROJECT CONTACT INFORMATION

Parties directly related to the compliance of the site are listed below. Any blank contacts were not known at the time of SWPPP creation and should be filled in when contractors are assigned.

Should any of the above personnel change, tables will be updated and noted on the Amendment Log found in Section 7 and additional Contractor Certification Sheets will be added to Section 1 of this SWPPP.

Owner/Operator		
Name: Brian Maenner	Title: Vice President of Development	
Company: Intrinsic Development		
Address: 3622 Endeavor Avenue, Suite 101		
City: Columbia	State: MO	ZIP Code: 65201
Email address: bpmaenner@intrinsicdevelopment.com	Telephone Number: 573.881.0280	

Operator/General Contractor		
Name:	Title:	
Company:		
Address:		
City:	State:	ZIP Code:
Email address:	Telephone Number:	

SWPPP Preparer		
Name: Brock Worthley	Title: Associate Civil Engineer	
Company: Olsson, Inc.		
Address: 1301 Burlington Street, Suite 100		
City: North Kansas City	State: MO	ZIP Code: 64116
Email address: bworthley@olsson.com	Telephone Number: 816.361.1177	

Permittee Designated Environmental Lead		
Name:	Title:	
Company:		
Address:		
City:	State:	ZIP Code:
Email address:	Telephone Number:	

SWPPP Inspector		
Name:	Title:	
Company:		
Address:		
City:	State:	ZIP Code:
Email address:	Telephone Number:	

Best Management Practice (BMP) Installer		
Name:	Title:	
Company:		
Address:		
City:	State:	ZIP Code:
Email address:	Telephone Number:	

Best Management Practice (BMP) Maintenance		
Name:	Title:	
Company:		
Address:		
City:	State:	ZIP Code:
Email address:	Telephone Number:	

2.0. INTRODUCTION AND DEFINITIONS

This document was created to comply with the Missouri State Operating Permit (MO-RA) in compliance with the Missouri Clean Water Law (Chapter 644 R.S. Mo. as amended) and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress). Relevant local ordinances are incorporated in Section 8 of this SWPPP. Permit language incorporated into this document will be denoted by *italics*.

The purpose of the SWPPP is to ensure the design, implementation, management, and maintenance of best management practices (BMPs) in order to prevent sediment and other pollutants in stormwater discharges associated with the land disturbance activities; compliance with the Missouri Water Quality Standards; and compliance with the terms and conditions of the general permit.

2.1. ACRONYMS

AST..... aboveground storage tank
BMP..... best management practice
MDNR..... Missouri Department of Natural Resources
ESA ..... environmental site assessment
ESC ..... erosion and sediment control
MO-RA..... Missouri State Operating Permit
MS4 ..... municipal separate storm sewer system
NRC..... National Response Center
NRCS ..... Natural Resources Conservation Service
REC ..... recognized environmental condition
SPCC..... spill prevention control and countermeasures plan
SVOC ..... semivolatile organic compound
SWPPP..... stormwater pollution prevention plan
TMDL..... total maximum daily load
TOC ..... total organic carbon
USEPA ..... United States Environmental Protection Agency
VOC..... volatile organic compound
WSS ..... Web Soil Survey

2.2. DEFINITIONS

Common Promotional Plan
A plan undertaken by one (1) or more persons to offer lots for sale or lease; where land is offered for sale by a person or group of persons acting in concert, and the land is contiguous or is known, designated, or advertised as a common unit or by a common name or similar names,

the land is presumed, without regard to the number of lots covered by each individual offering, as being offered for sale or lease as part of a common promotional plan.

Department
Missouri Department of Natural Resources

Immediately
For the purposes of this permit, immediately should be defined as within 24 hours.

Larger Common Plan of Development or Sale:
A continuous area where multiple separate and distinct construction activities are occurring under one plan, including any offsite borrow areas that are directly and exclusively related to the land disturbance activity. Off-site borrow areas utilized for multiple different land disturbance projects are considered their own entity and are not part of the larger common plan of development or sale. See definition of Common Promotional Plan to understand what a 'common plan' is.

Minimize
To reduce and/or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

Qualified Person (inspections)
A person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Volunteer Vegetation
A volunteer plant is a plant that grows on its own, rather than being deliberately planted for stabilization purposes. Volunteers often grow from seeds that float in on the wind, are dropped by birds, or are inadvertently mixed into soils. Commonly, volunteer vegetation is referred to as 'weeds'. This does not meet the requirements for final stabilization.

Waters of the State
Section 644.016.1(27) RSMo. defines waters of the state as, "All waters within the jurisdiction of this state, including all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common."

3.0. SITE DESCRIPTION

Project Name: Discovery Park Zone 1-4 and Aria 1st Plat Lot 1

Project Location: Lee's Summit, MO

Total project area: 198.01 Ac.

Area to be disturbed: 21.1 Ac.

Anticipated start date: March 2023

Anticipated end date: TBD

Endangered Species Information: Though Gray Bats (Myotis grisescens), Indiana Bats (Myotis sodalis), Northern Long-Eared Bats (Myotis septentrionalis), Tricolored Bats (Perimyotis subflavus), and Monarch Butterfly (Danaus plexippus) were noted in an IPaC inquiry with U.S. Fish and Wildlife Services, no known critical habitats are located within the project limits. An online Missouri Wildlife Heritage Review of the site noted there are records for state-listed endangered species, or Missouri species or natural communities of conservation concern within or near the project area. The Missouri Department of Conservation has been contacted for further review but has not completed their review. Their official response letter will be added to Section 10 once received. The IPac and Wildlife Heritage Review are provided in Section 10 of this binder as well.

Existing conditions: The existing site has been used to grow row crops in Aria and Discovery Park Zones 1, 3 and 4. An existing residential house is located in Discovery Park Zone 2. Aria is bordered by Lee's Summit Road to the north, NE Douglas Street to the east, Discovery Park Zone 1 to the south and undeveloped land to the west. Discovery Park Zone 1 is bordered by Aria to the north, NE Douglas Street to the east, NW Colbern Road to the south and undeveloped land to the west. Discovery Park Zone 2 is bordered by NW Colbern Road to the north, NE Douglas Street to the east, Interstate 470 to the south and Discovery Park Zone 3 to the west. Discovery Park Zone 3 is bordered by NW Colbern Road to the north, Discovery Park Zone 2 to the east, Interstate 470 to the south and Discovery Park Zone 4 to the west. Discovery Park Zone 4 is bordered by NW Colbern Road to the north, Discovery Park Zone 3 to the east, Interstate 470 to the south and N Main Street to the west. Refer to the site plan map in SWPPP binder Section 4 for a visual representation.

The site is mostly Greenton silty clay loam, with Sharpsburg silt loam and Snead-Rock outcrop complex throughout Discovery Park Zones 2, 3 and 4. Refer to the soils map in SWPPP binder Section 4 for additional information about the location and types of soils.

Description of construction activity: Construction will consist of mobilization, installing erosion control devices and then removal of trees to facilitate future mass grading of the site.

Table 1. Anticipated Sequence of Construction.

EROSION CONTROL PHASING CHART				
PROJECT PHASE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES:
1 – TREE CLEARING	1A	CONSTRUCTION ENTRANCE	1	INSTALL PER APWA DETAIL ESC-01
	1B	SILT FENCE	N/A	INSTALL PER APWA DETAIL ESC-03
	1C	ROCK DITCH CHECK	N/A	INSTALL PER APWA DETAIL ESC-10
	1D	TEMPORARY CONSTRUCTION FENCING	1	

Table 2. Outfalls.

#	Type	Location	Drainage Area
1	Creek Channel A4	N: 1013849.9 E: 2822093.3	171.87 Ac.
2	Ex. Roadway Culvert D2	N: 1011956.1 E: 2820909.1	229.46 Ac.
3	Ex. Roadway Culvert E1	N: 1011922.7 E: 2820698.2	29.15 Ac.
4	Ex. Roadway Culvert F2	N: 1011846.0 E: 2819908.2	12.76 Ac.
5	Ex. Roadway Culvert G2	N: 1011755.3 E: 2818985.7	7.93 Ac.
6	Ex. Roadway Culvert H1	N: 1010540.4 E: 2818205.2	56.17 Ac.

Receiving Waters: The receiving water for the project is Unity Lake Number One & Unity Lake Number Two. According to MDNR, Unity Lake Number Two has known pollutants of mercury in fish tissue however, at the time of this inquiry, no TMDLs have been put in place

4.0. EROSION AND SEDIMENT CONTROLS

Temporary BMPs used during active construction of the project will be listed below. Specific erosion and sediment control requirements found in the permit are also located here and should be addressed in the erosion and sediment control (ESC) plan sheets located in Section 5 of this SWPPP.

Table 3. Anticipated BMPs.

BMP	
Site Preparation	
SWPPP Sign	☒
Construction exit	☒
Wash rack	☐
Temporary stream crossing	☐
Surface roughening	☐
Tree protection	☒
Erosion Control	
Dust control	☒
Mulch	☒
Erosion control blankets	☐
Temporary seeding	☐
Permanent seeding	☐
Hydroseeding	☐
Sodding	☐
Slope protection	☐

BMP	
Sediment Control	
Silt fence	☒
Inlet protection	☐
Diversion berm	☐
Filter berm	☐
Outlet protection	☐
Check dam	☒
Sediment trap	☐
Sediment basin	☐
Pollution Prevention	
Stockpile	☐
Concrete washout	☐
Solid waste management	☒
Sanitary waste management	☒
Material staging areas	☒
	☐

Specification and detail sheets can be found in Section 6 of this SWPPP.

During construction, if additional BMPs not listed in Table 3 are required, the SWPPP will be amended. The BMP specification and detail sheets of the new BMPs should be added to Section 6 of this SWPPP, the locations noted on the BMP Tracking Map located in Section 5, and the change noted in the Log of Amendments located in Section 7 of this SWPPP.

4.1. EROSION AND SEDIMENT CONTROL DESIGN REQUIREMENTS

ESC plans for the project can be found in Section 5 of this SWPPP. Excerpts of these plans will be used as the basis of the BMP Tracking Map located in Section 5 of this SWPPP.

Ensure the design, installation, and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

- *a. Control stormwater volume, velocity, and peak flow rates within the site to minimize soil erosion;*
- *b. Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion and scour;*
- *c. Minimize the amount of exposed soil during construction activity;*
- *d. Minimize the disturbance of steep slopes;*
- *e. Minimize sediment discharges from the site. Address factors such as:*
    - *1) the amount, frequency, intensity, and duration of precipitation;*
    - *2) the nature of resulting stormwater runoff;*
    - *3) expected flow from impervious surfaces, slopes, and drainage features; and*
    - *4) soil characteristics, including the range of soil particle size expected to be present on the site;*
- *f. Provide and maintain natural buffers around surface waters as detailed in Part V. BMP REQUIREMENTS Condition 7, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible;*
- *g. Minimize soil compaction and preserve topsoil where practicable; and*
- *h. Capture or treat a 2-year, 24-hour storm event (MDNR 2022).*

4.2. TREE AND VEGETATION PRESERVATION

When applicable, areas where existing trees and vegetation are preserved on-site can be found on the ESC plan sheets located in Section 5 of this SWPPP.

4.3. NATURAL BUFFERS

When applicable, natural buffers will be identified on the ESC plans located in Section 5 of this SWPPP.

For surface waters of the state, defined in Section 644.016.1(27) RSMo, located on or adjacent to the site, the permittee must maintain a riparian buffer or structural equivalent in accordance with at least one of the following options. The selection and location must be described in the SWPPP.

- *a. Provide and maintain a 50-foot undisturbed natural buffer; or*
- *b. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or*

c. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

d. The permittee is not required to comply with (a), (b), or (c) above if one or more of the following exceptions apply and documentation is provided in the SWPPP:

i. If there is no discharge of stormwater to waters of the state through the area between the disturbed portions of the site and waters of the state located within 50 feet of the site. This includes situations where the permittee has implemented permanent control measures that will prevent such discharges, such as a berm or other barrier.

ii. Where no natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for the current development of the site.

a. Where some natural buffer exists but portions of the area within 50 feet of the waters of the state are occupied by preexisting development disturbances the permittee is required to comply with (a), (b), or (c) above.

iii. For linear projects where site constraints make it infeasible to implement a buffer or equivalent provided the permittee limit disturbances within 50 feet of any waters of the state and/or the permittee provides supplemental erosion and sediment controls to treat stormwater discharges from earth disturbances within 50 feet of the water of the state. The permittee must also document in the SWPPP the rationale for why it is infeasible for the permittee to implement (a), (b), or (c) and describe any buffer width retained and supplemental BMPs installed.

e. Where the permittee is retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:

1) The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or

2) The edge of the stream or river bank, bluff, or cliff, whichever is applicable. (MDNR 2022).

4.4. STABILIZATION REQUIREMENTS

The permit requires specific stabilization schedules depending on activity level and slope characteristics.

Soil disturbing activities on site that have ceased either temporarily or permanently shall initiate stabilization immediately in accordance with the options below. For soil disturbing activities that

have been temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days:

(a) The permittee shall construct BMPs to establish interim stabilization; and

(b) Stabilization must be initiated immediately and completed within 14 calendar days.

(c) For soil disturbing activities that have been permanently ceased on any portion of the site, final stabilization of disturbed areas must be initiated immediately and completed within 14 calendar days.

> *1) Extension to the 14-day completion period for temporary and final stabilization may be made due to weather and equipment malfunctions. In these circumstances, the justification for the extension to the 14 day shall be documented in the SWPPP. The discontinuation or continuation of the extension may be determined by review of the Department staff when on site.*

(d) Until stabilization is complete, interim sediment control shall consist of well-established and maintained BMPs that are reasonably certain to protect waters of the state from sediment pollution over an extended period of time. This may require adding more BMPs to an area than is normally used during daily operations. The types of BMPs used must be suited to the area disturbed, taking into account the number of acres exposed and the steepness of the slopes. If the slope of the area is greater than 3:1 (three feet horizontal to one foot vertical) or if the slope is greater than 3% and greater than 150 feet in length, then the permittee shall establish interim stabilization within seven days of ceasing operations on that part of the site. The following activities would constitute the immediate initiation of stabilization:

> *1) Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable;*
>
> *2) Applying mulch or other non-vegetative product to the exposed areas;*
>
> *3) Seeding or planting the exposed areas;*
>
> *4) Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.*

(e) If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed. Installed does not mean established (MDNR 2022).

5.0. STORMWATER MANAGEMENT CONTROLS

When applicable, permanent stormwater management BMPs will be listed and described here. Design specifications and details can be found in Section 6 of this SWPPP if applicable. These BMPs will remain in place to provide for stormwater management after construction has completed and the permit terminated.

Table 4. Post Construction Stormwater Management BMPs

No permanent BMPs will be installed with this phase of construction.

6.0. POLLUTION PREVENTION AND SPILL REPORTING

Good housekeeping practices shall be maintained at all times to keep waste from entering waters of the state. Below is a list of authorized non-stormwater discharges, and potential pollutants that will likely be on-site during construction. Suggested BMPs to help resolve potential discharges from non-stormwater discharges as well as potential pollutants are discussed.

6.1. GOOD HOUSEKEEPING

Good housekeeping practices shall be maintained at all times to keep waste from entering waters of the state.

> *(a) Provide solid and hazardous waste management practices, including providing trash containers, regular site cleanup for proper disposal of solid waste such as scrap building material, product/material shipping waste, food/beverage containers, spent structural BMPs;*
> *(b) Provide containers and methods for proper disposal of waste paints, solvents, and cleaning compounds.*
> *(c) Manage sanitary waste. Portable toilets shall be positioned so that they are secure and will not be tipped or knocked over and so that they are located away from waters of the state and stormwater inlets and stormwater conveyances.*
> *(d) Ensure the storage of construction materials be kept away from drainage courses, stormwater conveyances, storm drain inlets, and low areas* (MDNR 2022).

6.2. AUTHORIZED NON-STORMWATER DISCHARGES

The below signified discharges are anticipated to occur on-site.

☐ Discharges from emergency fire-fighting activities;
☐ De-chlorinated fire hydrant flushing;
☐ Uncontaminated water line flushing;
☐ Uncontaminated condensate from air conditioning or compressor condensate;
☐ Landscape watering;
☐ Uncontaminated, non-turbid discharges of ground water or spring water;
☐ Foundation or footing drains where flows are not contaminated with process materials;
☒ Water used to control dust; and
☐ Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. Directing pavement wash waters directly into any water of the state, storm inlet, or stormwater conveyance, unless the conveyance is connected to an effective control, is prohibited.

Potential BMPs used for authorized non-stormwater discharges:

De-chlorinated fire hydrants flushings;
Waters from fire hydrant flushing can be erosive in nature and lead to perimeter controls being overwhelmed, these waters should ideally be directed to clean paved streets where water may enter the storm sewer system. On projects where this is not possible, diffusers should be utilized to prevent erosive water velocities and flush water should be directed to relatively flat, vegetated portions of the project or to temporary or permanent basins.

Uncontaminated water line flushings
Waters from water line flushing should be directed to vegetated areas, lot perimeter controls (if volumes are unlikely to overwhelm controls), or clean paved streets where water may enter the storm sewer system. On projects where this is not possible, diffusers should be utilized to prevent erosive water velocities and flush water should be directed to relatively flat, vegetated portions of the project or to temporary or permanent basins.

Uncontaminated condensate from air conditioning or compressor condensate
Uncontaminated condensate should be discharged, whenever possible, to ground that is permanently or temporarily stabilized. When this is not possible sediment controls should be implemented to prevent erosion from the discharge area.

Landscape watering
Efforts should be taken to assure timing of watering activities of areas to establish vegetation should not occur prior to or during rain. Areas should be watered only in amounts necessary for vegetation to establish or thrive. Irrigated areas should be monitored for overwatering and if identified, volume and timing of watering should be adjusted.

Uncontaminated, non-turbid discharges ground water or spring water
Uncontaminated, non-turbd ground water or spring water should be diverted around the site or allowed to leave the site as long as it is a non-erosive manner over stabilized ground. As needed these waters can be directed to perimeter sediment barriers, basins or traps to allow any accumulated sediment to settle out.

Foundation or footing drains where flows are not contaminated with process materials
When possible foundation or footing drains should be discharged onto vegetated, or otherwise stabilized, areas. If discharges are to ground that is not stabilized, sediment controls should be implemented to prevent erosion. If rills form, they should be smoothed out and the area stabilized.

Water used to control dust
Water should only be applied in quantities sufficient to wet the top layer of disturbed soil to help keep dry soil particles from becoming airborne. This can be done by use of irrigation or sprinkler systems or by use of a water truck. Care should be taken to ensure that excessive amounts of water are not used that can lead to erosion.

Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. Directing pavement wash waters directly into any water of the state,

storm inlet, or stormwater conveyance, unless the conveyance is connected to an effective control, is prohibited.
Streets should be inspected to confirm sediment and spills have been removed before they are rinsed with water. Inlet protections should remain in place, so water may be filtered before leaving the site.

6.3. POTENTIAL POLLUTANTS

Potential pollutant sources that are anticipated to be on-site during the project can be found in the table below.

Table 5. Anticipated Potential Pollutants.
The below listed suggested BMPs are meant as initial examples and should be adjusted as site conditions necessitate different BMPs. The table should be amended should additional pollutants and BMPs be utilized onsite that were not originally anticipated.

Material/Activity	Potential Pollutants	Suggested BMPs
Detergents	pH, chlorine, surfactant	Use of detergents on-site should be discouraged. Washing of vehicles or equipment that requires the use of detergents should occur off-site.
Fertilizers	Nutrients	Fertilizers can be kept on-site in amounts necessary for immediate use. In the event fertilizers must remain on-site longer, they should be stored in a covered area to minimize contact with precipitation. Refer to the manufacturer's recommendations for application and disposal. Do not over apply or apply before an anticipated runoff-producing rain event.
Fuels and Oils	Petroleum hydrocarbons and distillates	If aboveground storage tanks (ASTs) are required, locations will be tracked on the SWPPP map. A separate spill prevention containment and countermeasure (SPCC) plan will be developed should one or more of the following be present on-site: • A single AST for oil with 660 gallons or more capacity • Two or more ASTs with an aggregate of 1,320 gallons or more capacity (include storage vessels stored above ground with a capacity of 55 gallons or more with the aggregate total capacity) • Belowground oil storage vessels of 42,000 gallons or more

		Smaller fuel containers and gas-powered equipment should be kept in secondary containment vessels to prevent spills or leaks during fueling and operation. Small gas cans can be kept in the back of trucks when not in use. Drip pans should be used for parked vehicles where leaks have been identified. Soil stained with fuel or other petroleum products should be removed and disposed of in compliance with federal, state, and local requirements.
Grease / Lubricants	Petroleum hydrocarbons	If grease is to be stored on-site, it should be stored in a covered location to minimize contact with stormwater. The application of lubricants should be conducted off-site when possible or in an area with sufficient secondary containment measures to contain any leaks or spills. If neither option is practicable, leaks and spills should be contained and cleaned up as soon as practicable to minimize contact with stormwater. Lubricants should not be applied in rain or on exposed areas of machinery when precipitation is expected.
Landscape Materials	Nutrients, sediment, pH	Landscape materials include—but are not limited to—items such as topsoil, compost, mulch, polymers, gypsum, and lime. If the materials are to be stored on-site they should be stored in a covered area or covered with plastic sheeting, tarps, or similar products to minimize contact with stormwater. If the amount of material is too large to be covered the materials should be contained by silt fence, wattles, berms or other sediment control BMPs. Soil amendments should not be used before anticipated runoff producing rain events.
Material Storage	Solid waste, hydrocarbons, nutrients, sediment, hazardous materials	As necessary and as space on the project allows, material storage areas should be dedicated on-site. The number of access points to the material storage area should be limited, and materials should be stored away from drainage courses and low areas. Hazardous materials should be stored in containers or structures or otherwise covered to minimize contact with stormwater. Secondary containment should be provided for the area not only to contain spills but also to limit multiple access points.
Pesticides, Herbicides	Organophosphates, carbamates, triazines, chloroacetanilides, salts, heavy metals	Pesticides and herbicides should be used and disposed of per manufacturer's recommendations. Avoid overapplying products and avoid applying products before anticipated runoff-producing storm events. Storage of pesticides and herbicides on-site should be discouraged. Should storage on-site be required, items should be stored in covered areas to minimize contact with precipitation and stormwater.

		Spilled material should be promptly cleaned up per manufacturer's recommendations.
Sanitary Waste	Bacteria, viruses, parasites	Sanitary stations should be located where accidental discharge cannot flow to storm drains, gutters, surface waters, or conveyance channels. Locate stations on a level, permeable surface, away from drainage courses and low areas. These stations should not be located on streets, sidewalks, or on top of inlets. Stations will be inspected and maintained by a qualified person at frequent and regular intervals to assure cleanliness and proper operation.
Sediment / Total Suspended Solids	Turbidity, nutrients	Surface water impairments caused by sediment and total suspended solids will have a higher risk of occurring in areas where soils have been disturbed for construction activities. Temporary controls are described in this SWPPP to control and contain this potential pollutant during land-disturbing activities of the project. Vegetation (temporary or permanent stabilization) is a very efficient BMP for controlling sediment and should be used whenever possible.
Solid Waste	Floatable and blowable trash and debris	Solid waste created from construction activities (including but not limited to scrap building material, product/material shipping waste, food containers, and cups) should be properly contained on-site and removed frequently from the site for disposal. Dumpsters should to be emptied at regular intervals and as needed during times of high activity on the site. Efforts should be taken to minimize exposure of solids wastes generated on the site to stormwater.
Vehicle Washing, Wheel Washwater	Sediment, petroleum hydrocarbons, heavy metals	If vehicle washing and/or wheel washing is to occur on-site, it should be done in designated areas where washwater can collect in a basin or alternative control. Use of detergents should be discouraged. Washing on paved surfaces should be discouraged unless water can be sufficiently treated before leaving the site.

6.4. NONREPORTABLE SPILL PROTOCOL

Most spills can be cleaned up following manufacturer's recommendations. Absorbent materials, sealable containers, plastic bags, and shovels/brooms are suggested as minimum spill response items that should be available at this location.

- Check for hazards (flammable material, noxious fumes). If flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present, leave the area and call 911.

- Make sure the spill area is safe to enter and that it does not pose an immediate threat to health or safety of any person.
- Stop the spill source.
- Call co-workers and supervisor for assistance and to make them aware of the spill and potential dangers.
- If possible, stop the spill from entering drains (use absorbent or other material as necessary).
- Stop spill from spreading (use absorbent or other material).
- If spilled material has entered a storm sewer, contact the locality at the below number.
- Clean up spilled material according to manufacturer's specifications. For liquid spills, use absorbent material and do not flush the contaminated area with water.
- Properly dispose of cleaning materials and used absorbent material according to manufacturer specifications.

6.5. REPORTABLE SPILLS

Requirements for reporting spills of hazardous materials and typical site pollutants and spill report documentations can be found in Section 9 of this SWPPP.

Spills, Overflows, and Other Unauthorized Discharges.
(a) Any spill, overflow, or other discharge not specifically authorized in the permit above are unauthorized.
(b) Should an unauthorized discharge cause or permit any contaminants to discharge or enter waters of the state, the unauthorized discharge must be reported to the appropriate Regional Office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's Environmental Emergency Response hotline at (573) 634-2436. Leaving a message on a Department staff member voice-mail does not satisfy this reporting requirement.
(c) A record of all spills shall be retained with the SWPPP and made available to the Department upon request.
(d) Other spills not reaching waters of the state must be cleaned up as soon as possible to prevent entrainment in stormwater but are not required to be reported to the Department (MDNR 2022).

Table 6. City of Lee's Summit Contacts.

Name/Position	Contact Number
Lee's Summit Fire Department	816.969.1300
Lee's Summit Public Works	816.969.1800

Report to:	Contact Number
Kansas City Regional Office 500 NE Colbern Road Lee's Summit, MO 64086-4710	816.251.0700
MDNR 24-Hour Spill Response	573.634.2436
National Response Center (NRC)	800.424.8802

7.0. SWPPP IMPLEMENTATION

7.1. PUBLIC NOTIFICATION

The locations of the site posting will be noted on the site BMP Tracking Map located in Section 5 of this SWPPP. The location will be updated should the posting move.

The permittee shall post a public notification sign at the main entrance to the site with the specific MORA permit number. The public notification sign must be visible from the public road that provides access to the site's main entrance. An alternate location is acceptable provided the public can see it and it is noted in the SWPPP. The public notification sign must remain posted at the site until the permit has been terminated. The sign is provided at the end of this permit (MDNR 2022).

7.2. INSPECTIONS

Site inspections should be conducted by qualified personnel at the frequency indicated below. Site inspection reports can be stored in Section 12 of this SWPPP unless otherwise noted.

All BMPs must be inspected in accordance to one of the schedules listed below. The inspection frequency shall be documented in the SWPPP, and any changes to the frequency of inspections, including switching between the options listed below, must be documented on the inspection form:

☐ *At least once every seven (7) calendar days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal work day or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday; or*

☐ *Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches of precipitation or greater, or the occurrence of runoff from snowmelt. To determine if a storm event of 0.25 inches or greater has occurred on the site, the permittee shall either keep a properly maintained rain gauge on site, or obtain the storm event information from a weather station near the site location.*

1) *Inspections are only required during the project's normal working hours.*
2) *An inspection must be conducted within 24 hours of a storm event which has produced 0.25 inches. The inspection shall be conducted within 24 hours of the event end, or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.*
3) *If it is elected to inspect every 14 calendar days and there is a storm event at the site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, the permittee shall conduct an inspection within 24 hours of the end of the*

storm or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.

☐ *For any portion of the site that discharges within the watershed of an Outstanding National or State Resource Water or a water impaired for sediment, inspections shall be inspected once every seven (7) calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or when the occurrence of runoff flow from frozen or snowmelt is sufficient to cause a discharge.*

Areas on-site that have achieved stabilization, while at the same time active construction continues on other areas, may reduce inspection frequency to monthly, for those stabilized areas, if the following conditions exist:

1) *For areas where disturbed portions have undergone temporary stabilization, inspections shall occur at least once a month while stabilized and when re-disturbed shall follow either frequency outlined in (a),(b), or (c) above.*
2) *Areas on-site that have achieved final stabilization must be inspected at least once per month until the permit is terminated.*

If construction activities are suspended due to frozen conditions, the permittee may temporarily reduce site inspections to monthly until thawing conditions begin to occur if all of the following are met:

1) *Land disturbances have been suspended; and*
2) *All disturbed areas of the site have been stabilized in accordance with Part V. BMP REQUIREMENTS, Condition 13* of the permit.
3) *The change shall be noted in the SWPPP* (MDNR 2022).

7.3. CORRECTIVE ACTIONS

Structural or maintenance problems with BMPs used in this project and noted as a result of an inspection shall be corrected as soon as possible but no more than seven calendar days after the inspection.

7.4. MODIFICATION AND AMENDMENTS

Modifications and amendments to the SWPPP can be tracked in Section 7 of this SWPPP. Below are minimum guidelines for when the SWPPP should be updated.

Throughout coverage under this permit, the permittee shall amend and update the SWPPP as appropriate during the term of the land disturbance activity. All SWPPP modifications shall be signed and dated. The permittee shall amend the SWPPP to incorporate any significant site condition changes which impact the nature and condition of stormwater discharges. At a minimum, these changes include whenever the:

a. *Location, design, operation, or maintenance of BMPs is changed;*
b. *Design of the construction project is changed that could significantly affect the quality of the stormwater discharges;*

c. *Permittee's inspections indicate deficiencies in the SWPPP or any BMP;*
d. *Department notifies the permittee in writing of deficiencies in the SWPPP;*
e. *SWPPP is determined to be ineffective in minimizing or controlling erosion and sedimentation (e.g., there is visual evidence of excessive site erosion or sediment deposits in streams, lakes, or downstream waterways, sediment or other wastes offsite); and/or*
f. *Department determines violations of water quality standards may occur or have occurred* (MDNR 2022).

7.5. TRANSFER OF OWNERSHIP

As necessary, permit transfers or records of sale should be placed in Section 2 of this SWPPP.

This permit may not be transferred to a new owner in any fashion except by submitting an Application for Transfer of Operating Permit signed by the seller and buyer of the site along with the appropriate modification fee. In some cases, revocation and reissuance may be necessary. Facilities that undergo transfers of ownership without notice to the Department are considered to be operating without a permit (MDNR 2022).

7.6. TERMINATION OF PERMIT

When the project is completed and has reached final stabilization, a copy of the notice of termination and confirmation from the MDNR should be placed in Section 14 of this SWPPP.

Until the permittee terminates coverage under this permit, the permittee must comply with all conditions in the permit, including continuation of site inspections and public notification signage posted. To terminate permit coverage, the permittee must submit to the appropriate Regional Office a complete and accurate Request for Termination of Operating Permit which certifies that the site meets the following requirements:
(a) For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which the permittee had control during the construction activities, the requirements for final vegetative or non-vegetative stabilization in Part V BMP REQUIREMENTS, Condition 13 of the permit*;*
(b) The permittee has removed and properly disposed of all construction materials, waste, and waste handling devices and has removed all equipment and vehicles that were used during construction, unless intended for long-term use following termination of permit coverage;
(c) The permittee has removed all temporary BMPs that were installed and maintained during construction, except those that are intended for long-term use following termination of permit coverage or those that are biodegradable; and
(d) The permittee has removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following termination of permit coverage.

The Department may request photographs that clearly document compliance with termination requirements.

The permit may be terminated if;
(a) There has been a transfer of control of all areas of the site for which the current permittee is responsible under this permit to another operator, and that operator has obtained coverage under this permit; or
(b) Coverage under an individual or alternative general NPDES permit, with land disturbance conditions, has been obtained (MDNR 2022).

7.7. RECORDS

When the project is complete, and the notice of termination has been accepted by the MDNR, records should be removed from the site and retained.

The permittee shall retain copies of this general permit, the SWPPP and all amendments for the site named in the State Operating Permit, results of any monitoring and analysis, and all site inspection records required by this general permit.

(a) The records shall be accessible during normal business hours and retained for a period of at least three (3) years from the date of termination.

(b) The permittee shall provide a copy (electronic or otherwise) of the SWPPP to the Department, USEPA, or any local agency or government representative if they request a copy in the performance of their official duties within 24 hours of the request (or next working day), unless given more time by the representative.

(c) The permittee shall provide a copy of the SWPPP to those who are responsible for installation, operation, or maintenance of any BMP. The permittee, their representative, and/or the contractor(s) responsible for installation, operation and maintenance of the BMPs shall have a current copy of the SWPPP with them when on the project site (MDNR 2022).

8.0. REFERENCES

California Stormwater Quality Association. (November 2009). *Stormwater Best Management Practice Handbook Portal: Construction*. Retrieved from http://www.buenapark.com/home/showdocument?id=2557.

Missouri Department of Natural Resources. (February 2022). *Missouri State Operating Permit*. Retrieved from https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/stormwater/construction-or-land-disturbance-mo-ra00000.

Missouri Department of Natural Resources, ABC's of BMP's LLC and Shockey Consulting Services. (January 2011). *Protecting Water Quality: A field guide to erosion, sediment and stormwater best management practices for development sites in Missouri and Kansas*. Retrieved from https://dnr.mo.gov/document-search/protecting-water-quality-field-guide.

United States Environmental Protection Agency. (May 2007). *Developing Your Stormwater Pollution Prevention Plan, A Guide for Construction Sites*. Retrieved from https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf.

Virginia Department of Environmental Quality. (July 2014). *Single Family Residence Common Plan of Development or Sale Stormwater Pollution Prevention Plan Template*. Retrieved from http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/ConstructionGeneralPermit.aspx.

SECTION 4

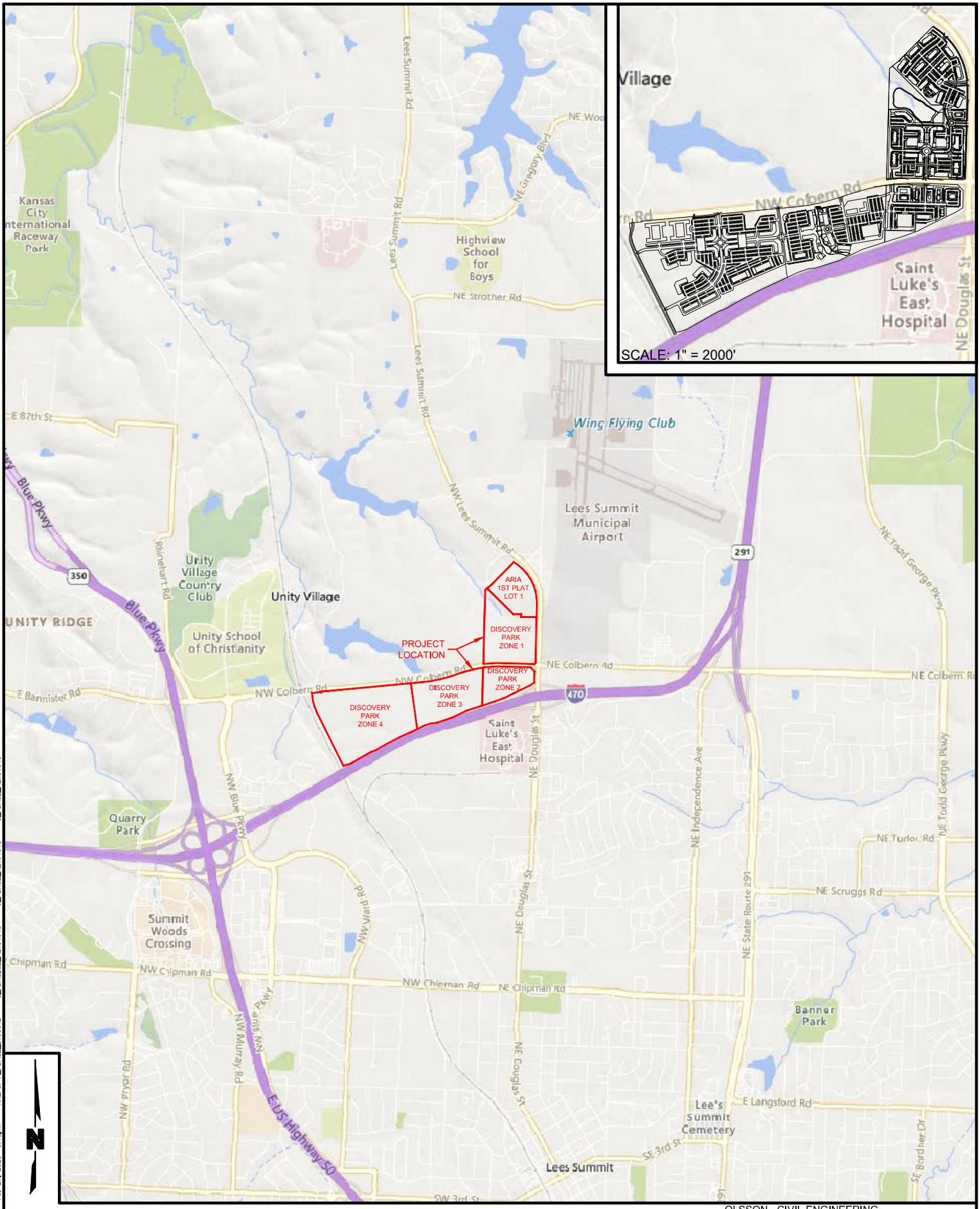
Location/Topographical Map(s), FIRM Maps & Soils Maps

This section contains:

-Required Location, Vicinity and Topographical Maps (as needed)

-FIRM Maps

-Soils Maps if needed



SCALE: 1" = 3000'

OLSSON - CIVIL ENGINEERING
MISSOURI CERTIFICATE OF AUTHORITY # 001592

PROJECT NO: A21-04643	DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1 LEE'S SUMMIT, MO SITE PLAN	olsson 1301 Burlington Street North Kansas City, MO 64116 TEL 816.361.1177	EXHIBIT
DRAWN BY: BMW			1
DATE: 2/27/2023			

DWG: F:\2021\04501-05000\021-04643-A\40-Design\Exhibits\SWPPP Exhibits\Site Plan\A2104643_Site Plan Map Exhibit 8.5x11.dwg USER: bworthley
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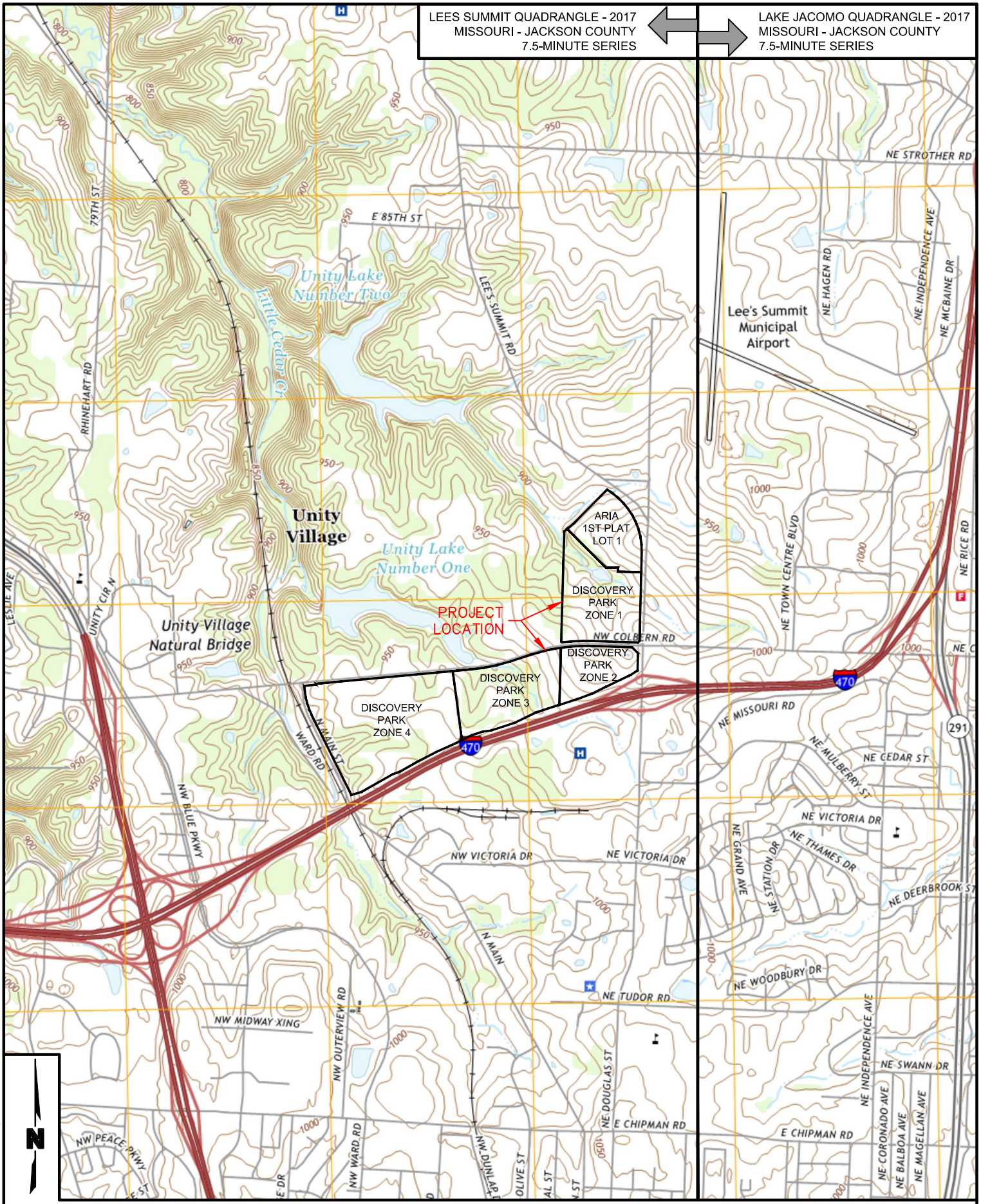

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OLSSON - CIVIL ENGINEERING
MISSOURI CERTIFICATE OF AUTHORITY # 001592

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DRAWN BY: BMW			
DATE: 2/27/2023			

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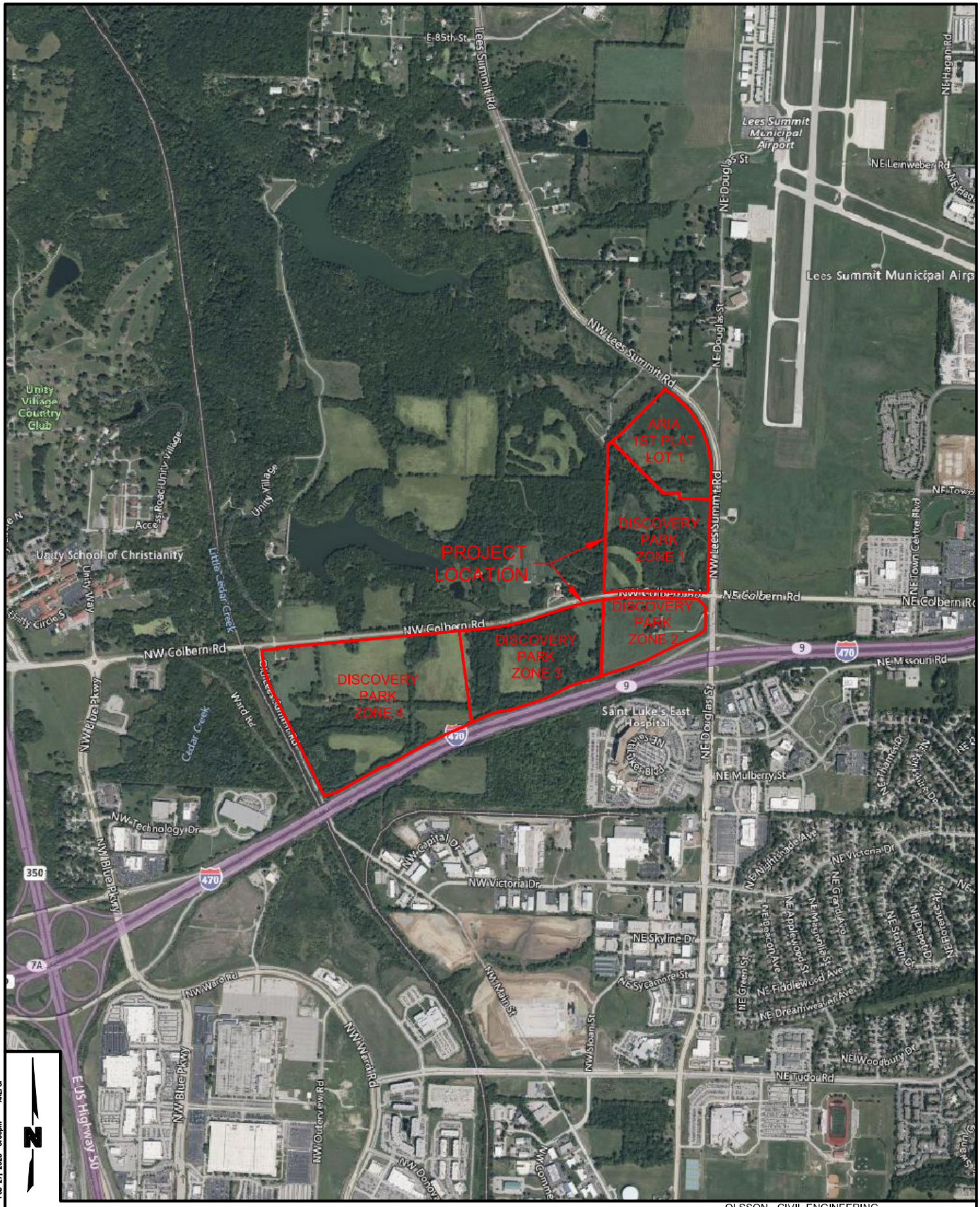

SCALE: 1" = 1500'

OLSSON - CIVIL ENGINEERING
MISSOURI CERTIFICATE OF AUTHORITY # 001592

PROJECT NO: A21-04643	DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1 LEE'S SUMMIT, MO AERIAL MAP	olsson 1301 Burlington Street North Kansas City, MO 64116 TEL 816.361.1177	EXHIBIT 3
DRAWN BY: BMW			
DATE: 2/27/2023			

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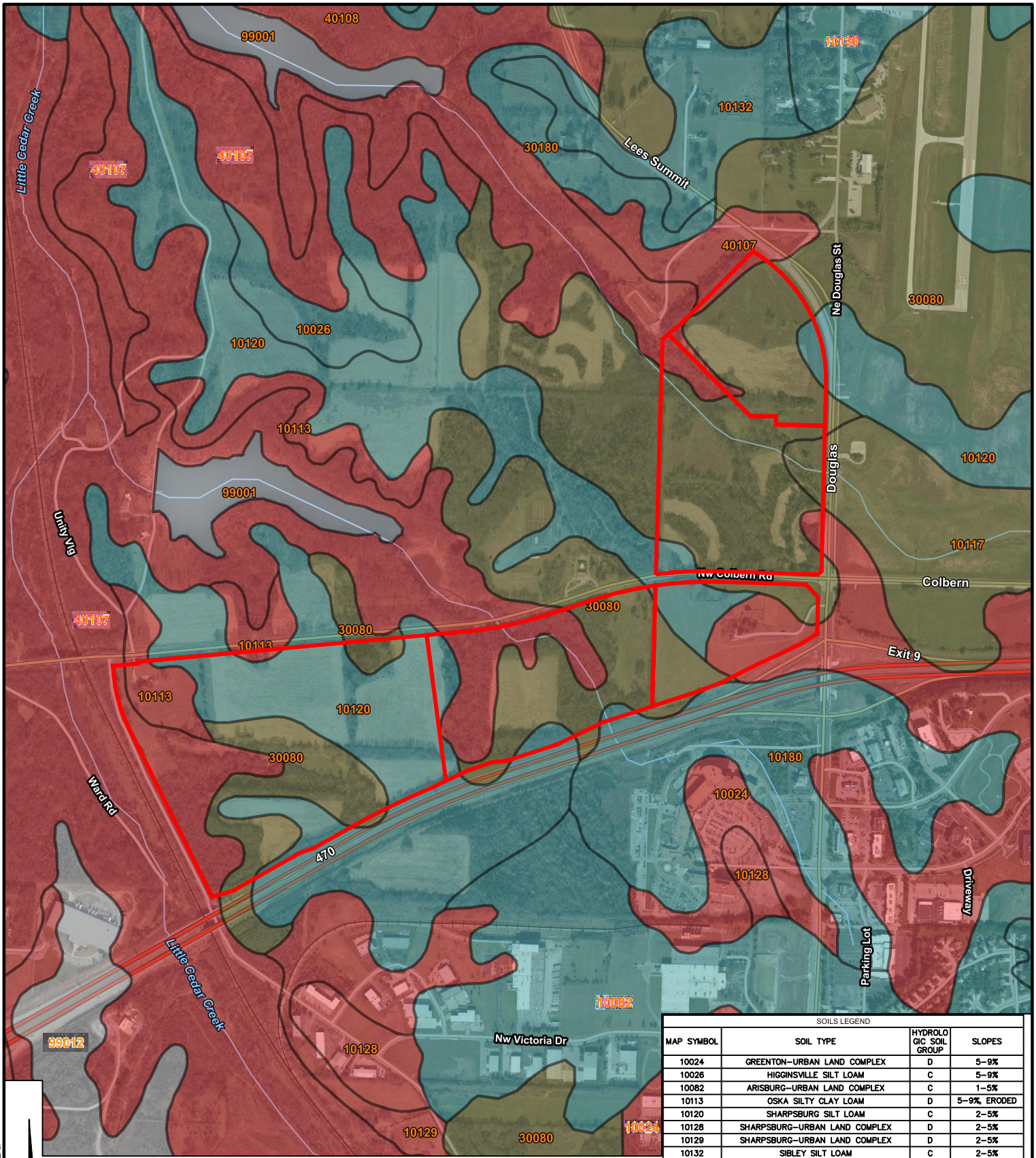

SOILS LEGEND

MAP SYMBOL	SOIL TYPE	HYDROLOGIC SOIL GROUP	SLOPES
10024	GREENTON–URBAN LAND COMPLEX	D	5–9%
10026	HIGGINSVILLE SILT LOAM	C	5–9%
10082	ARISBURG–URBAN LAND COMPLEX	C	1–5%
10113	OSKA SILTY CLAY LOAM	D	5–9%, ERODED
10120	SHARPSBURG SILT LOAM	C	2–5%
10128	SHARPSBURG–URBAN LAND COMPLEX	D	2–5%
10129	SHARPSBURG–URBAN LAND COMPLEX	D	2–5%
10132	SIBLEY SILT LOAM	C	2–5%
10136	SIBLEY–URBAN LAND COMPLEX	C	2–5%
10180	UDARENTS–URBAN LAND–SAMPSEL COMPLEX	C	2–5%
30080	GREENTON SILTY CLAY LOAM	C/D	5–9%
30180	POLO SILT LOAM	C	5–9%, ERODED
40107	SNEAD–ROCK OUTCROP COMPLEX, WARM	D	5–14%
40108	SNEAD–ROCK OUTCROP COMPLEX, WARM	D	14–30%
99001	WATER	–	–
99012	URBAN LAND, UPLAND	–	5–9%

N

SCALE: 1" = 1000'

OLSSON - CIVIL ENGINEERING
MISSOURI CERTIFICATE OF AUTHORITY # 001592

PROJECT NO: A21-04643	DISCOVERY PARK ZONE 1-4 ARIA 1ST PLAT LOT 1 LEE'S SUMMIT, MO SOILS MAP	olsson	EXHIBIT
DRAWN BY: BMW		1301 Burlington Street North Kansas City, MO 64116 TEL 816.361.1177	4
DATE: 2/27/2023			

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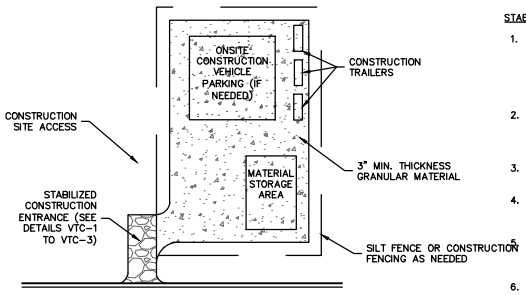


SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF STAGING AREA(S)
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM LOCAL JURISDICTION
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703. AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

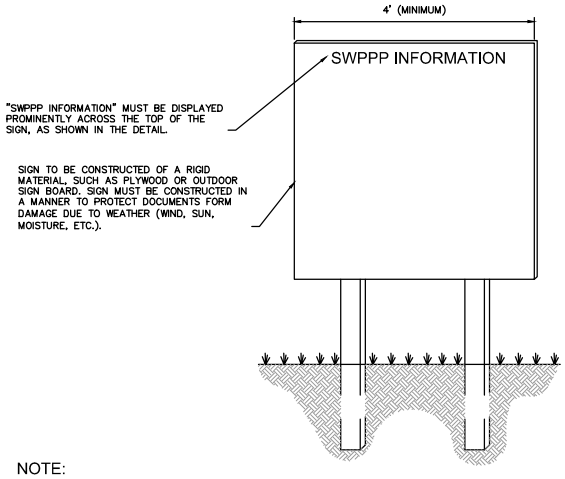
STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITH 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGARDED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE AND UNLOADIN/LOADING OPERATIONS.
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)



NOTE:

1. THE SWPPP INFORMATION SIGN MUST BE LOCATED NEAR THE ENTRANCE OF SITE, SUCH THAT IT IS ACCESSIBLE AND VIEWABLE BY THE GENERAL PUBLIC, BUT NOT OBSTRUCTING VIEW AS TO CAUSE A SAFETY HAZARD.
2. ALL POSTED DOCUMENTS REQUIRED BY THE DEPARTMENT OF NATURAL RESOURCES MUST BE MAINTAINED IN A CLEARLY READABLE CONDITION AT ALL TIMES THROUGHOUT CONSTRUCTION AND UNTIL THE NOTICE-OF-TERMINATION (NOT) IS FILED FOR THE PERMIT.
3. CONTRACTOR SHALL POST OTHER STORMWATER AND/OR EROSION CONTROL RELATED PERMITS ON THE SIGN AS REQUIRED BY THE GOVERNING AGENCY.
4. SIGN SHALL BE LOCATED OUTSIDE PUBLIC RIGHT-OF-WAY AND EASEMENTS UNLESS APPROVED BY THE GOVERNING AGENCY.
5. CONTRACTOR IS RESPONSIBLE FOR ENSURING STABILITY OF THE SWPPP INFORMATION SIGN.

SWPPP INFORMATION SIGN
NOT TO SCALE

OLSSON - CIVIL ENGINEERING
MISSOURI CERTIFICATE OF AUTHORITY # 001592

PROJECT NO: A21-04643	DISCOVERY PARK ZONE 1-4 ARIA 1ST PLAT LOT 1 LEE'S SUMMIT, MO STAGING AREA & SWPPP SIGN DETAILS	olsson 1301 Burlington Street North Kansas City, MO 64116 TEL 816.361.1177	EXHIBIT
DRAWN BY: BMW			5
DATE: 2/27/2023			

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Missouri State Plane West Zone (FIPS zone 2403). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from the U.S.D.A Farm Service National Agriculture ImageryProgram (NAIP) dated 2014. Produced at scale of 1:24,000.

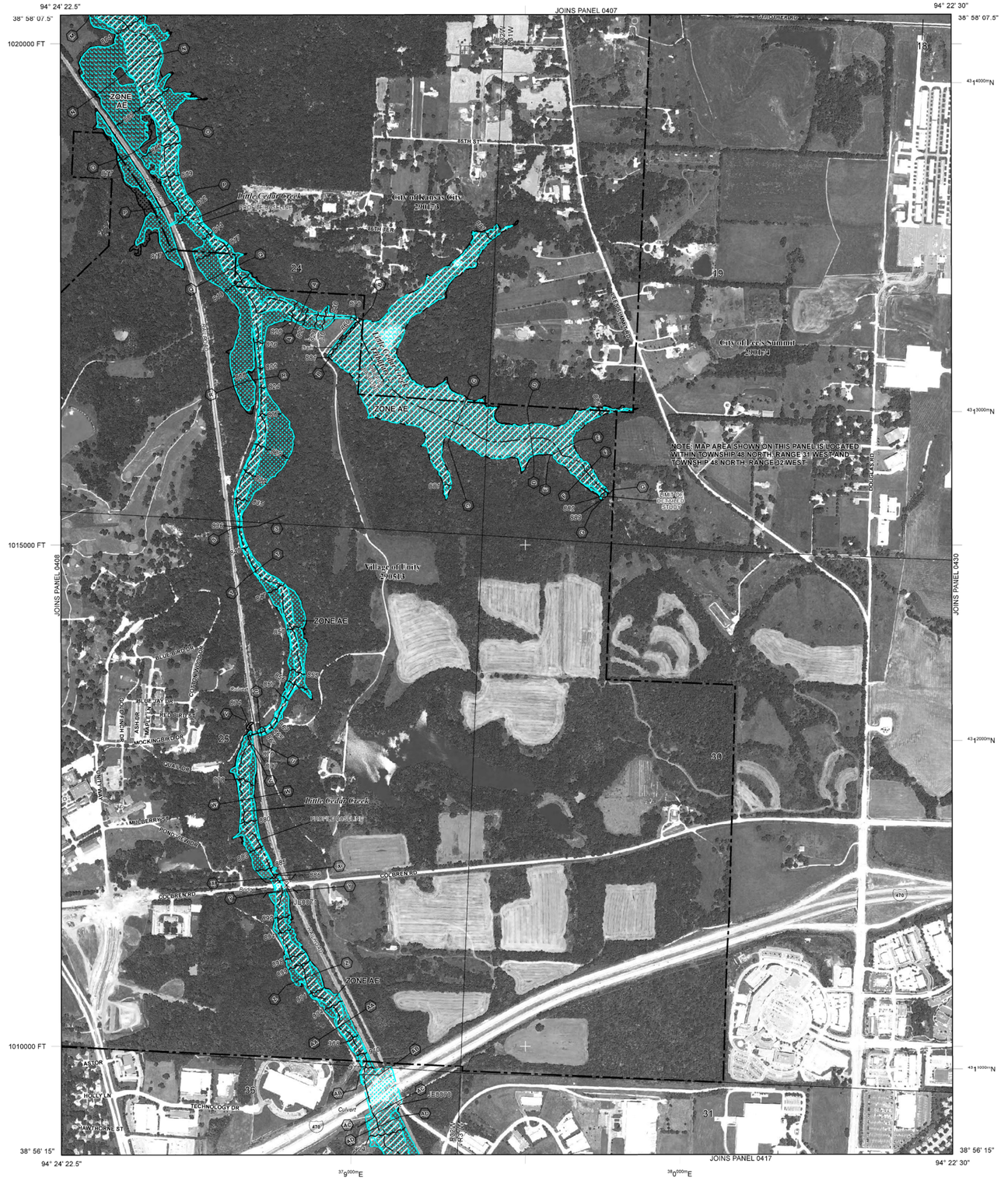
The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- Culvert
- Bridge
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 3100000 FT — 5000-foot ticks: Missouri State Plane West Zone (FIPS Zone 2403), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 29, 2006

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
January 20, 2017 - to change Special Flood Hazard Areas.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0409G

FIRM

FLOOD INSURANCE RATE MAP

JACKSON COUNTY, MISSOURI
AND INCORPORATED AREAS

PANEL 409 OF 625
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
KANSAS CITY, CITY OF	290173	0409	G
LEE'S SUMMIT, CITY OF	290174	0409	G
UNITY, VILLAGE OF	290513	0409	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
29095C0409G
MAP REVISED
JANUARY 20, 2017

Federal Emergency Management Agency

SECTION 5

BMP Tracking Map & Land Disturbance Tracking Log

This section contains:

- -Erosion and Sediment Control Plan sheet excerpts
- -Post Construction Stormwater Management Plan sheets if applicable
- -BMP Tracking Map (Working SWPPP Map)
  - -Record of Land Disturbance, Stabilization and BMP installation and removal
  - -Record of Dewatering Activities (e.g. dates and estimated volume of water discharged)

Grading, Stabilization and Dewatering Activities Log

Date Activity Initiated	Description of Grading/Dewatering Activity	Date Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated	Description of Stabilization Measure and Location

Grading, Stabilization and Dewatering Activities Log

Date Activity Initiated	Description of Grading/Dewatering Activity	Date Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated	Description of Stabilization Measure and Location

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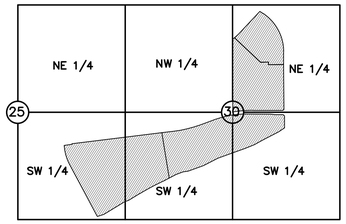
Date Activity Initiated	Description of Grading/Dewatering Activity	Date Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated	Description of Stabilization Measure and Location

DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1 SITE DISTURBANCE PLANS

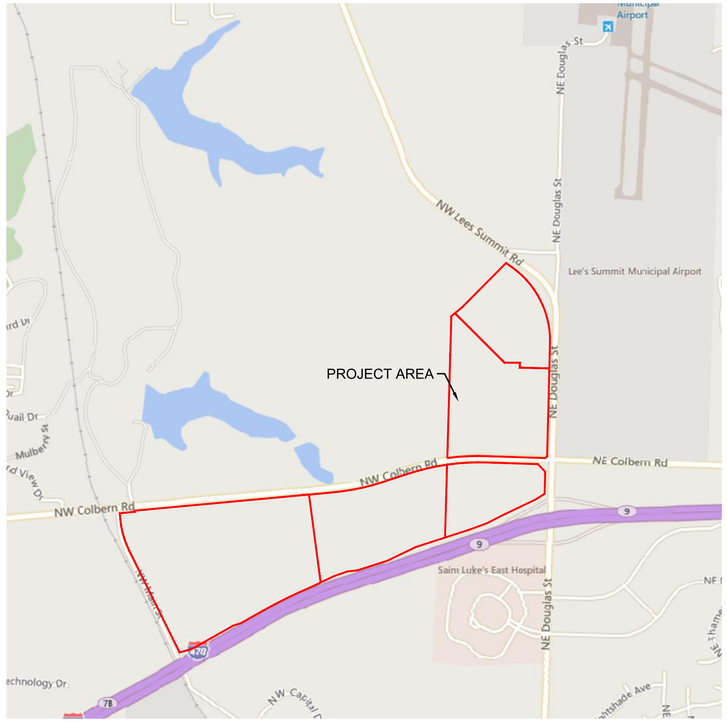
SECTION 25, TOWNSHIP 48N, RANGE 32W
SECTION 30, TOWNSHIP 48N, RANGE 31W
IN LEE'S SUMMIT, JACKSON COUNTY, MO



S25, T48N, R32W
S30, T48N, R31W
N.T.S.

VICINITY MAP

PROJECT TEAM & UTILITY CONTACT LIST	
OWNER/DEVELOPER INTRINSIC DEVELOPMENT 3622 ENDEAVOR AVE. STE. 101 COLUMBIA, MO 65201 CONTACT: BRIAN MAENNER PHONE: 573.881.0280 EMAIL: BPMAENNER@INTRINSICDEVELOPMENT.COM	UTILITY SERVICE NUMBERS NAME: LEE'S SUMMIT PUBLIC WORKS PHONE: 816-969-1800 NAME: LEE'S SUMMIT WATER UTILITIES PHONE: 816-969-1900 NAME: SPIRE (MGE) PHONE: 314-342-0500 NAME: AT&T PHONE: 800-286-8313 NAME: EVERGY PHONE: 816-471-5275 NAME: SPECTRUM (TWC) PHONE: 877-772-2253 NAME: GOOGLE FIBER PHONE: 877-454-6959
ENGINEER OLSSON 1301 BURLINGTON, SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: NICHOLAS HEISER PHONE: 816.361.1177 EMAIL: NHEISER@OLSSON.COM	
SURVEYOR OLSSON 1301 BURLINGTON, SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: JASON ROUDEBUSH PHONE: 816.361.1177 EMAIL: JROUDEBUSH@OLSSON.COM	



Sheet List Table	
Sheet Number	Sheet Title
C100	TITLE SHEET
C101	GENERAL NOTES
C102	GENERAL LAYOUT
C103	EROSION CONTROL PLAN – PHASE 1
C104	EROSION CONTROL PLAN – PHASE 1
C105	EROSION CONTROL PLAN – PHASE 1
C106	EROSION CONTROL PLAN – PHASE 1
C107	DETAIL SHEET

OIL/GAS WELLS:

NO OIL OR GAS WELLS ARE LOCATED WITHIN PROJECT LIMITS.
INFORMATION OBTAINED FROM THE MISSOURI DEPARTMENT OF NATURAL RESOURCES, GEOLOGICAL SURVEY GEOSCIENCES TECHNICAL RESOURCE ASSESSMENT TOOL (GEOSTRAT).

FLOOD CERTIFICATION:

THE ENTIRE SITE IS LOCATED WITHIN ZONE X, "AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM THE 1% ANNUAL CHANCE FLOOD" AS DEPICTED ON THE FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 29095C0409G, REVISION DATE JANUARY 20, 2017.

PROPERTY DESCRIPTION

ARIA FIRST PLAT LOT 1:
AS PROVIDED BY STEWART TITLE GUARANTY COMPANY:
TRACT OF LAND IN THE NORTHEAST QUARTER OF SECTION 30 TOWNSHIP 48 NORTH, RANGE 31 WEST OF THE 5TH PRINCIPAL MERIDIAN IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI BEING BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHWEST CORNER OF SAID NORTHEAST QUARTER SECTION; THENCE SOUTH 01 DEGREES 37 MINUTES 50 SECONDS WEST, ON THE WEST LINE OF SAID QUARTER SECTION, 853.75 FEET TO A POINT ON THE SOUTHEAST LOT LINE OF LOT 1, LEE'S SUMMIT ROAD PUMP STATION, A SUBDIVISION RECORDED IN BOOK I 51 AT PAGE 90 IN THE JACKSON COUNTY RECORDER OF DEEDS OFFICE; THENCE NORTH 50 DEGREES 41 MINUTES 15 SECONDS EAST, ON SAID SOUTHEAST LOT LINE, 59.22 FEET; TO THE POINT OF BEGINNING OF THE TRACT OF LAND TO BE HEREIN DESCRIBED; THENCE CONTINUING NORTH 50 DEGREES 41 MINUTES 15 SECONDS EAST ALONG SAID LINE, 116.89 FEET; THENCE NORTH 44 DEGREES 49 MINUTES 51 SECONDS EAST, 792.38 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF NW LEE'S SUMMIT ROAD AS ESTABLISHED BY DOCUMENT NUMBER 2015E0017982 IN THE JACKSON COUNTY RECORDER OF DEEDS OFFICE; THENCE ON SAID WESTERLY RIGHT-OF-WAY LINE, SOUTH 54 DEGREES 34 MINUTES 12 SECONDS EAST, 95.69 FEET; THENCE SOUTHEASTERLY ALONG A CURVE TO THE RIGHT BEING TANGENT TO THE LAST DESCRIBED COURSE WITH A RADIUS OF 1,142.00 FEET, A CENTRAL ANGLE OF 56 DEGREES 01 MINUTES 43 SECONDS AND AN ARC DISTANCE OF 1,116.74 FEET; THENCE SOUTH 01 DEGREES 27 MINUTES 31 SECONDS WEST, 322.27 FEET; THENCE LEAVING SAID RIGHT-OF-WAY LINE, NORTH 88 DEGREES 32 MINUTES 29 SECONDS WEST, 375.74 FEET; THENCE NORTH 01 DEGREES 27 MINUTES 27 SECONDS EAST, 62.94 FEET; THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST, 195.68 FEET; THENCE NORTH 45 DEGREES 00 MINUTES 00 SECONDS WEST, 889.18 FEET TO THE POINT OF BEGINNING, SUBJECT TO THAT PART, IF ANY, IN STREETS, ROADWAYS, HIGHWAYS OR OTHER PUBLIC RIGHT-OF-WAYS.

DISCOVERY PARK ZONE 1:
A TRACT OF LAND IN THE NORTHEAST QUARTER OF SECTION 30 TOWNSHIP 48 NORTH, RANGE 31 WEST OF THE 5TH PRINCIPAL MERIDIAN IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI BEING BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHWEST CORNER OF SAID NORTHEAST QUARTER SECTION; THENCE SOUTH 01°37'50" WEST, ON THE WEST LINE OF SAID QUARTER SECTION, 853.75 FEET TO A POINT ON THE SOUTHEAST LOT LINE OF LOT 1, LEE'S SUMMIT ROAD PUMP STATION, A SUBDIVISION RECORDED IN BOOK I 51 AT PAGE 90 IN THE JACKSON COUNTY RECORDER OF DEEDS OFFICE, AND THE POINT OF BEGINNING OF THE TRACT OF LAND TO BE HEREIN DESCRIBED; THENCE NORTH 50°41'15" EAST, ON SAID SOUTHEAST LOT LINE, 59.22 FEET; THENCE LEAVING SAID LOT LINE, SOUTH 45°00'00" EAST, 889.18 FEET; THENCE NORTH 90°00'00" EAST, 195.68 FEET; THENCE SOUTH 01°27'27" WEST, 62.94 FEET; THENCE SOUTH 88°32'29" EAST, 375.74 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF NE DOUGLAS STREET AS ESTABLISHED BY DOCUMENT NUMBER 2015E0017982 IN THE JACKSON COUNTY RECORDER OF DEEDS OFFICE; THENCE ON SAID WESTERLY RIGHT-OF-WAY LINE, SOUTH 01°27'31" WEST, 1,114.58 FEET; THENCE SOUTH 46°40'17" WEST, 35.22 FEET TO THE INTERSECTION OF THE NORTHERLY RIGHT-OF-WAY LINE OF NE COLBURN ROAD AS ESTABLISHED BY A SURVEY PROVIDED BY HAMILTON STERRETT AND DOOLEY, PROJECT NUMBER 99021; THENCE ON SAID NORTHERLY RIGHT-OF-WAY LINE NORTH 88°06'56" WEST, 730.85 FEET; THENCE WESTERLY ALONG A CURVE TO THE LEFT HAVING AN INITIAL TANGENT BEARING OF NORTH 87°33'04" WEST WITH A RADIUS OF 2,904.93 FEET, A CENTRAL ANGLE OF 10°06'02" AND AN ARC DISTANCE OF 512.10 FEET TO THE SOUTHWEST CORNER OF THE SAID NORTHEAST QUARTER; THENCE NORTH 01°37'22" EAST, ON THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 30, A DISTANCE OF 1,328.05 FEET TO THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF THE SAID NORTHEAST QUARTER; THENCE CONTINUING ON THE SAID WEST LINE, NORTH 01°37'50" EAST, 473.96 FEET TO THE POINT OF BEGINNING. CONTAINING 1,717,197 SQUARE FEET OR 39.42 ACRES, MORE OR LESS.

DISCOVERY PARK ZONE 2:
A TRACT OF LAND IN THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 30 TOWNSHIP 48 NORTH, RANGE 31 WEST OF THE 5TH PRINCIPAL MERIDIAN IN THE CITY OF LEE'S SUMMIT, JACKSON COUNTY, MISSOURI BEING BOUNDED AND DESCRIBED BY OR UNDER THE DIRECT SUPERVISION OF JASON S ROUDEBUSH, P.L.S. 2002014092 AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER, SAID POINT ALSO BEING THE SOUTHEAST CORNER OF SAID SOUTHWEST QUARTER OF SAID SECTION 30; THENCE NORTH 01°36'54" EAST ON THE WEST LINE OF SAID SOUTHEAST QUARTER, SAID LINE ALSO BEING THE EAST LINE OF SAID SOUTHWEST QUARTER, 1,633.15 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF INTERSTATE HIGHWAY NO. 470 AS ESTABLISHED BY THE REPORT OF COMMISSIONERS, CASE 741042, RECORDED AS DOCUMENT NO. 1971I0086010, IN BOOK I258 AT PAGE 1207, SAID POINT ALSO BEING THE POINT OF BEGINNING OF THE TRACT OF LAND TO BE HEREIN DESCRIBED: THENCE CONTINUING NORTH 01°36'54" EAST ON THE WEST LINE OF SAID SOUTHEAST QUARTER, AND THE EAST LINE OF SAID SOUTHWEST QUARTER, 925.47 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF NW COLBERN ROAD AS ESTABLISHED BY DOCUMENT NO. 1930I0284624; THENCE EASTERLY ON A CURVE TO THE RIGHT HAVING AN INITIAL TANGENT BEARING OF NORTH 81°50'55" EAST WITH A RADIUS OF 2,924.93 FEET, A CENTRAL ANGLE OF 10°02'09" AND AN ARC DISTANCE OF 512.33 FEET; THENCE SOUTH 88°06'56" EAST, ON SAID SOUTHERLY RIGHT-OF-WAY LINE, 642.13 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF NE DOUGLAS STREET ESTABLISHED BY SAID REPORT OF COMMISSIONERS CASE 741042, RECORDED AS DOCUMENT NO. 1971I0086010, IN BOOK I258 AT PAGE 1207; THENCE SOUTH 43°46'24" EAST, ON SAID WESTERLY RIGHT-OF-WAY LINE, 133.40 FEET; THENCE SOUTH 01°29'58" WEST, ON SAID WESTERLY RIGHT-OF-WAY LINE, 280.00 FEET TO A POINT ON THE AFORESAID NORTHWESTERLY RIGHT-OF-WAY LINE OF INTERSTATE HIGHWAY NO. 470; THENCE SOUTH 57°43'10" WEST, ON SAID NORTHWESTERLY RIGHT-OF-WAY LINE, 134.56 FEET; THENCE SOUTH 64°30'32" WEST, ON SAID NORTHWESTERLY RIGHT-OF-WAY LINE, 434.06 FEET; THENCE SOUTH 63°04'56" WEST, ON SAID NORTHWESTERLY RIGHT-OF-WAY LINE, 254.50 FEET; THENCE SOUTH 69°50'03" WEST, 250.20 FEET; THENCE SOUTH 72°07'30" WEST, 311.41 FEET TO THE POINT OF BEGINNING. CONTAINING 863,837 SQUARE FEET OR 19.831 ACRES MORE OR LESS.

DISCOVERY PARK ZONE 3 & 4:
A TRACT OF LAND IN THE SOUTHEAST QUARTER OF SECTION 25 AND THE NORTHEAST QUARTER OF SECTION 36, ALL IN TOWNSHIP 48 NORTH, RANGE 32 WEST OF THE 5TH PRINCIPAL MERIDIAN AND THE SOUTHWEST QUARTER OF SECTION 30 TOWNSHIP 48 NORTH AND RANGE 31 WEST OF THE 5TH PRINCIPAL MERIDIAN IN THE CITY OF UNITY VILLAGE AND THE CITY OF LEE'S SUMMIT, JACKSON COUNTY, MISSOURI BEING BOUNDED AND DESCRIBED BY OR UNDER THE DIRECT SUPERVISION OF JASON S ROUDEBUSH, P.L.S. 2002014092 AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF SAID SOUTHWEST QUARTER, SAID POINT ALSO BEING THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 30; THENCE NORTH 01°36'54" EAST ON THE EAST LINE OF SAID SOUTHWEST QUARTER, SAID LINE ALSO BEING THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 30, 1,633.15 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF INTERSTATE HIGHWAY NO. 470 AS ESTABLISHED BY THE REPORT OF COMMISSIONERS, CASE 741042, RECORDED AS DOCUMENT NO. 1971I0086010, IN BOOK I258 AT PAGE 1207, SAID POINT ALSO BEING THE POINT OF BEGINNING OF THE TRACT OF LAND TO BE HEREIN DESCRIBED: THENCE SOUTH 72°07'30" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 388.59 FEET; THENCE SOUTH 64°17'45" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 403.76 FEET; THENCE SOUTH 72°07'30" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 400.00 FEET; THENCE SOUTH 83°46'34" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 123.79 FEET; THENCE WESTERLY ON SAID NORTHERLY RIGHT-OF-WAY LINE, ON A CURVE TO THE LEFT HAVING AN INITIAL TANGENT BEARING OF SOUTH 72°07'29" WEST WITH A RADIUS OF 5,879.58 FEET, A CENTRAL ANGLE OF 01°47'15" AND AN ARC DISTANCE OF 183.44 FEET; THENCE SOUTH 64°11'08" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 308.18 FEET; THENCE SOUTHWESTERLY ON SAID NORTHERLY RIGHT-OF-WAY LINE, ON A CURVE TO THE LEFT HAVING AN INITIAL TANGENT BEARING OF SOUTH 67°20'14" WEST WITH A RADIUS OF 5,854.58 FEET, A CENTRAL ANGLE OF 06°45'11" AND AN ARC DISTANCE OF 690.04 FEET; THENCE SOUTH 60°35'03" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 324.69 FEET; THENCE SOUTH 71°53'38" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 101.98 FEET; THENCE SOUTH 60°35'03" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE, 600.00 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF INTERSTATE HIGHWAY NO. 470 AS ESTABLISHED BY DOCUMENT NO. 1970I0073237, IN BOOK I220 AT PAGE 1331, THENCE SOUTH 73°58'35" WEST, ON SAID NORTHERLY RIGHT-OF-WAY LINE 164.60 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF NW MAIN STREET ALSO KNOWN AS OLD LEE'S SUMMIT ROAD AS NOW ESTABLISHED; THENCE NORTH 26°17'46" WEST, ON SAID EASTERLY RIGHT-OF-WAY LINE, 1,447.40 FEET; THENCE NORTHERLY, ON SAID EASTERLY RIGHT-OF-WAY LINE, ON A CURVE TO THE RIGHT BEING TANGENT TO THE LAST DESCRIBED COURSE WITH A RADIUS OF 1,116.30 FEET, A CENTRAL ANGLE OF 21°01'41" AND AN ARC DISTANCE OF 409.69 FEET; THENCE NORTH 05°16'05" WEST, ON SAID EASTERLY RIGHT-OF-WAY LINE, 77.50 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF NW COLBERN ROAD AS NOW ESTABLISHED; THENCE NORTH 84°43'55" EAST, ON SAID SOUTHERLY RIGHT-OF-WAY LINE, 193.00 FEET; THENCE NORTH 05°16'05" WEST, ON SAID SOUTHERLY RIGHT-OF-WAY LINE, 15.00 FEET; THENCE NORTH 84°43'55" EAST, ON SAID SOUTHERLY RIGHT-OF-WAY LINE, 2,519.90 FEET; THENCE EASTERLY, ON SAID SOUTHERLY RIGHT-OF-WAY LINE, ON A CURVE TO THE LEFT BEING TANGENT TO THE LAST DESCRIBED COURSE WITH A RADIUS OF 2,904.93 FEET, A CENTRAL ANGLE OF 12°44'58" AND AN ARC DISTANCE OF 646.40 FEET; THENCE NORTH 71°58'57" EAST, ON SAID SOUTHERLY RIGHT-OF-WAY LINE, 349.26 FEET; THENCE EASTERLY, ON SAID SOUTHERLY RIGHT-OF-WAY LINE, ON A CURVE TO THE RIGHT BEING TANGENT TO THE LAST DESCRIBED COURSE WITH A RADIUS OF 2,924.93 FEET, A CENTRAL ANGLE OF 09°51'58" AND AN ARC DISTANCE OF 503.66 FEET TO A POINT ON THE EAST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 30, SAID POINT ALSO BEING ON THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 30; THENCE SOUTH 01°36'54" WEST, ON THE EAST LINE OF SAID SOUTHWEST QUARTER AND ON THE WEST LINE OF SAID SOUTHEAST QUARTER, 925.47 FEET TO THE POINT OF BEGINNING. CONTAINING 5,064,487 SQUARE FEET OR 116.264 ACRES, MORE OR LESS.

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/21/2023
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

TITLE SHEET

DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1
SITE DISTURBANCE PLAN

LEE'S SUMMIT, MISSOURI

2023

drawn by: BMW
checked by: BMW
approved by: NDH
QA/QC by: NDH
project no.: A2104643
drawing no.: C_TTL01_A2104643
date: 01.20.2023

SHEET
C100

DWG: F:\2021\04501-05000\021-04643-A\40-Design\AutoCAD\Preliminary Plans\Sheets\GNC\Site Disturbance Plan\C_TTL01_A2104643.dwg USER: nheiser
DATE: Feb 21, 2023 8:47am XREFS: C_PTBLK_A2104643

GENERAL NOTES:

1. THE INTENT OF THIS LAND DISTURBANCE PLAN IS TO ASSIST THE DEVELOPER IN HIS RESPONSIBILITY TO PROVIDE ALL MATERIALS, TOOLS, EQUIPMENT AND LABOR NECESSARY TO CONTROL EROSION, SILTATION AND DISCHARGES OF SOIL MATERIAL (SEDIMENT) INTO DOWNSTREAM SYSTEMS OR RECEIVING CHANNELS. THIS SHALL BE REQUIRED DURING ALL PHASES OF CONSTRUCTION AND UNTIL SUITABLE GROUND COVER IS ESTABLISHED FOR ALL DISTURBED AREAS. IF ANY METHOD OF CONTROL FAILS, THE DEVELOPER SHALL NOTIFY THE OWNER IMMEDIATELY, SO THAT THE OWNER OR HIS AGENT CAN REVIEW THE DEVELOPER'S PROPOSED METHOD OF REPAIR.

THIS PLAN INDICATES THE CRITICAL AREA(S) OF CONCERN AND THESE AREA(S) WILL BE CONTROLLED AS A MINIMUM. THE CONTROL MAY CONSIST OF TEMPORARY CONTROL MEASURES AS SHOWN ON THE PLANS OR ORDERED BY THE OWNER DURING THE LIFE OF THE CONTRACT TO CONTROL EROSION OR WATER POLLUTION, THROUGH THE USE OF BERMS, DIKES, DAMS, SEDIMENT BASINS, FIBER MATS, NETTING, STRAW BALES, GRAVEL, MULCHES, GRASSES, SLOPE DRAINS, DIVERSION SWALES OR OTHER EROSION CONTROL DEVICES OR METHODS. THE OWNER HAS THE AUTHORITY TO LIMIT THE SURFACE AREA OF ERODIBLE EARTH MATERIAL EXPOSED BY THE CONSTRUCTION OPERATIONS AND TO DIRECT THE DEVELOPER TO PROVIDE IMMEDIATE PERMANENT OR TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT STREAMS OR OTHER WATER COURSES, LAKES, PONDS, OR OTHER AREAS OF WATER IMPOUNDMENT OR CONVEYANCES.

THE TEMPORARY POLLUTION CONTROL PROVISIONS CONTAINED HEREIN SHALL BE COORDINATED WITH ANY PERMANENT EROSION CONTROL FEATURES SPECIFIED ELSEWHERE IN THE CONTRACT TO THE EXTENT PRACTICAL TO ASSURE ECONOMICAL, EFFECTIVE AND CONTINUOUS EROSION CONTROL THROUGHOUT THE CONSTRUCTION AND POST CONSTRUCTION PERIOD.

2. THIS SEDIMENTATION CONTROL PLAN MAKES USE OF THE FOLLOWING APPLICATIONS:
- _X_PRESERVATION OF EXISTING VEGETATION
- _X_SEDIMENT BARRIERS
- ___SEDIMENT TRAPS
- ___INLET PROTECTION
- ___OUTLET PROTECTION
- ___SOIL RETAINING SYSTEMS
- ___SLOPE DRAINS
- ___SUBSURFACE DRAINS

PHYSICAL DESCRIPTION OF EACH SPECIFIC SEDIMENT CONTROL DEVICE TO BE UTILIZED IS CALLED OUT ON THE PLANS WITH INSTALLATION PROCEDURES, CONSTRUCTION SPECIFICATIONS AND MAINTENANCE ARRANGEMENT AS CALLED FOR ON THE DETAIL SHEET. IN ADDITION TO THE MEASURES SPECIFIED, THE FOLLOWING GENERAL PRACTICES SHALL BE ADHERED TO WHEN APPLICABLE.

A) CLEARING AND GRUBBING WITHIN 50' OF A DEFINED DRAINAGE COURSE SHOULD BE AVOIDED WHEN POSSIBLE. WHERE CHANGES TO A DEFINED DRAINAGE COURSE OCCUR, WORK SHOULD BE DELAYED UNTIL ALL MATERIALS AND EQUIPMENT NECESSARY TO PROTECT AND COMPLETE THE DRAINAGE CHANGE ARE ON SITE. CHANGES SHALL BE COMPLETED AS QUICKLY AS POSSIBLE ONCE THE WORK HAS BEEN INITIATED. THE AREA IMPACTED BY THE CONSTRUCTION ACTIVITIES SHALL BE REVEGETATED OR PROTECTED FROM EROSION AS SOON AS POSSIBLE, AREAS WITHIN 50' OF A DEFINED DRAINAGE WAYS SHOULD BE RECONTOURED AS NEEDED OR OTHERWISE PROTECTED WITHIN FIVE (5) WORKING DAYS AFTER GRADING HAS CEASED.

B) WHERE SOIL DISTURBING ACTIVITIES CEASE IN AN AREA FOR MORE THAN 14 DAYS, THE DISTURBED AREAS SHALL BE PROTECTED FROM EROSION BY STABILIZING THE AREA WITH MULCH OR OTHER SIMILARLY EFFECTIVE EROSION CONTROL MEASURES. IF THE SLOPE OF THE AREA IS GREATER THAN 3:1 OR IF THE SLOPE IS GREATER THAN 3% AND GREATER THAN 150 FEET IN LENGTH, THEN THE DISTURBED AREAS SHALL BE PROTECTED FROM EROSION BY STABILIZING THE AREA WITH MULCH OR OTHER SIMILARLY EFFECTIVE EROSION CONTROL MEASURES IF ACTIVITIES CEASE FOR MORE THAN SEVEN (7) DAYS.

C) EXISTING VEGETATION SHALL BE PRESERVED TO THE EXTENT AND WHERE PRACTICAL. IN NO CASE SHALL DISTURBED AREAS REMAIN WITHOUT VEGETATIVE GROUND COVER FOR A PERIOD IN EXCESS OF 60 DAYS.

D) ADDITIONAL SITE MANAGEMENT PRACTICES WHICH SHALL BE ADHERED TO DURING THE CONSTRUCTION PROCESS SHALL INCLUDE:

SOLID AND HAZARDOUS WASTE MANAGEMENT INCLUDING PROVIDING TRASH CONTAINERS AND REGULAR SITE CLEAN UP FOR PROPER DISPOSAL OF SOLID WASTE SUCH AS BUILDING MATERIAL, PRODUCT/MATERIAL SHIPPING WASTE, FOOD CONTAINERS AND CUPS, AND PROVIDING CONTAINERS FOR THE PROPER DISPOSAL OF WASTE PAINTS SOLVENTS, AND CLEANING COMPOUNDS.

PROVISIONS OF PORTABLE TOILETS FOR PROPER DISPOSAL OF SANITARY SEWAGE.

STORAGE OF CONSTRUCTION MATERIALS AWAY FROM DRAINAGE COURSES AND LOW AREAS.

INSTALLATION OF CONTAINMENT BERMS AND USE OF DRIP PANS AT PETROLEUM PRODUCT AND LIQUID STORAGE TANKS AND CONTAINERS.

3. ALL DISTURBED AREAS SHALL BE SEEDED, FERTILIZED AND MULCHED, OR SODDED, IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF LEE'S SUMMIT AND GOOD ENGINEERING PRACTICES. THIS SHALL BE COMPLETED WITHIN FOURTEEN (14) DAYS AFTER COMPLETING THE WORK, IN ANY AREA. IF THIS IS OUTSIDE OF THE SEEDING PERIOD, SILT BARRIERS OR OTHER SIMILARLY EFFECTIVE MEASURES SHALL BE PROVIDED UNTIL SUCH TIME THAT THE AREAS CAN BE SEEDED.

4. THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO ALL CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF LEE'S SUMMIT. THE DEVELOPER WILL BE RESPONSIBLE FOR DETERMINING ALL ADDITIONAL STANDARDS, SPECIFICATIONS OR REQUIREMENTS WHICH ARE REQUIRED BY GOVERNING AGENCIES (INCLUDING LOCAL, STATE AND FEDERAL AUTHORITIES) HAVING JURISDICTION OVER THE WORK PROPOSED BY THESE CONSTRUCTION DRAWINGS.

5. ALL EROSION CONTROL MEASURES, TEMPORARY OR PERMANENT, REQUIRE MAINTENANCE TO PRESERVE THEIR EFFECTIVENESS. ALL EROSION CONTROL DEVICES SHALL BE INSPECTED IMMEDIATELY AFTER EACH HEAVY RAINSTORM AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHOULD BE MADE IMMEDIATELY. ALL COSTS ASSOCIATED WITH THE REPAIR WORK INCLUDING RELATED INCIDENTALS WILL BE THE DEVELOPER'S RESPONSIBILITY AND SHALL BE INCLUDED IN THE DEVELOPER'S BID FOR THE PROPOSED WORK.

6. ALL EROSION CONTROL MEASURES TO BE PER APWA KANSAS CITY METRO CHAPTER STANDARD DETAILS.

7. THE DEVELOPER MUST REMOVE AT HIS COST ANY BAD SUBSURFACE SOIL WHICH WOULD NOT BE ABLE TO SUPPORT ANY PROPOSED PUBLIC IMPROVEMENT. BACKFILL SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL SECTIONS 2100 AND 2201 ENTITLED "GRADING AND SITE PREPARATION" AND "SUBGRADE PREPARATION".

8. THE CONTRACTOR SHALL CONTACT THE CITY'S DEVELOPMENT SERVICES ENGINEERING INSPECTORS 48 HOURS PRIOR TO ANY LAND DISTURBANCE WORK AT (816) 969-1200

9. TREE CLEARING TO HAPPEN BETWEEN NOVEMBER 1 AND MARCH 31. TREES CLEARED BETWEEN APRIL 1 AND OCTOBER 31 MUST BE TREES GREATER THAN 1,000 FEET FROM FORESTED OR WOODED AREAS OR TREES LESS THAN 3 INCHES IN DIAMETER, AT BREAST HEIGHT, AND NOT MIXED WITH LARGER TREES. IF LARGER TREES NEED TO BE CLEARED, A SURVEY OF THE TREES MUST BE CONDUCTED TO MAKE SURE THERE ARE NO BAT ROOSTS IN THE TREES.
TREE CLEARING TO BE CONDUCTED BY CUTTING DOWN AND MULCHING OR BY PUSHING OVER AND MULCHING. TREES SHALL NOT BE BURNED DOWN.

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS-BUILT
	SITE DISTURBANCE			
1	VEHICLE TRACKING CONTROL	EA.	5	
2	SILT FENCE	L.F.	17,557	
3	ROCK DITCH CHECK	EA.	58	
4	TEMPORARY CONSTRUCTION FENCING	L.F.	8,000	
5	TREE CLEARING	AC.	65.1	
6	DISTURBED AREA	AC.	65.1	

SUMMARY OF QUANTITIES AS INDICATED ABOVE AND ANY QUANTITIES AS SHOWN WITHIN THE PLANS HAVE BEEN PROVIDED FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR USE IN PREPARATION OF CONTRACT DOCUMENTS. QUANTITIES INTENDED FOR, BUT NOT LIMITED TO, THE PREPARATION OF PROPOSALS AND BID DOCUMENTS SHALL BE INDEPENDENTLY EVALUATED BY THE ESTIMATING PARTY BASED UPON THE CONTENTS OF THESE PLANS.

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North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/21/2023
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

GENERAL NOTES

DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1
SITE DISTURBANCE PLAN

LEE'S SUMMIT, MISSOURI

2023

drawn by: BMW
checked by: BMW
approved by: NDH
QA/QC by: NDH
project no.: A21-04643
drawing no.: C_GEN01_A2104643
date: 01.20.2023

SHEET
C101

DWG: F:\2021\04501-05000\021-04643-A\40-Design\AutoCAD\Preliminary Plans\Sheets\GNCV\Site Disturbance Plan\C_GEN01_A2104643.dwg USER: nheiser
DATE: Feb 21, 2023 8:55am XREFS: C_PTBLK_A2104643

LEGEND	
	TREE REMOVAL
	FUTURE TREE REMOVAL

N

0' 150' 300' 600'
SCALE IN FEET

DWG: F:\2021\04501-05000\021-04643-A\40-Design\AutoCAD\Preliminary Plans\Sheets\GNCV\Site Disturbance Plan\C_GEN02_A2104643.dwg USER: nheiser
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/21/2023
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REVISIONS

GENERAL LAYOUT

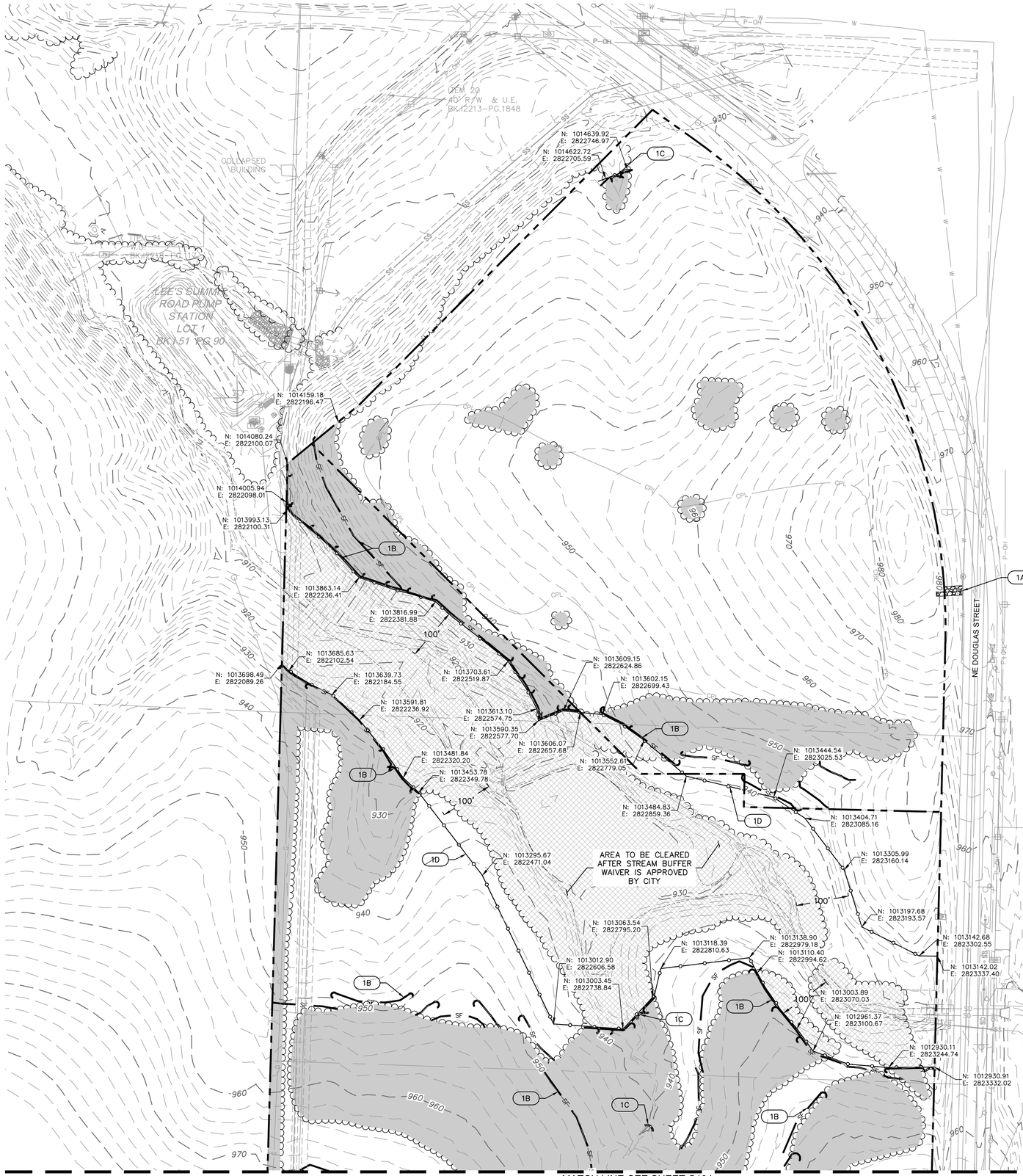
DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1
SITE DISTURBANCE PLAN

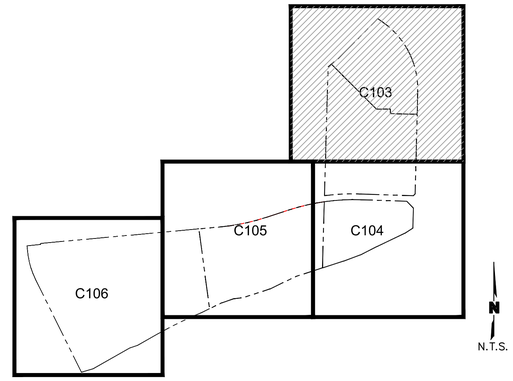
LEE'S SUMMIT, MISSOURI

2023

drawn by:	BMW
checked by:	BMW
approved by:	NDH
QA/QC by:	NDH
project no.:	A21-04643
drawing no.:	C_GEN02_A2104643
date:	01.20.2023

SHEET
C102





EROSION CONTROL PHASING CHART

PROJECT PHASE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES:
1 – TREE CLEARING	1A	CONSTRUCTION ENTRANCE	1	INSTALL PER APWA DETAIL ESC-01
	1B	SILT FENCE	N/A	INSTALL PER APWA DETAIL ESC-03
	1C	ROCK DITCH CHECK	N/A	INSTALL PER APWA DETAIL ESC-10
	1D	TEMPORARY CONSTRUCTION FENCING	1	

LEGEND	
PROPOSED	
SF	SILT FENCE
	TEMPORARY CONSTRUCTION FENCE
	ROCK DITCH CHECK
	TEMPORARY STONE CONSTRUCTION ENTRANCE
	TREE REMOVAL
	FUTURE TREE REMOVAL

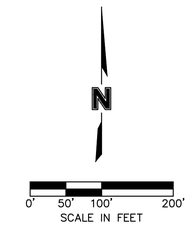
NOTE:
THE SITE DISTURBANCE PLANS INDICATES THE FINAL PLACEMENT OF EROSION CONTROL DEVICES. THE CONTRACTOR(S) MAY PROCEED WITH THE CONSTRUCTION PRIOR TO THE FINAL PLACEMENT OF THESE DEVICES BY PROVIDING ADDITIONAL DEVICES TO CONTROL EROSION ON THEIR ITEMS OF WORK. THESE DEVICES SHALL BE MAINTAINED UNTIL THE FINAL DEVICES ARE IN PLACE.

CONTRACTOR TO KEEP SWPPP REPORTS AND MDNR PERMIT IN THE ON-SITE CONSTRUCTION OFFICE TRAILER. TRAILER LOCATION TO BE DETERMINED BY CONTRACTOR

TREE CLEARING TO HAPPEN BETWEEN NOVEMBER 1 AND MARCH 31. TREES CLEARED BETWEEN APRIL 1 AND OCTOBER 31 MUST BE TREES GREATER THAN 1,000 FEET FROM FORESTED OR WOODED AREAS OR TREES LESS THAN 3 INCHES IN DIAMETER, AT BREAST HEIGHT, AND NOT MIXED WITH LARGER TREES. IF LARGER TREES NEED TO BE CLEARED, A SURVEY OF THE TREES MUST BE CONDUCTED TO MAKE SURE THERE ARE NO BAT ROOSTS IN THE TREES.

TREE CLEARING TO BE CONDUCTED BY CUTTING DOWN AND MULCHING OR BY PUSHING OVER AND MULCHING. TREES SHALL NOT BE BURNED DOWN.

ALL DISTURBED AREAS DUE TO TREE CLEARING TO BE COVERED WITH WOOD CHIP MULCH TO STABILIZE AREA.



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02/21/2023
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

EROSION CONTROL PLAN - PHASE 1

DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1
SITE DISTURBANCE PLAN

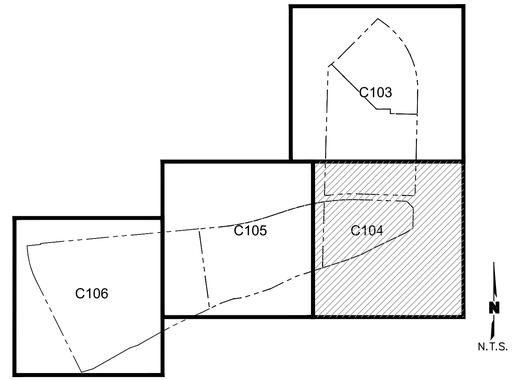
LEE'S SUMMIT, MISSOURI

2023

drawn by: BMW
checked by: BMW
approved by: NDH
QA/QC by: NDH
project no.: A21-04643
drawing no.: C_ERC01_A2104643
date: 01.20.2023

SHEET
C103

DWG: F:\2021\04501-05000\021-04643-A\40-Design\AutoCAD\Preliminary Plans\Sheets\GNCV\Site Disturbance Plan\C_ERC01_A2104643.dwg USER: nheiser
DATE: Feb 21, 2023 8:48am XREFS: C_PTBLK_A2104643 C_XBASE_A2103436 C_PBNDY_A2104643 C_PEROS_A2104643



EROSION CONTROL PHASING CHART

PROJECT PHASE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES:
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	1C	ROCK DITCH CHECK	N/A	INSTALL PER APWA DETAIL ESC-10
	1D	TEMPORARY CONSTRUCTION FENCING	1	

LEGEND	
PROPOSED	
SF	SILT FENCE
	TEMPORARY CONSTRUCTION FENCE
	ROCK DITCH CHECK
	TEMPORARY STONE CONSTRUCTION ENTRANCE
	TREE REMOVAL
	FUTURE TREE REMOVAL

NOTE:
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CONTRACTOR TO KEEP SWPPP REPORTS AND MDNR PERMIT IN THE ON-SITE CONSTRUCTION OFFICE TRAILER. TRAILER LOCATION TO BE DETERMINED BY CONTRACTOR

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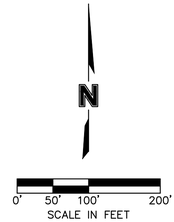
ALL DISTURBED AREAS DUE TO TREE CLEARING TO BE COVERED WITH WOOD CHIP MULCH TO STABILIZE AREA.



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STATE OF MISSOURI
NICHOLAS D. HEISER
02/21/2023
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

EROSION CONTROL PLAN - PHASE 1

DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1
SITE DISTURBANCE PLAN

LEE'S SUMMIT, MISSOURI

2023

drawn by: BMW
checked by: BMW
approved by: NDH
QA/QC by: NDH
project no.: A21-04643
drawing no.: C_ERC01_A2104643
date: 01.20.2023

SHEET
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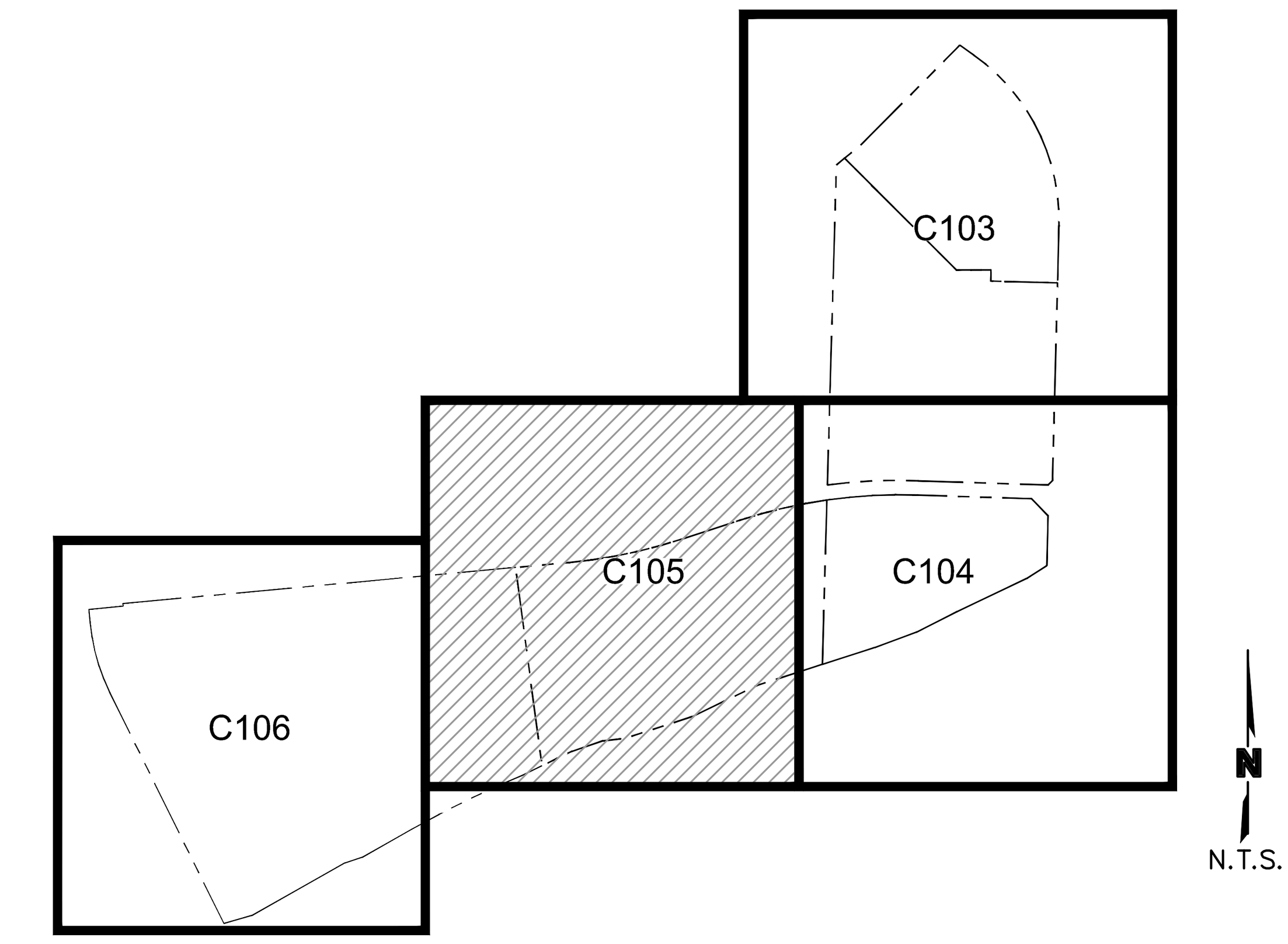

EROSION CONTROL PHASING CHART

PROJECT PHASE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES:
1 - TREE CLEARING	1A	CONSTRUCTION ENTRANCE	1	INSTALL PER APWA DETAIL ESC-01
	1B	SILT FENCE	N/A	INSTALL PER APWA DETAIL ESC-03
	1C	ROCK DITCH CHECK	N/A	INSTALL PER APWA DETAIL ESC-10
	1D	TEMPORARY CONSTRUCTION FENCING	1	

LEGEND

PROPOSED	
SF	SILT FENCE
	TEMPORARY CONSTRUCTION FENCE
	ROCK DITCH CHECK
	TEMPORARY STONE CONSTRUCTION ENTRANCE
	TREE REMOVAL
	FUTURE TREE REMOVAL

NOTE:
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N

0' 50' 100' 200'
SCALE IN FEET

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STATE OF MISSOURI
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02/21/2023
NUMBER PE-2017000555
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LEE'S SUMMIT, MISSOURI

2023

drawn by:	BMW
checked by:	BMW
approved by:	NDH
QA/QC by:	NDH
project no.:	A21-04643
drawing no.:	C_ERC01_A2104643
date:	01.20.2023

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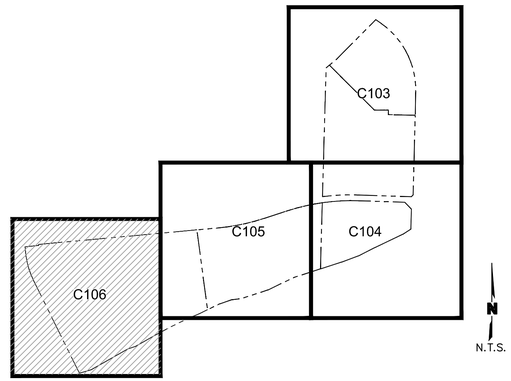

LEGEND	
PROPOSED	
SF	SILT FENCE
	TEMPORARY CONSTRUCTION FENCE
	ROCK DITCH CHECK
	TEMPORARY STONE CONSTRUCTION ENTRANCE
	TREE REMOVAL
	FUTURE TREE REMOVAL

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N

0' 50' 100' 200'
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2023

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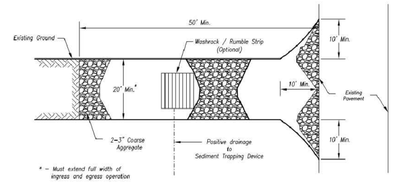
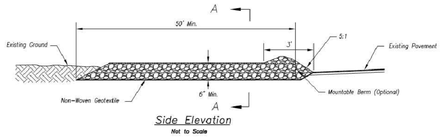


Plan View
Not to Scale



Side Elevation
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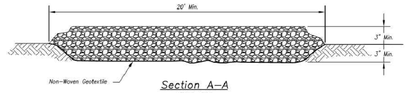


Section A-A
Not to Scale

Notes for Construction Entrance:

1. Avoid loading on steep slopes, at curves on public roads, or downhill of disturbed area.
2. Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 3H:1V side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

1. Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

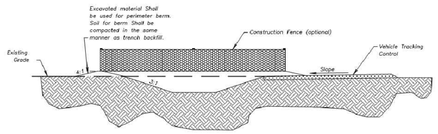
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout area shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slopes leading out of the subsurface pit shall be 3:1. The vehicle tracking pad shall be sloped towards the concrete washout area.
3. Vehicle tracking control is required at the access point to all concrete washout areas.
4. Signs shall be placed at the construction site entrance, washout area and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete truck and pump rigs.
5. A one-piece impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

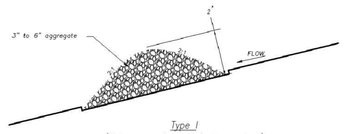
1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for wasted concrete.
3. Concrete washout water, wasted pieces of concrete and all other materials in the subsurface pit shall be transported from the job site in a water-tight container and disposed of properly.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topsoil, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.



CONCRETE WASHOUT

Construction Entrance modified from 2013 Overland Park Standard Details for Erosion and Sediment Control, Concrete Washout modified from 2009 City of Great Bend Standard Drawings.

AMERICAN PUBLIC WORKS ASSOCIATION		
Kansas City Metro Chapter APWA American Public Works Association	KANSAS CITY METRO CHAPTER	
CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT	STANDARD DRAWING NUMBER ESC-01	ADOPTED: 10/24/2016

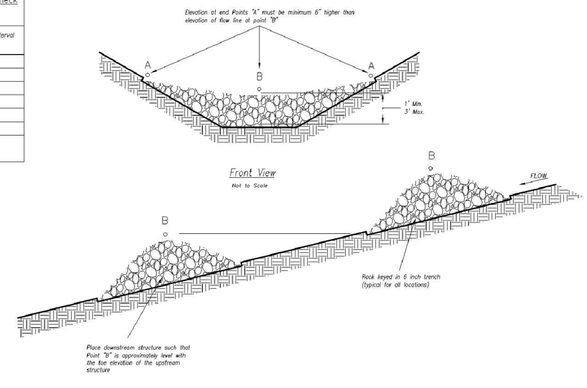


ROCK DITCH CHECK

Temporary Rock Ditch Check Spacing

Ditch Centerline Slope (%)	Spacing Interval (Feet)
5.0	60
6.0	50
7.0	43
8.0	38
9.0	33
10.0	29

Note: Use this spacing only for Rock Ditch Checks.



Notes:

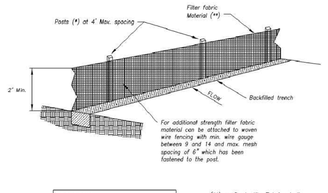
1. Rock check dams shall be used only for drainage areas less that 10 acres unless approved by the City Engineer.
2. Use rock checks only in situations where the ditch slope exceeds 6%.

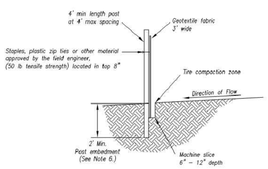
Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of the ditch check.
2. Replace and reshape as necessary to maintain function and integrity of installation.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION		
Kansas City Metro Chapter APWA American Public Works Association	KANSAS CITY METRO CHAPTER	
ROCK DITCH CHECKS	STANDARD DRAWING NUMBER ESC-10	ADOPTED: 10/24/2016





(*) POSTS
- MIN. LENGTH 4'
- HARDWOOD 1 ½" x 1 ½"
- NO.2 SOUTHERN PINE 2 ½" x 2 ½"
- STEEL 1.33 LB/FT

(**) - Geotextile Fabric shall meet the requirements of AASHTO M288

SILT FENCE DETAILS
Not to Scale

Notes:

1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of silt fence.
2. Repair as necessary to maintain function and structure.

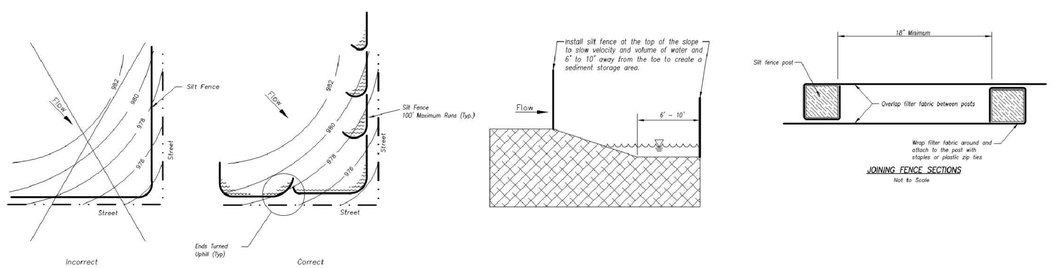


Figure A

SILT FENCE LAYOUT
Not to Scale

JOINING FENCE SECTIONS
Not to Scale

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION		
Kansas City Metro Chapter APWA American Public Works Association	KANSAS CITY METRO CHAPTER	
SILT FENCE	STANDARD DRAWING NUMBER ESC-03	ADOPTED: 10/24/2016

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/21/2023
NUMBER PE-2015000552
PROFESSIONAL ENGINEER

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

DETAIL SHEET

DISCOVERY PARK ZONE 1-4 & ARIA 1ST PLAT LOT 1
SITE DISTURBANCE PLAN

LEE'S SUMMIT, MISSOURI

2023

drawn by: BMW
checked by: BMW
approved by: NDH
QA/QC by: NDH
project no.: A21-04643
drawing no.: C_DTL01_A2104643
date: 01.20.2023

SHEET
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DATE: Feb 16, 2023 1:08pm
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USER: mdlebolt

SECTION 6

BMP Specification & Detail Sheets

SECTION 2150 – EROSION AND SEDIMENT CONTROL

CITY OF LEE'S SUMMIT, MISSOURI
STANDARD SPECIFICATIONS

The City of Lee's Summit hereby adopts Section 2150 of the Kansas City Metropolitan Chapter of APWA Construction and Material Specifications, current edition. The following additions, deletions and/or revisions are adopted as a part of Section 2150 for use within Lee's Summit. Text in bold italics indicates revisions or additions to the APWA standard.

2154.5.A (Silt Fence) Materials, Construction Requirements, and Maintenance:

ADD the following:

1. ***Silt fence typically should not be used in swales, drainage-ways, channels and other conduits of concentrated stormwater flow and will only be considered on a case by case basis.***
2. ***Silt fence typically should not be used to direct or divert water and will only be considered on a case by case basis.***

DIVISION II
CONSTRUCTION AND MATERIAL SPECIFICATIONS

SECTION 2150 EROSION AND SEDIMENT CONTROL

Approved and Adopted this 15th day of February, 2017

Kansas City Metropolitan Chapter
American Public Works Association

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SECTION 2151 GENERAL REQUIREMENTS

2151.1 Summary: This section describes general requirements to prevent or minimize the pollution of rivers, streams, lakes, and wetlands caused by runoff from the construction zone. Such pollution includes sediment that may migrate offsite through the action of wind, water, or traffic, as well as chemical spills or other refuse from the site.

2151.2 Contractor's Responsibility: The Contractor shall take measures to prevent or minimize the transport of sediment or pollutants from the project limits or into bodies of water that are intended for protection, in accordance with the plans, the requirements of applicable permits and regulations, and best available management practices.

2151.3 Compliance with NPDES Permits: The Owner will obtain a National Pollutant Discharge Elimination System (NPDES) permit and other similar local water pollution control permits as required. Where such permits are required, the Owner will provide the Contractor with a Stormwater Pollution Prevention Plan (SWPPP) which has been prepared by the Engineer or other qualified professional. The Contractor shall comply with all requirements of such permits and the SWPPP, and shall enforce compliance with such requirements by all Subcontractors. The Contractor shall complete the required certification forms for coverage under the relevant permit and shall notify all Subcontractors in writing of the requirements of the SWPPP, obligate them under contract to comply, and enforce compliance during the work.

2151.4 Projects Not Requiring a Permit: If neither NPDES permit nor other local water pollution control permits are required for a project, the Engineer may waive certain documentation and record-keeping provisions of this specification. The Contractor is required to comply with all other provisions in this specification and is required to install such measures for erosion and pollution control as may be called for in the plan or ordered by the Engineer.

2151.5 Stormwater Pollution Prevention Plan (SWPPP): The Stormwater Pollution Prevention Plan (SWPPP) outlines methods and controls to be used to prevent stormwater pollution from the construction activities.

The SWPPP will generally consist of the following elements: (a) a site description; (b) a site map or plan sheets showing areas of soil disturbance, an outline of areas which will not be disturbed, and a drainage area map; (c) plan sheets, tables, or other schedules detailing the location of major structural and non-structural controls and areas where stabilization practices are expected to occur; (d) a description of erosion and sediment controls to be used; (e) a description of any permanent stormwater management features which are incorporated into the project; (f) a description of other controls related to waste disposal practices; (g) a description of the timing, during the construction, of when the measures will be implemented and removed; and (h) a description of maintenance procedures for control measures identified in the plan.

Where multiple agencies have jurisdiction over erosion and sediment control, the SWPPP will be prepared to satisfy the requirements of each. The use of the term “Stormwater Pollution Prevention Plan” or “SWPPP” is not intended to limit its content to the provisions of any single permit program or jurisdiction, and this specification shall have the same meaning regardless of whether the applicable plans are referred to as a “SWPPP,” “erosion control plan,” “erosion and sediment control plan,” “temporary water pollution control plan,” or other equivalent term.

All elements of the project bid documents relating to erosion and pollution control are considered part of the SWPPP, either by direct inclusion or by reference, including plan sheets,

specifications, special provisions, quantity tabulations, bid sheets, and contract documents. A copy of all NPDES and other water pollution related permits and permit applications are also part of the SWPPP. This APWA specification is an integral part of the SWPPP.

2151.6 Contractor Amendments to the SWPPP: Prior to beginning work, the Contractor shall review the SWPPP in detail and provide the Engineer with written recommendations for amendments to improve the effectiveness of the SWPPP or to bring it into better alignment with the Contractor's intended method of operations. The Contractor shall also advise the Engineer of any omissions or deficiencies they find in the SWPPP. During the progress of the job, the Contractor shall continue to monitor the effectiveness and performance of the control measures used and propose additional amendments as needed. No amendment shall be incorporated unless approved by the Engineer, and a log of such amendments shall be made by the Contractor. When required by the permit or state law, such amendments shall be developed and prepared under the supervision of a qualified professional as defined in said permit or law. A copy of the SWPPP and all amendments shall be retained by the Contractor onsite and ready for inspection without notice.

2151.7 Contractor Schedule: In addition, the Contractor shall also provide the Engineer with a detailed schedule of their work prior to beginning, which shall include information on the expected timing, duration, and sequencing of erosion and sediment control measures and overall job completion and phasing. Once approved, such schedule shall become a part of the SWPPP, and changes to the schedule shall require amendment to the SWPPP.

2151.8 Alternate Methods or Materials: The Contractor may propose alternative methods or materials for any of the specific erosion and sediment controls given in the SWPPP, provided that such methods provide equal or improved measures of control, as determined by the Engineer. The Contractor shall submit any documentation required by the Engineer to evaluate the alternative. If agreed to by the Engineer (and subject to state or other permitting agency approval if applicable), payment for such alternate method shall be handled in accordance with the applicable provisions of the Contract for changes in work.

2151.9 Superintendent Training Required: The Contractor’s resident superintendent shall have no less than 8 hours of formal training on erosion and sediment control within the last 24 months. Such training shall include the principles of erosion and sediment control, technical information on typical and/or innovative controls, and the contents of these specifications and related Standard Drawings and Design Criteria. The training shall be taught primarily by a registered professional engineer or other professional who is considered by the applicable regulatory agencies to be qualified to prepare a SWPPP. Documentation of training shall be submitted to the Engineer upon request, prior to beginning work.

2151.10 Duration of Contractor's Responsibility: The Contractor is responsible for water pollution control and permit compliance from the issuance of Notice to Proceed until final completion of the work and during any subsequent maintenance bond period. The notice of termination will not be submitted by the Owner until all permit requirements are met, which includes the requirement that final stabilization be achieved on 100% of the site. Vegetation shall achieve a density of at least 70% of full turf to be considered acceptable as final stabilization.

2151.11 Installation of Controls: The Contractor shall obey all requirements for chemical and waste controls specified in Section 2152. Contractor shall provide all specific erosion and sediment controls required by the SWPPP in accordance with the requirements of Section 2153

and 2154. If the SWPPP calls out items or controls not included in this specification, refer to the project special provisions and plans for requirements. Controls shall be installed prior to disturbance in an area, unless otherwise indicated in the plans.

2151.12 Maintenance: The Contractor shall maintain the integrity of the temporary erosion and sediment control devices as long as they are in place and necessary. Devices not functioning properly shall be corrected or replaced. Accumulated sediments shall be removed promptly as detailed in Section 2154.

2151.13 Removal: Control measures shall be completely removed from the site when they are no longer needed, unless they are approved by the Engineer to remain in place for permanent stabilization or biodegradation (i.e. erosion control blankets).

2151.14 Inspections: The Contractor shall inspect the construction site within twenty-four hours of the end of a storm which results in precipitation of 0.5 inches or greater, during both active and inactive phases. In addition, regular inspections shall be made weekly during active phases of construction. During inactive phases (such as winter when construction activity has temporarily ceased), an inspection of the site condition shall be made no less than once every 14 days. All installed practices shall be checked for proper installation, operation, and maintenance. Locations where stormwater runoff leaves the site shall be inspected for evidence of erosion or sediment deposition. Deficiencies shall be noted in a report of the inspection and corrected within seven calendar days of the inspection.

A report of each inspection is to be made within 24 hours of the inspection and shall contain the following minimum information: inspector's name, date of inspection, observations relative to the effectiveness of the practices, actions taken or necessary to correct deficiencies, a listing of areas where construction operations have permanently or temporarily stopped, observations at stormwater discharge locations, and any other item required of an inspection by the applicable permits The inspection report shall be signed by the person performing the inspection. Site inspection reports shall be maintained onsite with the SWPPP or the SWPPP shall contain written documentation of the off-site records storage location.

2151.15 Records: The Contractor shall maintain all permit required records during the job and shall transmit all necessary records to the Engineer at the completion of the work, including all Contractor and Subcontractor certifications and site inspection records, as well as other records requested by the Engineer.

2151.16 Site Access for Inspections: The Contractor shall allow authorized representatives of federal, state, or local agencies having jurisdiction of this permit, upon presentation of proper credentials, to enter the site where construction activities are located, to obtain samples of any discharge water, to have access to and copy at reasonable times, any records which shall be kept, and to inspect any facilities or equipment.

2151.17 Maximum Areas of Disturbance at One Time: The surface area of erodible earth material exposed by site operations shall be limited by the Engineer according to the Contractor's capability and progress in keeping with the approved schedule. Existing vegetation shall be preserved or retained as long as practical and the time period for soil areas to be without permanent surface or vegetative cover shall be minimized. The maximum surface area of erodible earth exposed at one time shall not exceed ten (10) acres unless approved in writing by the Engineer or otherwise provided for in the plans. The Contractor shall pay close attention to the grading and disturbance limits indicated on the plan or authorized by the Engineer.

2151.18 Measures Where Construction has Ceased: Soil stabilizing erosion control measures as detailed in Sections 2153 shall be implemented within 14 calendar days after construction activities have temporarily or permanently ceased on any portion of the site. Exceptions to this requirement are as follows: (a) if implementation of erosion controls is precluded by snow cover, such measures shall be taken as soon as practical after snowmelt, or (b) a waiver to this requirement is justified and approved by the Engineer in writing, in which case a specific deadline for installing erosion controls shall be established.

2151.19 Duration Limits for Select Activities: For certain items of work, the plans or standard sequences may contain specific time limits for the maximum duration of exposure, typically stated as "Item A construction shall have a maximum exposure time of X days." Where such limits are specified, the time shall be measured from the date in which stabilized ground cover is first disturbed in the work area until the specified construction is complete and permanent or temporary stabilization shown on the Plans is applied. Contractor shall be responsible for documenting the elapsed time on all such work, typically by noting the time in their inspection logs, taking time-stamped photographs, and/or by marking the area with a wooden stake documenting beginning and ending dates. The Engineer may grant extensions of time requested by the Contractor when justified and suitable interim stabilization measures are provided.

2151.20 Construction near Rivers, Streams, and Waterbodies: Construction operations in or near rivers, streams, and other water impoundments shall be restricted to those areas essential for construction. Unless otherwise provided for in the plans, a minimum 50 feet buffer of undisturbed vegetation shall be maintained between construction operations and defined drainage courses. Where such buffers are not provided, work shall not be initiated until all materials and equipment necessary to complete the work are on site and such operations shall be completed as quickly as possible once the work has begun. When no longer required, all falsework, pilings, temporary crossings, and other obstructions shall be promptly removed. Stream crossings shall be limited to those detailed in the plans or as approved by the Engineer.

2151.21 Culverts, Ditches and Storm Sewers: Construction of major elements of the proposed storm sewer or other drainage systems shall be coordinated to minimize the duration of time over which stormwater would run through temporary, erodible channels. Unless otherwise indicated on the plans, construction of the major elements of this system shall be among the first activities on the project. Once begun, construction shall proceed expeditiously to completion, including placement of all final headwalls, end structures, rip-rap and other end treatments. Temporary or permanent ditches which are graded on the project shall either be stabilized or have temporary sediment controls installed within seven (7) days of their grading.

2151.22 Methods of Measurement: No separate measurements will be made for the general requirements covered by this Section.

2151.23 Basis of Payment: Compliance with the general requirements of this section will not be paid separately, but shall be subsidiary to other items listed in the contract. (Note: Some Owner's may elect to pay for Administration of erosion control requirements as a separate line item. Consult the contract and job special provisions if that is the case.

SECTION 2152 CHEMICAL AND WASTE CONTROLS

2152.1 Summary: This section describes specific requirements to control non-sediment related pollutant discharges from chemicals and wastes from the site, including requirements for chemical handling, spill prevention, spill response, and waste disposal.

2152.2 Solid, Liquid, and Hazardous Wastes: All trash shall be placed in dumpsters or trash barrels provided by the Contractor and accumulated trash shall be hauled offsite and properly disposed. Floating debris found in any waterbody on or immediately adjacent to construction shall be removed immediately, regardless of source. Hazardous wastes shall be stored, transported offsite, and disposed of properly.

2152.3 Sanitary Wastes: Sanitary facilities shall be made available and their use enforced by the Contractor.

2152.4 Leak Prevention: All equipment used onsite shall be free of leaks, receive regular preventative maintenance, and be inspected daily to reduce chance of leakage. No fueling, servicing, maintenance, or repair of equipment shall be done within 50 feet of a stream, drainage way, lake, storm sewer manhole or other water body. Onsite fuel tanks shall be in good condition, free of leaks or drips, painted brightly for visibility, and monitored daily. All fuel tanks, including mobile trailers, shall be protected by a secondary containment system or earthen berm sized to contain 110% of the full tank volume.

2152.5 Concrete Washout: Concrete wash or rinse water from concrete mixing equipment, tools and/or ready-mix trucks, tools, etc., shall not be discharged into or be allowed to run directly into any existing water body or storm inlet. One or more locations for concrete wash out shall be designated on site and installed in accordance with the Standard Drawings.

2152.6 Chemical Handling and Storage: Chemicals or materials capable of causing pollution shall only be stored onsite in their original container. Materials stored outside shall be in closed and sealed water-proof containers and located outside of drainage ways or areas subject to flooding. Manufacturer's data regarding proper use and storage, potential impacts to the environment if released, spill response, and federally-defined reportable quantities for spill reporting shall be maintained by the field superintendent onsite at all times. Locks and other means to prevent or reduce vandalism shall be used.

2152.7 Herbicides, Pesticides and Fertilizers: Herbicides, pesticides and fertilizers used as part of the work shall be applied only in accordance with manufacturer recommendations. Direct spray into water bodies is prohibited. Such chemicals shall not be used if rain is forecast within 24 hours, unless they are approved for wet weather application.

2152.8 Spill Clean-up and Management: If it is safe to do so, Contractor shall stop the source of any spills or leaks and shall contain spills immediately with an appropriate device, earthen berm, sawdust, sand, kitty litter, rags or other absorbents. Manufacturer recommendations shall be followed. Leaks from broken hoses shall be immediately contained with hose clamps, plugs, or drained into leak-proof containers. Contractor shall have the tools, equipment, and supplies necessary for spill response onsite at all times and ready for immediate use. Contractor personnel shall be trained to properly respond immediately to a leak or spill. All spills shall be cleaned up and disposed of in accordance with applicable federal, state, and local regulations. Local hazardous materials response units shall be called if assistance is needed in stopping or containing the spill.

2152.9 Spill Reporting: All spills in excess of reportable quantities shall be reported to the appropriate federal, state, and local agencies within 24 hours of their occurrence. The Contractor shall maintain a listing of all such agencies onsite within the SWPPP and in easy reference for onsite personnel. Spills that pose an immediate threat to public safety or contamination of a water body shall be reported immediately to designated first response authorities. A current listing of applicable phone numbers for the jurisdiction shall be placed at the front of the SWPPP and posted conspicuously on the jobsite.

2152.10 Methods of Measurement: No separate measurements will be made for the requirements covered by this Section.

2152.11 Basis of Payment: Compliance with the requirements of this section will not be paid separately, but shall be subsidiary to other items listed in the contract.

SECTION 2153 EROSION CONTROLS

2151.1 Referenced Standards:

The following standards are referenced directly in this section. The latest version of these standards shall be used.

APWA, Kansas City Metropolitan Chapter (KC-APWA):
Standard Drawings, Division III of Standard Specifications and Design Criteria

Erosion Control Technology Council (ECTC):
Standard Specification for Rolled Erosion Control Products (RECPs).

Kansas Department of Transportation (KDOT):
Standard Specifications for State Road & Bridge Construction, 2015 Edition or later including all latest errata and adopted Special Provisions, as well as associated Standard Drawings.

Missouri Department of Transportation (MoDOT):
Missouri Standard Specifications for Highway Construction, 2011 edition or later including all supplemental specifications, as well as associated Standard Plans.

Texas Department of Transportation (TxDOT):
Approved Products List (APL) for Erosion Control. Based on testing and standards cited in the report "TXDOT / TTI Hydraulics, Sedimentation and Erosion Control Laboratory: Field Performance Testing of Selected Erosion Control Products".

US Composting Council (USCC):
STA – Seal of Testing Assurance Program; and TMECC - Test Methods for the Examination of Composting and Compost. Information available online at www.compostingcouncil.org.

2153.2 Summary: This section describes specific requirements for installation and maintenance of temporary measures to stabilize onsite soils and prevent erosion during construction.

2153.3 Materials: Materials used for erosion controls shall meet the requirements of the following subsections. Unless otherwise specified herein, the Contractor shall submit, for each material used, a certification prepared by the manufacturer which states that the materials meet all the requirements of this specification. The manufacturer shall also provide supporting documentation and testing results to validate this certification, if requested by the Engineer. Manufacturer's instructions for installation of materials (when applicable) shall be available onsite whenever work is occurring and a copy shall be submitted to the Engineer upon request.

2153.4 Permanent Seeding and Sodding: Final stabilization with vegetation by either permanent seeding or sodding is the most effective form of erosion control and shall be achieved as early in the construction process as possible.

A. Materials, Construction Requirements and Maintenance: Permanent seeding or sodding shall be provided as specified in Section 2400 of these Standard Specifications.

Contractor shall schedule work so that permanent seeding is conducted as early as practical in the construction process. Multiple mobilizations of seeding or sodding operations shall be expected.

B. Out-of-Season Special Provision: The Engineer may request that permanent seeding be conducted anytime between April 16 and August 14 and/or that sodding be conducted anytime between June 1 and September 1, even though such dates are outside the standard seasons established in Section 2400. If agreed to by the Contractor, then the Contractor shall conduct such seeding or sodding and shall be responsible for the establishment of a vigorous and healthy seed or sod cover. The Contractor will be paid, however, for all watering necessary during the period that falls outside the standard season.

C. Measurement and Payment: Shall be as specified in Section 2400. If out-of-season seeding or sodding has been authorized, then "Out of Season Watering" will be measured by the 1,000-gallon unit applied and paid for at the contract unit price.

2153.5 Temporary Seeding: Interim stabilization with annual vegetation to provide temporary cover to minimize erosion. This item only covers seeding installed by conventional drilling.

A. Materials: Seed and equipment used for temporary seeding shall meet all the criteria given for permanent seeding in Section 2400 of these Standard Specifications. Fertilizer is not required.

Mulch used for temporary seeding shall meet the same requirements as “mulch cover” in subsection 2153.6. Mulch is required unless erosion control blankets are being used instead.

The following seed mixtures and planting rates shall be used:

1. Type "TR" Seed: This mixture will normally be used when temporary seeding is conducted between February 15 and May 31, or between September 1 and October 31. The seed mixture will be as follows:

Kind of Seed	Minimum Pure Live Seed (%)	Rate of Pure Live Seed (lbs per Acre)
Annual Rye Grass	83	90

2. Type "TM" Seed: This mixture will normally be used when temporary seeding requires heat tolerance, typically for planting anytime between May 1 and August 15. (Volunteer millet is aesthetically objectionable in turf grass lawns; therefore, some jurisdictions may restrict use of this mix. Confirm local requirements before use.) The seed mixture will be as follows:

Kind of Seed	Minimum Pure Live Seed (%)	Rate of Pure Live Seed (Lbs per Acre)
Millet	77	65

3. Type "TW" Seed: This mixture will normally be used when temporary seeding requires cold tolerance, typically for planting anytime between September 15 and November 30. The seed mixture will be as follows:

Kind of Seed	Minimum Pure Live Seed (%)	Rate of Pure Live Seed (Lbs per Acre)
Winter Wheat	83	120

B. Construction Requirements: Preparation, planting and all other construction requirements for temporary seeding shall be as specified for permanent seeding in Section 2400, except as modified herein. Temporary seeding shall be drilled (see 2153.8 for hydraulic application of temporary seed). Prior to application, the soil shall be tilled to a depth of at least 2 inches and gullies, depressions, and large clods eliminated. Roller compaction of the seedbed is not required. Within 24 hours of seeding, mulch or erosion control blankets shall be applied. When mulch is used, it shall be applied in accordance with the same requirements given for "Mulch Cover" in subsection 2153.6. When erosion control blankets are used, they shall be installed in accordance with the requirements in subsection 2153.9. The Contractor shall initially water all areas of temporary seeding at least one-quarter inch as soon as the mulch is laid. Additional watering may be necessary for plant germination and adequate growth to provide cover. Contractor shall schedule work so as to provide temporary seeding as early as practical in the construction process. Contractor shall maintain a readiness to perform temporary seeding frequently during the progress of the project. No more than 7 calendar days shall elapse between the Engineer's request for temporary seeding and its application. Multiple mobilizations to seed areas as construction progresses shall be expected.

C. Maintenance: Mulch shall be replaced or repaired as needed during germination and early growth. Bare spots shall be patched, by hand seeding if necessary. Vehicle and personnel traffic shall be minimized in areas seeded.

D. Measurement and Payment: "Temporary Seeding" will be measured per acre or hundredth part thereof and paid for at the contract unit price. No differentiation shall be made for type of temporary seed used. Mulch and watering shall not be measured or paid for separately on any temporary seeding, but all such costs shall be subsidiary to the item. Erosion control blankets, when used, will be measured and paid separately as "Erosion Control Blanket."

2153.6 Mulch Cover: Mulch applied without seeding to protect the soil surface from raindrop impact and reduce wind erosion and dust. Mulch Cover (without seed) is generally used when ground cover is required and temporary or permanent seeding is not feasible.

A. Materials: Mulch shall be vegetative type only, consisting of cereal straw from stalks of oats, rye, wheat or barley and shall be free of prohibited and noxious weed seeds.

B. Construction: Prior to applying mulch, the soil shall be tilled to a depth of 2 inches to eliminate hard crust and allow rainwater intercepted by mulch to infiltrate the soil. Gullies, depressions, and large clods shall be eliminated.

Mulch shall be applied at the rate of 1.5 tons/acre (3,000 lbs/acre) and be anchored into the soil a minimum depth of 3 inches by use of a heavy disc harrow, set nearly straight, or a similar approved tool. Discs of the anchoring tool shall be set approximately 9

inches apart. Anchoring shall be accomplished by not more than two passes of the tool. If approved by the Engineer, a tackifier may be applied to the mulch to anchor it instead of using the disc harrow.

C. Maintenance: Mulch cover shall be replaced or repaired as needed. Bare spots shall be filled in, by hand if necessary. Vehicle and personnel traffic shall be minimized in areas mulched.

D. Measurement and Payment: "Mulch Cover" will be measured per acre or hundredth part thereof and paid for at the contract unit price. Mulch is not measured and paid separately when laid down in conjunction with seeding operations.

2153.7 Hydrocover (Standard): Hydraulic application of a standardized mixture of fiber mulch, tackifier, and temporary seed to provide temporary cover.

A. Materials:

1. **Fiber Mulch:** Fiber mulch shall be a manufactured, pre-packaged, biodegradable material. The material supplied shall be meet the requirements of ECTC's Standard Specification for Hydraulic Erosion Control Products (HECPs) (version 2.4 dated April 2, 2014) for Type 3 products, having a functional longevity of 3 months, a maximum uninterrupted slope length of 50 feet, and applied to a slope that is flatter than 3:1. In addition, the material shall also be listed on the TxDOT Approved Products List for Erosion Control under the category "Mulches 4:1 or Flatter Slopes" and specified for use on "Clay or Tighter Soils".

2. **Tackifier:** Shall be food-grade hydrolyzed guar gum powder or alternate material as specified by the manufacturer. It shall be mixed with the cellulose fibers based on the manufacturer's recommendations.

3. **Water:** Shall be clean, potable water mixed at a rate suitable for the equipment being used and as recommended by the manufacturer.

4. **Seed:** Shall be Type TR, TM or TW seed as specified in Section 2153.5 and appropriate for the season. Seed shall be mixed to provide no less than the seeding rate per acre given in that section.

5. **Fertilizer**: Not required unless specified by the Engineer

B. Construction Requirements: The fiber mulch shall be added to the hydraulic seeder along with proportionate amounts of seed, tackifier, and water in accordance with the manufacturer's recommendation. It shall be applied to make a uniform coverage of the soil surface. Prior to application, the soil shall be tilled to a depth of at least 2 inches and smoothed to eliminate gullies, depressions, or large clods. The Standard Mix Hydrocover mix shall not be used on any slope steeper than 4:1. Contact the engineer for alternate specifications to be used on steeper slopes if there is a discrepancy.

Hydrocover shall be applied at a minimum rate of 2,000 pounds dry weight of fiber per acre (0.41 pounds per square yard), unless otherwise specified by the manufacturer. Once applied, the area shall be allowed to dry and vehicle and personnel traffic shall be

kept off the stabilized area. Water shall be applied as needed for seed germination and plant growth. The hydrocover operation shall be accomplished with hydraulic sprayers suitable for spreading and projecting the mixture and fitted with the appropriate nozzle tips. Sprayers shall be mechanically mixed or jet agitated.

Contractor shall maintain a readiness to provide hydrocover frequently during the progress of the project. No more than 7 calendar days may elapse between the Engineer's request for hydrocover and its application. Multiple mobilizations of hydrocover operations shall be expected.

C. Maintenance: Areas which are disturbed by construction shall be patched with additional application of slurry at the next available mobilization of equipment at no additional cost. Small areas of poor coverage may be stabilized through erosion control blankets, mulch for cover, straw wattle protection or other measures, at no additional cost.

D. Measurement and Payment: "Hydrocover (Standard)" will be measured per acre or hundredth part thereof and paid for at the contract unit price. No payment will be made for applications made outside the area intended for coverage.

2153.8 Hydrocover (Specialty Mix): Hydraulic application of specialized mixtures of fiber mulch, tackifiers, seed and other additives to provide temporary cover. Such specialized mixtures may provide for steeper slopes, more robust protection, longer durability, or enhanced vegetative growth, as compared to the Standard Mix.

A. Materials: When specialty mixtures are used, the particular mix design and ingredient requirements shall be given in the plans or special provisions. Such specialty mixtures may include additives for improved seed germination, mixtures of special polymer tackifiers and heavier rates of cellulose fiber or other cross-linking organic fibers to produce a more continuous cover (i.e. "Bonded Fiber Matrix"), or mixtures that contain polyacrylamides that chemically stabilize the underlying soils (i.e. "Stabilized Fiber Matrix"). Seed and additives shall conform to the requirements of standard hydrocover, except as modified in the plans, special provisions or by the manufacturer's recommendations for the specialty mix.

B. Construction and Maintenance Requirements: All construction and maintenance requirements shall be the same as for standard hydrocover, except as modified by the plans or the manufacturer's recommendation for the specialty mix. Equipment for specialty mixes shall conform to manufacturer's recommendations.

C. Measurement and Payment: "Hydrocover (Named Specialty Mix)" will be measured per acre or hundredth part thereof and paid for at the contract unit price. No payment will be made for applications made outside the area intended for coverage.

2153.9 Erosion Control Blankets (including Turf Reinforcing Mats): Blankets or mats of natural, synthetic, or composite materials that can be rolled onto bare earth and anchored in place to provide temporary or permanent cover and/or to stabilize bare earth or channels subject to overland or concentrated surface flow. This item of work includes the use of Turf Reinforcing Mats.

A. **Materials:** Erosion control blankets of the class and type specified in the contract shall be a "Rolled Erosion Control Product" as defined by the ECTC Standard Specification. Further, the material shall be listed in the current TxDOT Approved Products List for Erosion Control. Blankets are categorized by expected use and application, as follows:

Class 1: For use as Cover and Slope Protection from overland flow:
Type A: On slopes 1:3 or flatter with clay soils.
Type B: On slopes 1:3 or flatter with sandy soils.
Type C: On slopes steeper than 1:3 with clay soils.
Type D: On slopes steeper than 1:3 with sandy soils.

Class 2: For use as Flexible Channel Liner under concentrated flow:
Type E. For shear stresses below 2 lb/sq. ft.
Type F. For shear stresses below 4 lb/sq. ft.
Type G. For shear stresses below 6 lbs/sq. ft.
Type H. For shear stresses below 8 lb/ sq. ft.

Materials supplied for Type A, B, C, D, E and F blankets shall have a minimum expected longevity of 12 months, unless otherwise stated on the plans or approved by the Engineer. Materials supplied for Type G and H shall have a longevity of greater than 5 years. Materials for Type H shall be 100% synthetic. Expected longevity shall be evaluated based on the manufacturer's data.

B. **Construction Requirements:** The Contractor shall install erosion control blankets in the locations shown in the plans and in accordance with the Standard Drawings and manufacturer's recommendations.

C. **Maintenance**: Maintain blankets in accordance with the Standard Drawings and manufacturer's recommendations.

D. **Measurement and Payment:** "Erosion Control Blanket (Named Type)" will be measured per square yard of sloped surface area covered by the completed mat and paid for at the contract unit price for the given type. Excess blanket used for overlap at seams, anchoring, waste, repairs, etc. will not be included in the measurement. When blankets are used in conjunction with permanent or temporary seeding, erosion control blanket will be paid for at the contract unit price and the seeding operation shall be paid separately.

2153.10 Compost Cover: Organic compost applied with or without seeding to protect the soil surface from raindrop impact, absorb stormwater, facilitate vegetation growth and reduce wind erosion and dust.

A. **Materials:** *(Note: The material requirements in this subsection do not apply for compost filter berms and compost filter socks, and are described more fully in Sections 2154.10 and 2154.11.)*

All compost shall be mature, sanitized, well-composted organic matter free of identifiable feedstock constituents and offensive odors. Compost shall have been produced by the aerobic decomposition of organic material. Organic material sources may include leaves and yard trimmings, paper fiber, wood, bark, biosolids, food scraps, composted manures, or combinations of these products. Biosolids compost shall comply with the

Standards for Class A biosolids outlined in 40 Code of Federal Regulations (CFR) Part 503. The compost shall be free of any refuse, contaminants, and any material toxic to plant growth. Compost must not be derived from mixed municipal solid waste. Compost shall comply with all applicable state and federal regulations regarding production and distribution.

All compost material supplied shall be certified through one of the following programs:

A. The USCC STA Program through a certified supplier, and wherein all testing procedures follow the USCC TMECC manual.

B. The KDOT Specification found at Section 2105 for Soil Compost Materials, wherein all testing procedures are in accordance with the requirement listed there. Under this specification, however, compost sources from the State of Missouri are not excluded, provided that such sources are in compliance with Missouri regulations, satisfy the material and testing requirements found in the KDOT specification, and are otherwise found to be suitable by the Engineer.

Before delivering of the compost, the suppler shall provide a copy of the lab analysis and certifications as outlined for the applicable program. The supplier shall also document the feedstocks and sources used in the compost to be supplied.

B. Construction: Prior to applying compost, the soil shall be tilled to a depth of 2 inches to eliminate hard crust and allow rainwater intercepted by the compost cover to infiltrate into the soil. Gullies, depressions, and large clods shall be eliminated.

Compost shall be applied to a depth of 1.5 to 2 inches when alone or 1 to 1.5 inches when used in conjunction with seeding operations. Compost shall be uniformly applied using an approved spreader unit, which may include mechanical or pneumatic (blower) devices. Compost shall extend at least 3 feet beyond the shoulder of any slope to ensure that runoff does not flow under the cover. Once applied, the compost shall be thoroughly watered to improve settling.

C. Maintenance: Compost shall be replaced or repaired as needed. Bare spots shall be filled in, by hand if necessary. Vehicle and personnel traffic shall be minimized in areas covered.

D. Measurement and Payment: "Compost Cover" will be measured per cubic yard of compost in the vehicle at the point of delivery to the project. When compost cover is used in conjunction with permanent or temporary seeding, compost cover will be paid at the contract unit price and the seeding operation shall be paid separately. The unit price for compost cover will include any deductions for standard mulching that is no longer required.

2153.11 Surface Roughening: Any rough graded slope that is not yet ready for seeding or other treatment and which will not be disturbed by ongoing construction for a period of 7 days or more shall be roughened by grooving, tracking, disking, or ripping it with a disc, tiller, spring harrow or other suitable implement. Such grooves shall be located traverse to the slope face and shall not be less than 3 inches deep nor spaced more than 15 inches apart. The requirement to roughen slopes by tracking or grooving shall apply to all slopes steeper than 6:1

horizontal to vertical. No measurement or payment shall be made for this item, but it shall be subsidiary to the earthwork.

2153.12 Dust Control: Contractor shall take effective measures to prevent blowing dust. Adequate moisture content shall be maintained in all exposed soils by application of water or other approved dust suppressant. Areas to be subsequently paved may be treated with asphalt emulsion. When dust produced by operations such as sand blasting, concrete grinding, and sawing of concrete or masonry would create a public nuisance, they shall be performed under a water spray or an alternate construction method shall be used. No measurement or payment shall be made for this item, but it shall be subsidiary to other work.

2153.13 Method of Measurement: Erosion controls will be measured in the manner specified in each applicable subsection.

2153.14 Basis of Payment: Erosion controls will be paid for at the contract unit price specified in each applicable subsection.

SECTION 2154 SEDIMENT CONTROLS AND DIVERSIONS

2154.1 Referenced Standards:

The following standards are referenced directly in this section. The latest version of these standards shall be used.

AASHTO:
M 288 - Geotextile Specification for Highway Applications

APWA, Kansas City Metropolitan Chapter (KC-APWA):
Standard Drawings, Division III of Standard Specifications and Design Criteria

ASTM:
D 3786 - Test Method for Hydraulic Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Tester Method
D 4355 - Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus

Kansas Department of Transportation (KDOT):
Standard Specifications for State Road & Bridge Construction, 2015 Edition or later including all latest errata and adopted Special Provisions, as well as associated Standard Drawings.

Missouri Department of Transportation (MoDOT):
Missouri Standard Specifications for Highway Construction, 2011 edition or later including all supplemental specifications, as well as associated Standard Plans.

2154.2 Summary: This section describes specific requirements for installation and maintenance of temporary measures to detain, filter, or cause settlement of sediment from runoff, as well as measures used to temporarily direct or divert runoff onsite or at the site perimeter.

2154.3 Materials: Materials used for sediment controls and diversions shall meet the requirements of the following subsections. Unless otherwise specified herein, the Contractor shall submit a certification prepared by the manufacturer for each material used which states that the materials meet all the requirements of this specification. The manufacturer shall also provide supporting documentation and testing results to validate this certification, if requested by the Engineer. Manufacturer's instructions for installation of materials (when applicable) will be available onsite whenever work is occurring and a copy shall be submitted to the Engineer upon request.

2154.4 Sediment Removal and Disposal: Removal of accumulated, settled sediment from behind barriers, traps, or within basins.

A. Materials: Not applicable.

B. Construction Requirements: Accumulated sediment shall be removed when it exceeds the volumes specified for any particular measure or would otherwise impede the proper operation of control measures. Sediments removed shall be mixed with other onsite materials and incorporated into project fills, spread loosely across the site, or

hauled offsite as necessary. Sediments shall not form an identifiable layer or seam in any fill. Sediments hauled offsite shall be dewatered first or hauled in a water tight truck. Sediments shall be located and compacted in a way which minimizes the likelihood of being resuspended in future rainfalls. Removal shall be by machine or hand work, whichever is most feasible.

C. Maintenance: Not applicable.

D. Measurement and Payment: Sediment removal is not measured or paid separately, but shall be subsidiary the other items in the contract. The proper and timely use of erosion controls will help reduce the quantity of sediment that must otherwise be cleaned out of downstream controls.

2154.5 Silt Fence: A temporary barrier of synthetic fabric embedded in the ground and supported by posts used to divert water or to maintain a trap for settlement.

A. Materials, Construction Requirements and Maintenance: Refer to the Standard Drawings.

B. Measurement and Payment: Silt fence will be measured by the linear foot and will be paid for at the contract unit price for "Silt Fence" Initial excavation of depressions on the upstream side of silt fence to create added storage shall be subsidiary.

2154.6 Straw Bales: Straw bales shall not be used.

2154.7 Rock Ditch Checks: Small temporary stone ditch checks used to form protect ditches with larger flows.

A. Materials: Rock shall be a clean aggregate free of deleterious substances, including earth, chert, cracks, seams, soapstone, shale or other easily disintegrated materials. Rock shall come from a primary run and be screened to remove the easily separated fines. It shall meet the gradation requirements below for the nominal size specified:

2-inch Rock: Fifty percent (50%) by weight of the particles shall be larger than 1.5 inches in diameter and none shall be larger than 4 inches. Total aggregate and fines smaller than ½ inch shall not exceed 2 % by weight.

4-inch Rock: Fifty percent (50%) by weight of the particles shall be larger than 4 inches in diameter and none shall be larger than 9 inches. Total aggregate and fines smaller than 1" shall not exceed 2 % by weight.

6-inch Rock: Fifty percent (50%) by weight of the particles shall be larger than 6 inches in diameter and none shall be larger than 12 inches. Total aggregate and fines smaller than 1" shall not exceed 2 % by weight.

The Engineer may approve modifications to these gradations to accommodate readily available stockpiles from local quarries.

B. Construction Requirements: See Standard Drawings.

C. Maintenance: See Standard Drawings.

D. Measurement and Payment: "Rock Ditch Checks (Named Rock Size)" will be measured per ton or tenth part thereof, as placed, and paid for at the contract unit price for the nominal size of rock indicated. Initial excavation of depressions on the upstream side of rock barriers to create added storage shall be subsidiary.

2154.8 Synthetic Sediment Barriers (Type): Any one of various proprietary ditch checks, primarily composed of synthetic materials, that can be used instead of the other measures specified herein to control velocities and erosion in ditches or swales.

A. Materials: Materials for any given Type of Synthetic Sediment Barrier shall be as called out in the plans or Standard Drawings. In addition, this category may also include those measures called out as “Synthetic Sediment Barrier” in KDOT Specification Sections 902 and 2114 or those called out as “Alternate Ditch Checks” in MoDOT Specification 806.

B. Construction Requirements: Install Synthetic Sediment Barrier’s in accordance with manufacturer instructions. Pay particular attention to anchoring, protection of channel underneath, and to conditions at the ends to avoid bypassing.

C. Maintenance: Remove silt when it accumulates to 20% of the height of the barrier or when the accumulation prevents the proper operation of the ditch check, whichever is less. If units are damaged or dislodged during the sediment removal process, repair and re-establish continuity.

D. Measurement and Payment: "Synthetic Sediment Barriers (Type) " will be measured per linear foot and paid for at the contract unit price. Underlying erosion control blanket or geotextiles shall be subsidiary. If no specific type is given, then all such measures allowed for the job will be paid for at a uniform price.

2154.9 Biodegradable Logs (or Wattles): Circular tubes of netting filled with straw or other biodegradable fibers and used as a small height barrier for diversion of water or settlement.

A. Materials: Biodegradable logs are manufactured using a variety of filler materials. For this specification, the following two classes of filler are specified:

Class A: Rice or wheat straw fibers Fiber material shall be certified as weed free in accordance with state standards. Fibers shall have an average length greater than 3 inches. Type A wattles shall have a durability in the field of no less than 3 months. Type A wattles shall be specified with dimensions and minimum weights of 9-inch diameter (1.7 lbs./lin ft.); 12-inch diameter (2.5 lbs/lin. ft.) or 20-inch diameter (3.5 lbs/lin. Ft.)

Class B: Excelsior wood fibers, coconut fiber (i.e. coir), jute, or other longer-lasting biodegradable materials. Such materials shall be free of deleterious substances, compacted tightly, and shown to have an in-field durability of 6-months or greater. Class B wattles shall be specified with dimensions 9-inch diameter, 12-inch diameter, or 20-inch diameter.

Containment netting shall be jute or light-weight plastic. The entire wattle unit shall be sufficiently durable to withstand weather, construction, and installation conditions for no less than the life of the filler material (see above), including multiple movements and

reinstallations. Wood posts of sufficient strength withstand installation and weather shall be used for anchoring.

B. Construction Requirements: Biodegradable logs shall be located as shown on the plans or directed by the Engineer. Individual units shall be installed in accordance with manufacturer's recommendations and the Standard Drawings.

C. Maintenance: Maintain as called out in the Standard Drawings.

D. Measurement and Payment: "Biodegradable Logs (Size and Class)" will be measured per linear foot and paid for at the contract unit price. When used without other qualifier, the phrase "Straw Wattle" shall be considered equivalent to a 9-inch Class A Biodegradable Log.

2154.10 Compost Filter Berm: A berm or dike of compost placed to trap pollutants and filter runoff from small areas of overland flow.

A. Materials: Compost to be used in filter berms shall meet the following requirements:

Parameter	Range
pH	5.0-8.5
Moisture Content	<60%
Organic Matter Content	>25% of dry weight
Particle Size	99% < 2", 30%-50% < 3/8"

B. Construction Requirements: Compost filter berms shall be constructed using specially designed pneumatic equipment (blowers) and a berm shaping device, or other equipment as approved by the Engineer. If a blower is used, compost shall be blown directly at the soil surface to help settle, compact and shape the berm. The berm shall be formed in a trapezoidal shape, having a typical dimension of 3 feet wide at the base and 1.5 feet high. Position the berm around designated soil areas and parallel to the contour. The ends of the berm shall be pointed up slope such that the bottom elevation at each end is higher than the top elevation throughout most of the slope, so as to prevent water from flowing around the end of the berms.

C. Maintenance: Berms shall be reshaped and compost added as necessary to maintain their function and dimensions. Breaches in the berm shall be repaired promptly. Compost may be added by hand and tamped in place. Unless otherwise directed by the final landscape plans or by the Engineer, removal of the compost berm shall be made by spreading the compost in a thin layer over adjacent planted areas.

D. Measurement and Payment: "Compost Filter Berm" will be measured per linear foot and paid for at the contract unit price.

2154.11 Compost Filter Sock: A compost filter encased in a geotextile tube that serves a similar purpose to compost filter berms, particularly in areas with more concentrated overland runoff.

A. **Materials:** Compost to be used in filter socks shall meet the respective requirements for compost specified in Section 2154.10 for Filter Berms.

Tubes used for compost filter socks shall be produced from a 5 mil thick continuous HDPE or polypropylene filament, woven into a tubular mesh netting material, with openings in the knitted mesh 1/8 in (3 mm) to 3/8 in (10 mm). Tubes shall have a diameter of either 8, 12, or 18 inches, as specified. The 12-inch tubes are for general use, the 8-inch tubes are typically for flat slopes, and the 18 inch tubes are typically for steep slope protection and minor check dams.

Stakes for securing filter socks shall be hardwood with a 2" by 2" nominal dimension. Steel or other non-biodegradable stakes shall not be used.

B. **Construction Requirements:** Compost filter socks shall be constructed on site or delivered to the jobsite. When assembled on site, the sock shall be filled using a pneumatic blower. The sock shall be formed continuously for the length needed, up to 200 feet long. When multiple socks are needed, the end of one sock shall be pulled over the second to create a "sleeved" overlap. Once overlapped, the second section is filled with compost to create a seamless unit. Once placed, the filter sock will settle into an oval shape. Trenching is not required. Existing soil in the vicinity of the filter sock shall remain undisturbed to the extent practical. The sock shall be anchored by driving stakes through the center of the filter sock at 10 foot intervals, at all sleeved overlaps, and at each end. Where an adjustable section of filter sock is necessary (such as to permit dry weather vehicle access), the stakes may be placed on the downhill side of the sock rather than through it. Filter socks may be seeded.

C. **Maintenance:** Compost filter socks shall be inspected to ensure the sock material is intact and to determine if runoff is bypassing or undermining the units. Additional filter socks may be stacked as needed. Breaches in the line shall be repaired promptly. Unless otherwise directed by the final landscape plans or by the Engineer, removal of the compost sock shall be made by spreading the compost in a thin layer over adjacent planted areas. The HDPE or polypropylene sock shall be sliced open longitudinally to release the compost and the sock disposed of.

D. **Measurement and Payment:** "Compost Filter Sock (Named Diameter)" will be measured per linear foot and paid for at the contract unit price for the nominal diameter indicated.

2154.12 Diversion Berms: Earthen berms temporarily graded and compacted to provide a diversion of overland flow. Can be used in conjunction with slope drains at the top of slopes to prevent sheet flow down the slope face.

A. **Materials, Construction and Maintenance:** Refer to the Standard Drawings.

B. **Measurement and Payment:** "Diversion Berms" will be measured per linear foot and paid for at the contract unit price. Such payment shall be full compensation for berm installation, maintenance, removal and any other work noted on the plans.

2154.13 Slope Drain: A flexible tubing or conduit used to convey concentrated water from the top of a slope down to the toe and thereby preventing erosion over the slope face.

A. Materials, Construction and Maintenance: Refer to the Standard Drawings.

B. Measurement and Payment: "Temporary Slope Drain" will be measured per linear foot and paid for at the contract unit price. Such payment shall include installation of outlet protection.

2154.14 Inlet Protection: Any one of a variety of devices or procedures used to allow water to enter an stormwater inlet while filtering or temporarily impeding the flow sufficiently to reduce the quantity of sediment carried.

A. Materials: When used, biodegradable logs, compost filter socks, synthetic sediment barriers, silt fence, or rock ditch checks shall meet the material requirements given by other items of this specification. All other material specifications are as shown in the Standard Details or on the plans. Straw wattles are not allowed for curb inlet protection. Unless otherwise restricted in the plans, the Contractor may also use any applicable inlet protection system allowed by KDOT Specification 902 and 2114 and the Standard Drawings or pre-approved materials list under the category “Temporary Inlet Sediment Barriers (if in Kansas); or any applicable inlet protection system allowed by MoDOT Specification 806 and Standard Plans under the category “Inlet Checks” (if in Missouri).

B. Construction Requirements: Use the inlet protection systems shown on the plan, as appropriate. Provide the given system in accordance with the Standard Drawings. Alternate inlet protection methods may be approved or specified by the Engineer. The appropriate details for a given inlet will change during the progress of the job and adjustments shall be made as inlet construction progresses. Each inlet shall be protected continuously from initial construction until final stabilization. The ultimate test of acceptability is performance in preventing the migration of sediments through the inlet.

When surrounding conditions are such that protection of the inlet would lead to an increased risk of flooding of adjacent structures or produce a hazard to motorists, the barriers shall be adjusted or eliminated to avoid such impacts. In those cases, extra attention shall be paid to minimize the degree of sediment carried in the flow that reaches the inlet.

The general cases of inlet protection and the performance expected from each are as follows:

1. All Inlets at Sump Conditions: Inlets at sump conditions shall remain accessible for flow at all times. Small barriers, depressions and/or filters are used to screen larger sediments and initiate settlement of the water prior to it entering the inlet by creating a ponding zone. Generally, stormwater will enter the inlet via weir flow over the top of the barrier. Such water is generally the least-sediment laden as it is decanted from the top of the ponded area.

2. Street Inlets on Grade: On-grade inlet shall be converted into a localized sump condition by installing a barrier downstream and around the inlet of sufficient height to produce ponding and prevent bypass, while a barrier, depression, and/or filter in front of the inlet induces settlement of solids. Bypassing of water

at the on-grade inlet shall not be allowed and the inlet shall remain open to accept flow without causing excessive flooding.

3. Selected Inlets Closed to Flow: In select locations, the plans may designate certain inlets as “closed to flow.” In those situations, the objective is to provide sufficient blockage of permanent and temporary openings to prevent entry of stormwater into the inlet. Such locations will be clearly indicated on the plans, and the closed condition for flow may be designated for only a portion of the construction period. The Contractor shall notify the Engineer if they believe that the closure of such inlets would result in an increased risk of flooding or downstream erosion, and such concerns shall be resolved before closing an inlet to flow.

C. Maintenance: Sediment shall be removed from each inlet after every rainfall event that exceeds 1/2" or which results in a visible accumulation of sediment. Particular attention shall be paid to prevent blockage of inlets or cases where resuspension of captured sediment is likely. Specific maintenance issues unique to each inlet protection type shall be addressed as outlined in the Standard Drawings.

D. Measurement and Payment: “Inlet Protection” will be measured per each inlet protected and paid for at the contract unit price. Each inlet will be measured only one time for the duration of the project regardless of the number of phases or protection methods used to protect a single inlet. Unless otherwise specified in the plans or contract documents, inlet protection at all locations will be paid at the same unit price.

2154.15 Construction Entrance: A stabilized layer of large aggregate and other features, located in areas of high traffic and at the construction entrance and exit, intended to remove mud and silt embedded in tires, to prevent tracking sediments off the site.

A. Materials, Construction and Maintenance: See Standard Drawings.

D. Measurement and Payment: "Construction Entrance" will be measured by the square yard and paid for at the contract unit price. All other features required for the entrance shall be subsidiary.

2154.16 Sediment Trap: A temporary reservoir and embankment with a stone outlet that is constructed across a drainage way to intercept sediment-laden runoff and provide retention time sufficient to settle out a majority of solids. Used for smaller watersheds where the engineered outlet works of a sediment basin are not required.

A. Materials: See Standard Drawings.

B. Construction Requirements: See Standard Drawings. The construction of the sediment trap shall be carried out in a manner such that it does not result in sediment problems downstream. The embankment of the sediment trap shall be stabilized with temporary or permanent vegetation immediately after installation.

C. Maintenance: See Standard Drawings.

D. Measurement and Payment: "Sediment Traps" shall be measured per each trap constructed and paid for at the contract unit price. Unless otherwise specified in the plans or contract documents, each trap shall be paid for at the same unit price.

2154.17 Sediment Basin: A temporary reservoir and embankment with engineered outlet works that is constructed across a drainageway to intercept sediment-laden runoff from large areas and provide retention time sufficient to settle out a majority of solids.

A. Materials: See Standard Drawings.

B. Construction Requirements: See Standard Drawings. Where the plans indicate that a temporary sediment basin is to be converted into a permanent basin, pond, or other stormwater facility, the construction, use, and removal or alterations shall be coordinated to result in a final facility that is operational in the time frame specified in the plans and which causes a minimum amount of disruption to the sitework, downstream channel, or future facility and minimizes the amount of rework needed. The construction of the sediment basin shall be carried out in a manner such that it does not result in sediment problems downstream. The embankment and emergency spillway of the sediment basin shall be stabilized with temporary or permanent vegetation immediately after installation of the basin.

C. Maintenance: See Standard Drawings.

D. Measurement and Payment: "Sediment Basin" shall be lump sum, and no measurement for payment of any item will be made. If multiple basins are used on a project, then this item shall be lump sum for all basins collectively, unless the bidding list designates individual locations.

Eighty percent (80%) of the lump sum payment shall be made once the basin is complete, in-place and operational. The final twenty percent (20%) shall be made when the basin is removed. Such payment shall be full compensation for clearing, grubbing, grading, spillway installation, stabilization, maintenance, removal, and any other work noted on the plans, including installation of outlet protection. Routine removal of sediment shall be subsidiary

If the basin indicated on the plans is to be converted at the end of construction into a permanent pond, basin, or other stormwater facility, then this item shall include payment only for the incremental costs associated with its use as a temporary basin. Permanent embankments, excavations, spillways, or other appurtenances that are constructed will be handled by the other appropriate items of the Contract for the permanent facility.

2154.18 Temporary Stream Crossings: A temporary culvert constructed in a creek, river, or stream to allow construction access and crossing.

A. Materials: See Standard Drawings.

B. Construction Requirements: See Standard Drawings. Culvert sizing, number, and orientation shall be as dictated in the plans. Care shall be taken to ensure that the stream crossing does not cause inadvertent flooding of adjacent homes, buildings, or other structures. Concerns about adequacy of culvert sizing shall be brought to the

immediate attention of the Engineer and no installation made until such concerns are resolved.

C. Maintenance: See Standard Drawings.

D. Measurement and Payment: "Temporary Stream Crossing" shall be lump sum and such payment shall be full compensation for installation, maintenance, removal and any other work noted on the plans. If multiple crossings are used on a project, then this item shall be lump sum for all crossings collectively, unless the bidding list designates locations individually.

Eighty percent (80%) of the lump sum payment shall be made once the crossing is complete, in-place and operational. The final twenty percent (20%) shall be made when the crossing is removed.

2154.19 Diversion Channels: A temporary channel excavated and stabilized to divert flow from a stream around a culvert or other in-stream structure being constructed, so as to avoid excessive erosion in the construction zone.

A. Materials: See Standard Drawings.

B. Construction Requirements: See Standard Drawings. Diversions of streams shall only be allowed if covered by the plans and approved permits for the project. Such construction, stabilization, and restoration will conform the plans and Standard Drawings. Concerns about adequacy of culvert sizing shall be brought to the immediate attention of the Engineer and no installation made until such concerns are resolved.

C. Maintenance: See Standard Drawings.

D. Measurement and Payment: "Diversion Channels" shall be lump sum and such payment shall be full compensation for installation, maintenance, removal and any other work noted on the plans. If multiple crossings are used on a project, then this item shall be lump sum for all diversions collectively, unless the bidding list designates locations individually.

Eighty percent (80%) of the lump sum payment shall be made once the diversion is complete, in-place and operational. The final twenty percent (20%) shall be made when the crossing is removed.

2154.20 Turbidity Curtains: Floating barriers of synthetic fabric curtain suspended in the water and held in a vertical position, used in lakes and perennial rivers to slow, contain or direct the flow from disturbed areas allowing solids to settle out before spreading into the surrounding water.

A. Materials: All components shall conform to the requirements given for the specific turbidity curtain system specified in the plans.

B. Construction Requirements: Shall conform to the manufacturer's recommendations for the curtain system specified in the plans, plus such additional requirements as may be listed in the plans. A manufacturer's representative shall be onsite during installation of the system.

C. Maintenance: Anchor lines shall be kept secure and properly positioned. Fabric, cable, and other appurtenances shall be repaired immediately as needed and in accordance with manufacturer's instructions.

D. Measurement and Payment: "Turbidity Curtain" will be measured by the linear foot and paid for at the contract unit price.

2154.21 Dewatering Filter: A device for filtering sediments from water that is discharged during pumping or dewatering activities.

A. Materials: Dewatering filters shall be constructed of materials as shown on the Standard Plans. Proprietary devices that provide equal or better performance than filters in the Standard Plans may be approved by the Engineer.

B. Construction Requirements: Dewatering filters shall be used whenever sediment-laden effluent is discharged from pumps used during construction for dewatering or other activities. For proprietary devices, the manufacturer's recommendations shall be followed.

C. Maintenance: Filters shall be cleaned or replaced as necessary to maintain filtration capacity.

D. Measurement and Payment: No measurement or payment will be made for "Dewatering Filters," but the use of such devices shall be subsidiary to the dewatering activity or other items of the contract. Removal of sediments from dewatering devices shall also be subsidiary.

2154.22 Method of Measurement: Sediment controls and diversions will be measured in the manner specified in each applicable subsection.

2154.23 Basis of Payment: Sediment controls and diversions will be paid for as specified in each applicable subsection.

SECTION 2155 SCHEDULING AND STANDARD SEQUENCES

It is intended that future editions of this specification will contain guidelines and requirements for scheduling and standard sequences of work in order to minimize the duration of exposure and potential for sediment discharge. This section has been reserved for that purpose.

SECTION 2156 MEASUREMENTS AND PAYMENTS

2156.1 Summary: This section includes the method of measurement and the basis of payment, for furnishing all labor, equipment, tools and materials and for the performance of all related work necessary to complete any work covered in Section 2150. Unless otherwise indicated, the maintenance, repair, removal and disposal of all temporary measures shall be subsidiary to the initial installation.

2156.2 General: Unless specifically altered by the Contract Special Provisions, the methods of measurement and payment shall be as specified in each section herein, and as listed in the Proposal.

2156.3 Measurement: The Engineer or his representative will measure the work for payment. The method of measurement and computations used in determination of quantities of work performed will be those methods generally recognized as conforming to good engineering practice.

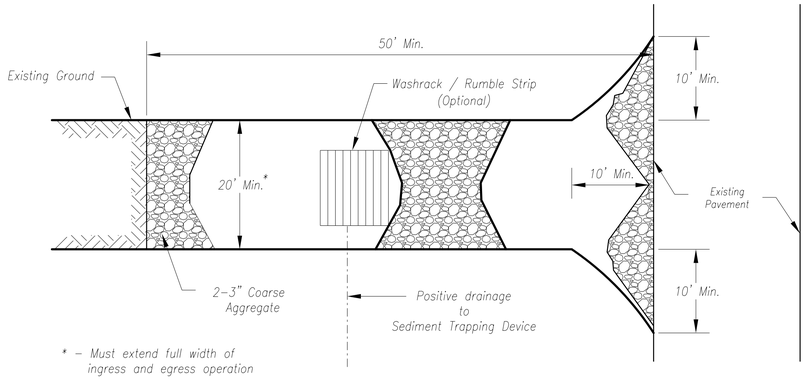
2156.4 Items not listed in the Proposal: There shall be no measurement or separate payment for any item of work not specifically identified and listed in the Proposal and all costs pertaining thereto shall be included in the contract unit prices for other items which are listed in the Proposal.

2156.5 Measurement and Payment Summary Table

Item Description	Ref. Section	Method of Measurement	Basis of Payment
General Requirements	2151	No measurement	Subsidiary to other items
Chemical and Waste Controls	2152	No measurement	Subsidiary to other items
Permanent Seeding or Sodding	2153.4	See Section 2400	See Section 2400
Out of Season Watering	2153.4	1,000 gallon unit	Unit Bid Price
Temporary Seeding	2153.5	0.01 acre	Unit Bid Price
Mulch Cover	2153.6	0.01 acre	Unit Bid Price
Hydrocover (Standard)	2153.7	1.0 lbs dry-weight of fiber	Unit Bid Price
Hydrocover (Named Specialty Mix)	2153.8	1.0 lbs dry-weight of fiber	Unit Bid Price
Erosion Control Blanket (Named Type)	2153.9	1.0 sq. yd.	Unit Bid Price
Compost Cover	2153.10	1.0 cu. yd.	Unit Bid Price
Surface Roughening	2153.11	No measurement	Subsidiary to earthwork items
Dust Control	2153.12	No measurement	Subsidiary to other items
Sediment Removal	2154.4	No measurement	Subsidiary to other items
Silt Fence	2154.5	1.0 lin. ft.	Unit Bid Price
Rock Barrier (Named Size)	2154.7	0.1 ton	Unit Bid Price
Open-Flow Ditch Check (Type)	2154.8	1.0 lin. ft.	Unit Bid Price
Biodegradable Logs (Size and Class)	2154.9	1.0 lin. ft.	Unit Bid Price
Compost Filter Berm	2154.10	1.0 lin. ft.	Unit Bid Price
Compost Filter Sock (Named Diameter)	2154.11	1.0 lin. ft.	Unit Bid Price
Diversion Berm	2154.12	1.0 lin. ft.	Unit Bid Price
Slope Drain	2154.13	1.0 lin. ft.	Unit Bid Price

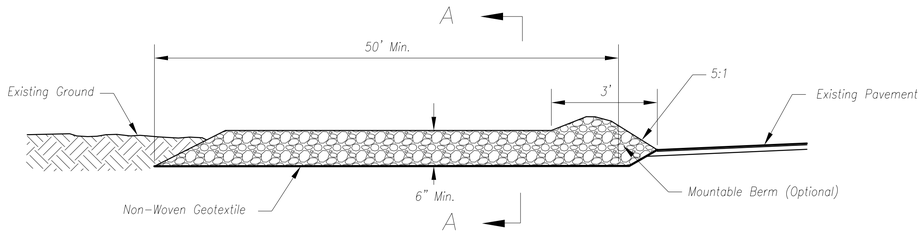
Measurement and Payment Summary Table (continued)

Item Description	Ref. Section	Method of Measurement	Basis of Payment
Inlet Protection	2154.14	Each inlet	Unit Bid Price
Construction Entrance	2154.15	1.0 sq. yd.	Unit Bid Price
Sediment Trap	2154.16	Each trap	Unit Bid Price
Sediment Basin	2154.17	No measurement	Lump Sum
Temporary Stream Crossing	2154.18	No measurement	Lump Sum
Diversion Channels	2154.19	No measurement	Lump Sum
Turbidity Curtain	2154.20	1.0 lin. ft.	Unit Bid Price
Dewatering Filter	2154.21	No measurement	Subsidiary to other items



Plan View

Not to Scale



Side Elevation

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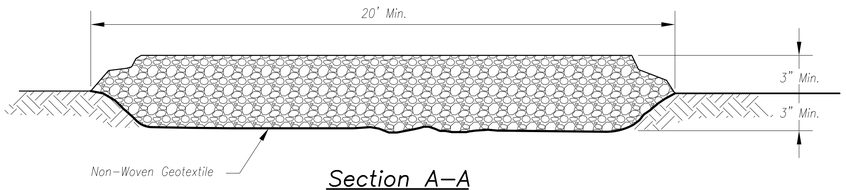

Section A-A

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Notes for Construction Entrance:

1. Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed area.
2. Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 3H:1V side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

1. Reshape entrance as needed to maintain function and integrity of Installation. Top dress with clean aggregate as needed.

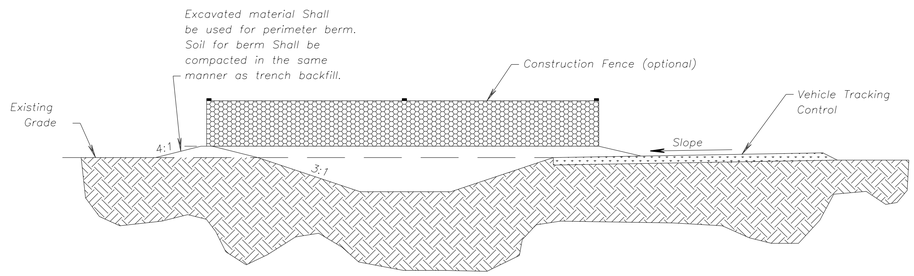
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout area shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slopes leading out of the subsurface pit shall be 3:1. The vehicle tracking pad shall be sloped towards the concrete washout area.
3. Vehicle tracking control is required at the access point to all concrete washout areas.
4. Signs shall be placed at the construction site entrance, washout area and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete truck and pump rigs.
5. A one-piece impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for wasted concrete.
3. Concrete washout water, wasted pieces of concrete and all other debris in the subsurface pit shall be transported from the job site in a water-tight container and disposed of properly.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topsoil, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.



CONCRETE WASHOUT

Construction Entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control; Concrete Washout modified from 2009 City of Great Bend Standard Drawings.

AMERICAN PUBLIC WORKS ASSOCIATION

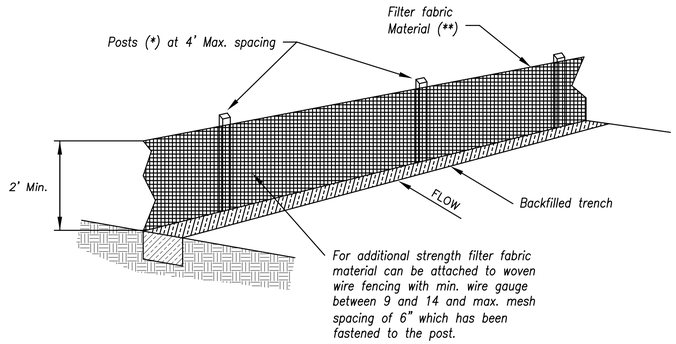
Kansas City Metro Chapter APWA AMERICAN PUBLIC WORKS ASSOCIATION

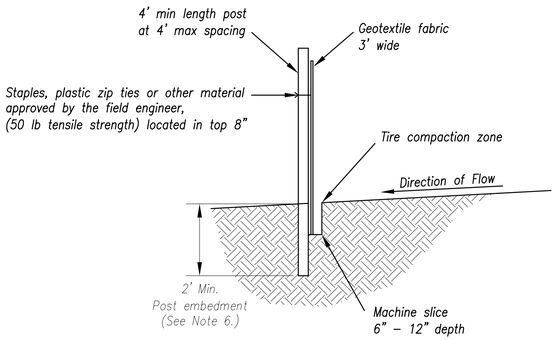
KANSAS CITY
METRO CHAPTER

CONSTRUCTION ENTRANCE
AND CONCRETE WASHOUT

STANDARD DRAWING
NUMBER ESC-01

ADOPTED:
10/24/2016





(*) POSTS

- MIN, LENGTH 4'
- HARDWOOD 1 3/16" x 1 3/16"
- NO.2 SOUTHERN PINE 2 5/8" x 2 5/8"
- STEEL 1.33 LB/FT

(**) – Geotextile Fabric shall meet the requirements of AASHTO M288

SILT FENCE DETAILS

Not to Scale

Notes:

1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ⅓ the height of silt fence.
2. Repair as necessary to maintain function and structure.

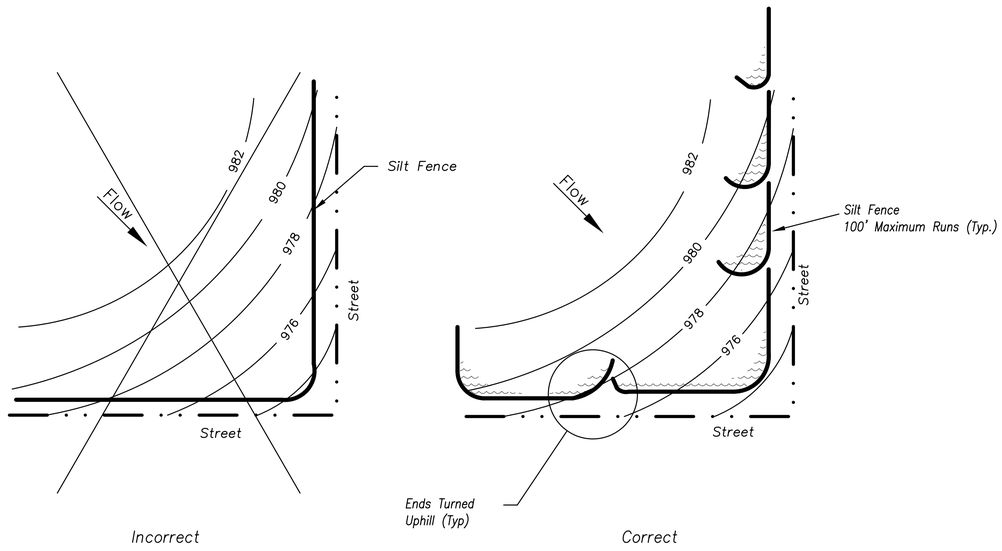
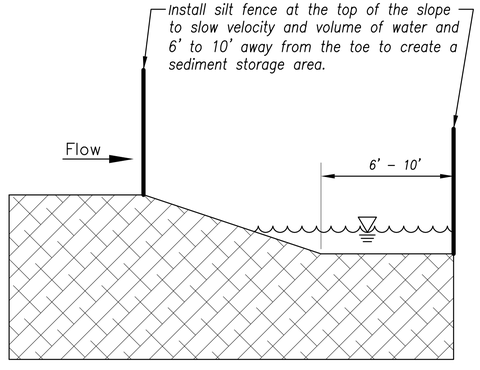
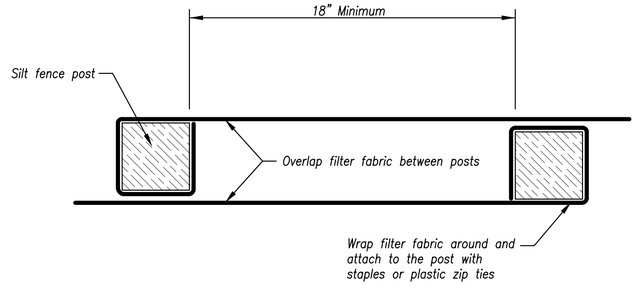


Figure A

SILT FENCE LAYOUT

Not to Scale





JOINING FENCE SECTIONS

Not to Scale

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

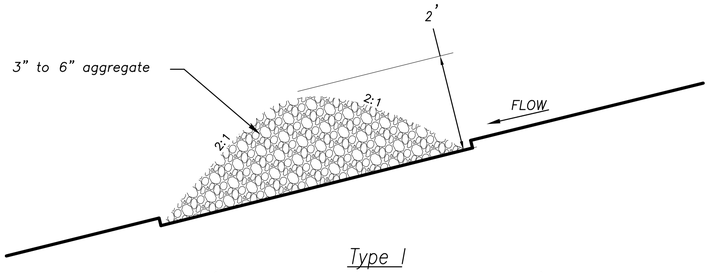
AMERICAN PUBLIC WORKS ASSOCIATION

KANSAS CITY METRO CHAPTER

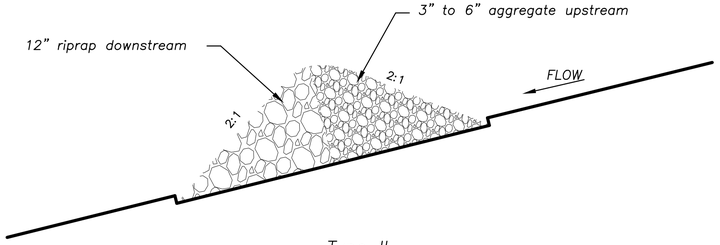
SILT FENCE

STANDARD DRAWING NUMBER ESC-03

ADOPTED: 10/24/2016



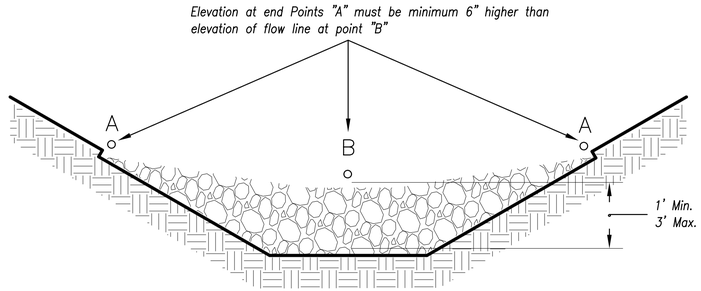
Type I
(2 Acres or less of Drainage Area)
Not to Scale



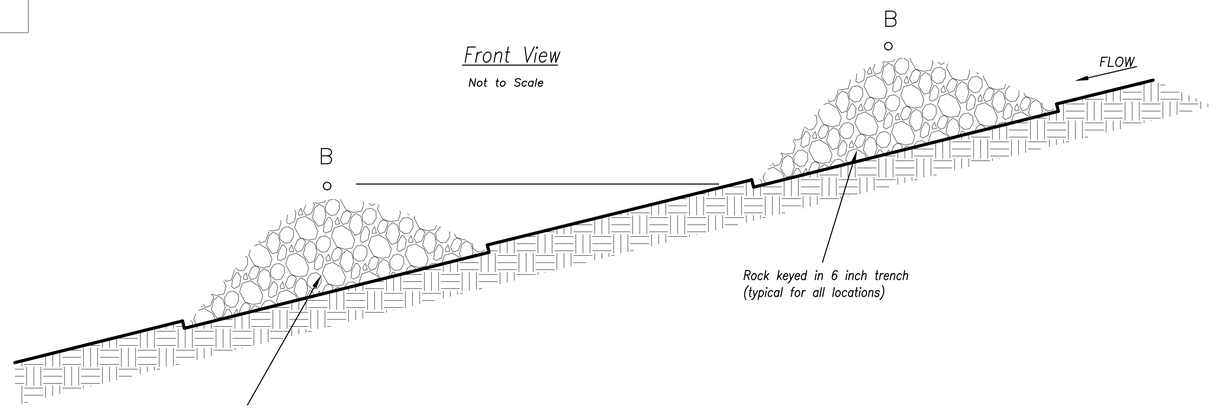
Type II
(2–10 Acres of Drainage Area)
Not to Scale

ROCK DITCH CHECK

Temporary Rock Ditch Check Spacing	
Ditch Centerline Slope (%)	Spacing Interval (Feet)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
Note: Use this spacing only for Rock Ditch Checks.	



Front View
Not to Scale



Spacing Between Check Dams (all types)
Not to Scale

Notes:

1. Rock check dams shall be used only for drainage areas less that 10 acres unless approved by the City Engineer.
2. Use rock checks only in situations where the ditch slope exceeds 6%.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of the ditch check.
2. Replace and reshape as necessary to maintain function and integrity of installation.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION

Kansas City Metro Chapter APWA American Public Works Association

KANSAS CITY METRO CHAPTER

ROCK DITCH CHECKS

STANDARD DRAWING NUMBER ESC-10

ADOPTED: 10/24/2016

SECTION 7

Log of Amendments

The permittee shall amend the SWPPP at a minimum whenever the:

(a) Location, design, operation, or maintenance of BMPs is changed;

(b) Design of the construction project is changed that could significantly affect the quality of the stormwater discharges;

(c) Permittee's inspections indicate deficiencies in the SWPPP or any BMP;

(d) Department notifies the permittee in writing of deficiencies in the SWPPP;

(e) SWPPP is determined to be ineffective in minimizing or controlling erosion and sedimentation (e.g., there is visual evidence

of excessive site erosion or sediment deposits in streams, lakes, or downstream waterways, sediment or other wastes offsite);

and/or

(f) Department determines violations of water quality standards may occur or have occurred.

SWPPP Amendment Log

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Authorized by [Name(s) and Title]

SWPPP Amendment Log

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Authorized by [Name(s) and Title]

SECTION 8

Local Regulations & Additional Permits

Local Ordinances can be located here for reference only. Additional permits (i.e. 404, NWP, grading permits if required, etc.) can be kept here for reference only.

SECTION 9

Spill Response

This section contains Missouri Code of State Regulations as they pertain to hazardous substances and emergency response. Contained within are:

Division 24 - Hazardous Substance Emergency Response Office

- -10 CSR 24-1.010 - Organization
- -10 CSR 24-2.010 - Definitions
- -10 CSR 24-3.010 - Emergency Notification Procedures

Spill Report Forms

Rules of
Department of Natural Resources
Division 24—Hazardous Substance Emergency Response Office
Chapter 1—Organization

Title		Page
10 CSR 24-1.010	General Organization	3

Title 10—DEPARTMENT OF NATURAL RESOURCES
Division 24—Hazardous Substance Emergency Response Office
Chapter 1—Organization

10 CSR 24-1.010 General Organization

PURPOSE: This rule explains the organization and responsibilities of the Hazardous Substance Emergency Response Office. Also explained is how to obtain additional information regarding these activities and where to make submittals to this office.

(1) The Department of Natural Resources is authorized under sections 260.500–260.550, RSMo to administer the state's Hazardous Substance Emergency Response Office. The director of the Department of Natural Resources appoints a director and staff who provide day-to-day operation of the Hazardous Substance Emergency Response Office.

(A) Among its operations, the Hazardous Substance Emergency Response Office performs the following administrative and technical functions: develop and adopt rules relating to hazardous substance emergencies; develop and update the state Hazardous Substance Emergency Response plan in cooperation with other state agencies and other affected persons; respond to, investigate, document and take action regarding hazardous substance emergencies in accordance with sections 260.500–260.550, RSMo; provide technical assistance to other state agencies, to political subdivisions of the state and to other persons upon request for the prevention, control and response to hazardous substance emergencies; enter into agreements with state, local and federal agencies and with other persons as necessary to develop and implement the Hazardous Substance Emergency Response Plan and to implement sections 260.500–260.550, RSMo; monitor the statewide telephone used to notify Missouri whenever a hazardous substance emergency occurs; notify appropriate agencies of hazardous substance emergencies; and cooperate with appropriate units of government and other persons to prevent the occurrence and improve response to hazardous substance emergencies.

(B) Requests for copies of rules, reports of incident investigations, technical information and assistance and any other submissions are to be made to the department's Hazardous Substance Emergency Response Office, Environmental Services Program, P.O. Box 176, Jefferson City, MO 65102. The telephone number during office hours is (573) 526-3348. For emergencies, the Hazardous Substance Emergency Response Office can be contacted any time at (573) 634-2436.

(2) Information.

(A) The mailing address for the Hazardous Substance Emergency Response Office is: Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102.

(B) The Hazardous Substance Emergency Response Office files, except trade secrets as provided for in section 260.550, RSMo, are public information and are located at 2710 West Main Street, Jefferson City, MO 65109.

(C) Anyone wishing to review information in the Hazardous Substance Emergency Response Office files is requested to make an appointment by calling (573) 526-3348. There is no fee for reviewing file information. There is a copying fee if copies of file information are made, and it must be paid by check, money order or exact change.

(D) Any request for information shall be in writing. All requests for information shall be available during normal business hours for inspection by the public.

(E) Nonemergency information can be obtained by contacting the department at the post office box listed previously or by calling (573) 526-3348.

(F) The number to contact the department for emergency release notifications under section 260.505, RSMo is (573) 634-2436. This is for emergencies only.

AUTHORITY: section 260.520, RSMo (Supp. 1995). Original rule filed Nov. 30, 1983, effective April 12, 1984. Emergency amendment filed Dec. 2, 1992, effective Jan. 1, 1993, expired April 20, 1993. Amended: Filed Oct. 5, 1992, effective April 8, 1993. Amended: Filed June 14, 1994, effective Jan. 29, 1995. Amended: Filed July 22, 1996, effective Feb. 28, 1997.*

**Original authority 1983, amended 1993, 1995.*

Rules of
Department of Natural Resources
Division 24—Hazardous Substance Emergency Response Office
Chapter 2—Definitions

Title		Page
10 CSR 24-2.010	Definitions	3

Title 10—DEPARTMENT OF NATURAL RESOURCES
Division 24—Hazardous Substance Emergency Response Office
Chapter 2—Definitions

10 CSR 24-2.010 Definitions

PURPOSE: This rule provides definitions for terms used in 10 CSR 24.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) Administrator—the administrator of the United States Environmental Protection Agency.

(2) Cleanup—all actions necessary to contain, collect, control, identify, analyze, cleanup, treat, disperse, remove or dispose of a hazardous substance.

(3) Cleanup costs—all costs incurred by the state or any of its political subdivisions or their agents or by any other person participating with the approval of the Department of Natural Resources in the prevention or mitigation of damages from a hazardous substance emergency or the cleanup of a hazardous substance involved in a hazardous substance emergency.

(4) Department—the Department of Natural Resources.

(5) Director—director of the Department of Natural Resources.

(6) Extremely hazardous substance—a substance listed under 40 CFR part 355 by the administrator.

(7) Hazardous substance—any substance or mixture of substances that presents a danger to the public health or safety or the environment and includes:

(A) Any hazardous waste identified or listed by the department under sections 260.350–260.430, RSMo;

(B) Any element, compound, mixture, solution or substance designated pursuant to Sections 101(14) and 102 of the Comprehensive Environment Response, Compensation and Liability Act (CERCLA) of 1980 or designated pursuant to section 304 of the Federal Emergency Planning and Community Right-to-Know Act of 1986; and

(C) Any hazardous material designated by the secretary of the United States Department of Transportation under the Hazardous Materials Transportation Act.

(8) Hazardous substance emergency and emergency involving a hazardous substance—

(A) Any release of hazardous substances or extremely hazardous substances in quantities equal to or in excess of those determined pursuant to section 101(14) or 102 of the CERCLA of 1980 or section 304 of the Federal Emergency Planning and Community Right-to-Know Act of 1986;;

(B) Any release of petroleum including crude oil or any fraction, natural gas, natural gas liquids, liquefied natural gas or synthetic gas usable for fuel (or mixture of natural gas and synthetic gas) in excess of fifty (50) gallons for liquids or three hundred (300) cubic feet for gases;

(C) Any release of a hazardous waste which is reportable under sections 260.350–260.430, RSMo;

(D) Any release of a hazardous substance which requires immediate notice under 49 CFR part 171; and

(E) The department shall promulgate rules identifying the substances and the quantities of substances which, if released, constitute a hazardous substance emergency.

(9) Hazardous Substance Emergency Response Plan—the plan, as specified in section 260.505, RSMo, developed and maintained by the Missouri Department of Natural Resources for response to hazardous substance emergencies.

(10) Local Emergency Planning Committee (LEPC) or committee—the people appointed by the Missouri Emergency Response Commission (MERC) for the purpose of improving hazardous chemical safety and preparedness.

(11) Local government—any county, township, municipal corporation, school district or other governmental body of equivalent rank.

(12) Person—any individual, partnership, copartnership, firm, company, public or private corporation, association, joint stock company, trust, estate, political subdivision or any agency, board, department or bureau of the state or federal government or any other legal entity which is recognized by law as the subject of rights and duties.

(13) Person having control over a hazardous substance—any person producing, handling, storing, transporting, refining or disposing of a hazardous substance when a hazardous substance emergency occurs, including bailees, carriers and any other person in control of a hazardous substance when a hazardous substance emergency occurs, whether they own the hazardous substance or are operating under a lease, contract or other agreement with the legal owner.

(14) Release—any threatened or real emission, discharge, spillage, leakage, pumping, pouring, emptying or dumping of a substance into or onto the land, air or waters of the state unless done in compliance with the conditions of a federal or state permit, unless the substance is confined and is expected to stay confined to property owned, leased or otherwise controlled by the person having control over the substance or unless, in the case of pesticides, application is done in accordance with the product label.

(15) State of Missouri Basic Emergency Operations Plan—the state plan, its annexes and appendices as developed or maintained by the state emergency management agency for response to natural and man-made disasters in this state.

(16) Waters of the state—all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two (2) or more persons jointly or as tenants in common and include waters of the United States lying within the state.

AUTHORITY: section 260.520, RSMo Supp. 1993. Original rule filed Nov. 30, 1983, effective April 12, 1984. Emergency amendment filed Dec. 2, 1992, effective Jan. 1, 1993, expired April 30, 1993. Amended: Filed Oct. 5, 1992, effective April 8, 1993.*

Amended: Filed June 14, 1994, effective Jan. 29, 1995.

**Original authority: 260.520, RSMo 1983, amended 1993.*

Rules of
Department of Natural Resources
Division 24—Hazardous Substance Emergency Response Office
Chapter 3—Emergency Notification Procedures

Title		Page
10 CSR 24-3.010	Notification Procedures for Hazardous Substance Emergencies and for Emergency Notification of Releases of Hazardous Substances and Extremely Hazardous Substances	3

Title 10—DEPARTMENT OF NATURAL RESOURCES
Division 24—Hazardous Substance Emergency Response Office
Chapter 3—Emergency Notification Procedures

10 CSR 24-3.010 Notification Procedures for Hazardous Substance Emergencies and for Emergency Notification of Releases of Hazardous Substances and Extremely Hazardous Substances

PURPOSE: This rule establishes a statewide emergency telephone number to notify Missouri whenever a hazardous substance emergency occurs and specifies the requirements for emergency notification and follow-up written notices in the event of a hazardous substance emergency, the release of a reportable quantity of a hazardous substance and the release of a reportable quantity of an extremely hazardous substance.

PUBLISHER'S NOTE: The publication of the full text of the material that the adopting agency has incorporated by reference in this rule would be unduly cumbersome or expensive. Therefore, the full text of that material will be made available to any interested person at both the Office of the Secretary of State and the office of the adopting agency, pursuant to section 536.031.4, RSMo. Such material will be provided at the cost established by state law.

(1) Any person having control over a hazardous substance shall contact Missouri by telephone at (573) 634-2436 or the National Response Center at (800) 424-8802 at the earliest practical moment upon discovery of an emergency involving a hazardous substance under his/her control. Information to be provided to Missouri to the best ability of the person having control over the hazardous substance includes: substance(s) involved, an indication of whether the substance is an extremely hazardous substance; the medium or media into which the release occurred; any known or anticipated acute or chronic health risks associated with the release and, where appropriate, advice regarding medical attention necessary for exposed individuals; proper precautions to take as a result of the release, including evacuation; amount of the substance(s) released or in danger of being released; location of the hazardous substance emergency and directions to the site; names, addresses and phone numbers of persons that may have information on the substances involved; when the hazardous substance emergency occurred, duration of the release and when it was discovered; actions taken to cleanup the hazardous substance and to end the hazardous substance emergency and when those actions will be taken; and any other pertinent information requested by Missouri, or as specified in the Missouri hazardous waste management commission regulations at 10 CSR 25-7.264(2)(D) and (E) and 10 CSR 25-7.265(2)(D) and (E). Federal reporting requirements for releases of hazardous substances can be found in 40 CFR parts 302 and 355. In addition, state reporting requirements contained in 11 CSR 40-4.030 reference these regulations, and require that certain information be provided to Local Emergency Planning Committees (LEPCs) for reportable releases of hazardous substances and extremely hazardous substances.

(2) The person monitoring the statewide emergency telephone shall notify appropriate agencies of the hazardous substance emergency as designated in the Hazardous Substance Emergency Response Plan.

(3) Upon request, written follow-up notifications are required for releases of hazardous substances and extremely hazardous substances as listed in 40 CFR parts 302 and 355. If requested, the person having control of the hazardous substance or extremely hazardous substance shall provide a written follow-up emergency notice (or notices, as more information becomes available) to the department setting forth and updating the information with respect to—

(A) Information required in section (1);

(B) Actions taken to respond to and contain the release;

(C) Any known or anticipated acute or chronic health risks associated with the release; and

(D) Where appropriate, advice regarding medical attention necessary for exposed individuals.

(4) If requested, a written report shall be provided to the department for any other hazardous substance emergency. The requested reports shall contain the information as specified in sections (1) and (3) of this rule and any other pertinent information as requested by the department. In addition, state reporting requirements in 11 CSR 40-4.030 require that written follow-up reports be provided to the Department of Public Safety and appropriate LEPCs for any reportable releases of hazardous substances or extremely hazardous substances.

AUTHORITY: section 260.520, RSMo (Supp. 1995). Original rule filed Nov. 30, 1983, effective April 12, 1984. Emergency amendment filed Dec. 2, 1992, effective Jan. 1, 1993, expired April 30, 1993. Amended: Filed Oct. 5, 1992, effective April 8, 1993. Amended: Filed June 14, 1994, effective Jan. 29, 1995. Amended: Filed July 22, 1996, effective Feb. 28, 1997.*

**Original authority 1983, amended 1993, 1995.*

Spill Report Form

For spills of reportable quantities that impact soil, surface water or ground water call MDNR 24-hour Environmental Emergency Response at 573-634-2436.

Site: _____ Primary Contractor: _____

Date: _____ Incident Date: _____

Complete for any type of petroleum product or hazardous materials / waste spill or incident. If the spill is of reportable quantity, report must be submitted within five (5) business days.

Keep a copy of this report with the SWPPP Log.

Person Reporting Spill or Incident	
Name	Address
Organization	
Title	
Telephone	
Email	Signature

Type of Spill:
Common Name of Spilled Substance
Estimated Quantity Spilled
Estimated Concentration
Date and Duration of Spill
Date Clean Up Completed

SPILL TO LAND	SPILL TO WATER BODY
Name of site:	Name of water body:
Street address:	Location of discharge
City	Description of area from which spilled material may reach:
County:	

Actions Taken:

To contain spill:

To clean up spill:

To remove/dispose of spilled substance and cleanup material:

To prevent reoccurrence:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Person responsible for managing spill response:	
Name	Signature
Phone	Email

Spill Report Form

For spills of reportable quantities that impact soil, surface water or ground water call MDNR 24-hour Environmental Emergency Response at 573-634-2436.

Site: _____ Primary Contractor: _____

Date: _____ Incident Date: _____

Complete for any type of petroleum product or hazardous materials / waste spill or incident. If the spill is of reportable quantity, report must be submitted within five (5) business days.

Keep a copy of this report with the SWPPP Log.

Person Reporting Spill or Incident	
Name	Address
Organization	
Title	
Telephone	
Email	Signature

Type of Spill:
Common Name of Spilled Substance
Estimated Quantity Spilled
Estimated Concentration
Date and Duration of Spill
Date Clean Up Completed

SPILL TO LAND	SPILL TO WATER BODY
Name of site:	Name of water body:
Street address:	Location of discharge
City	Description of area from which spilled material may reach:
County:	

Actions Taken:

To contain spill:

To clean up spill:

To remove/dispose of spilled substance and cleanup material:

To prevent reoccurrence:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Person responsible for managing spill response:	
Name	Signature
Phone	Email

SECTION 10

Endangered Species Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

In Reply Refer To: February 27, 2023
Project Code: 2023-0049773
Project Name: Discovery Park Zone 1-4 and Aria 1st Plat Lot 1

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).
New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. **Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days.** The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Refer to the Midwest Region S7 Technical Assistance website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects:

projects in developed areas, HUD, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Federally Listed Bat Species

Indiana bats, gray bats, and northern long-eared bats occur throughout Missouri and the information below may help in determining if your project may affect these species.

Gray bats - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. If your project will impact caves, mines, associated riparian areas, or will involve tree removal around these features – particularly within stream corridors, riparian areas, or associated upland woodlots –gray bats could be affected.
Indiana and northern long-eared bats - These species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches diameter at breast height (dbh) for Indiana bat, and ≥3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory, white oak, cottonwood, and maple. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, Indiana bats or northern long-eared bats could be affected.
Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas;
- Trees found in highly-developed urban areas (e.g., street trees, downtown areas);
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees; and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see #3 below) – then project proponents can conclude the proposed activities **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species through the S7 Technical Assistance website.
3. If IPac returns a result that one or more federally listed bat species (Indiana bat, northern long-eared bat, or gray bat) are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** these bat species **IF** one or more of the following activities are proposed:
    a. Clearing or disturbing suitable roosting habitat, as defined above, at any time of year;
    b. Any activity in or near the entrance to a cave or mine;
    c. Mining, deep excavation, or underground work within 0.25 miles of a cave or mine;
    d. Construction of one or more wind turbines; or
    e. Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on listed bat species. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.
If any of the above activities are proposed in areas where one or more bat species may be present, project proponents can conclude the proposed activities **may affect** one or more bat species. We recommend coordinating with the Service as early as possible during project planning. If your project will involve removal of over 5 acres of suitable forest or woodland habitat, we recommend you complete a Summer Habitat Assessment prior to contacting our office to expedite the consultation process. The Summer Habitat Assessment Form is available in Appendix A of the most recent version of the Range-wide Indiana Bat Summer Survey Guidelines.

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA

to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Next Steps

Should you determine that project activities **may affect** any federally listed species or trust resources described herein, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

If you have not already done so, please contact the Missouri Department of Conservation (Policy Coordination, P. O. Box 180, Jefferson City, MO 65102) for information concerning Missouri Natural Communities and Species of Conservation Concern.
We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

John Weber

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
(573) 234-2132

PROJECT SUMMARY

Project Code: 2023-0049773
Project Name: Discovery Park Zone 1-4 and Aria 1st Plat Lot 1
Project Type: Mixed-Use Construction
Project Description: The Discovery Park Zone 1-4 developments are commercial developments in Lee's Summit, Jackson County, MO located west of the intersection of NW Colbern Road and NE Douglas Street. The projects include mass grading, paving, building construction and utility installation for multi-family residential and commercial buildings on 198-acres of land.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.94675815,-94.38054362477494,14z

Counties: Jackson County, Missouri

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/56VZ72IV4NGGHEBGABQ72BAFF4/documents/generated/6868.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ipac.ecosphere.fws.gov/project/56VZ72IV4NGGHEBGABQ72BAFF4/documents/generated/6868.pdf	Threatened
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Olsson
Name: Brock Worthley
Address: 1301 Burlington Street, Suite 100
City: North Kansas City
State: MO
Zip: 64116
Email bworthley@olssonassociates.com
Phone: 8163611177

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to
protect and manage the forest, fish, and
wildlife resources of the state and to
facilitate and provide opportunities for all citizens to
use, enjoy and learn about these resources.

Natural Heritage Review Level Two Report: State Listed Endangered Species and/or Missouri Species/Natural Communities of Conservation Concern

There are records of state-listed Endangered Species, or Missouri Species or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this report is to provide information to federal, state and local agencies, organizations, municipalities, corporations, and consultants regarding sensitive fish, wildlife, plants, natural communities, and habitats to assist in planning, designing, and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: Discovery Park Zone 1-4 and Aria 1st Plat Lot 1 #12313
User Project Number: A21-04643
Project Description: The Discovery Park Zone 1-4 developments are commercial developments in Lee's Summit, Jackson County, MO located west of the intersection of NW Colbern Road and NE Douglas Street. The projects include mass grading, paving, building construction and utility installation for multi-family residential and commercial buildings on 198-acres of land.
Project Type: Residential, Commercial and Governmental Building Development
Contact Person: Brock Worthley
Contact Information: bworthley@olsson.com or 8163611177

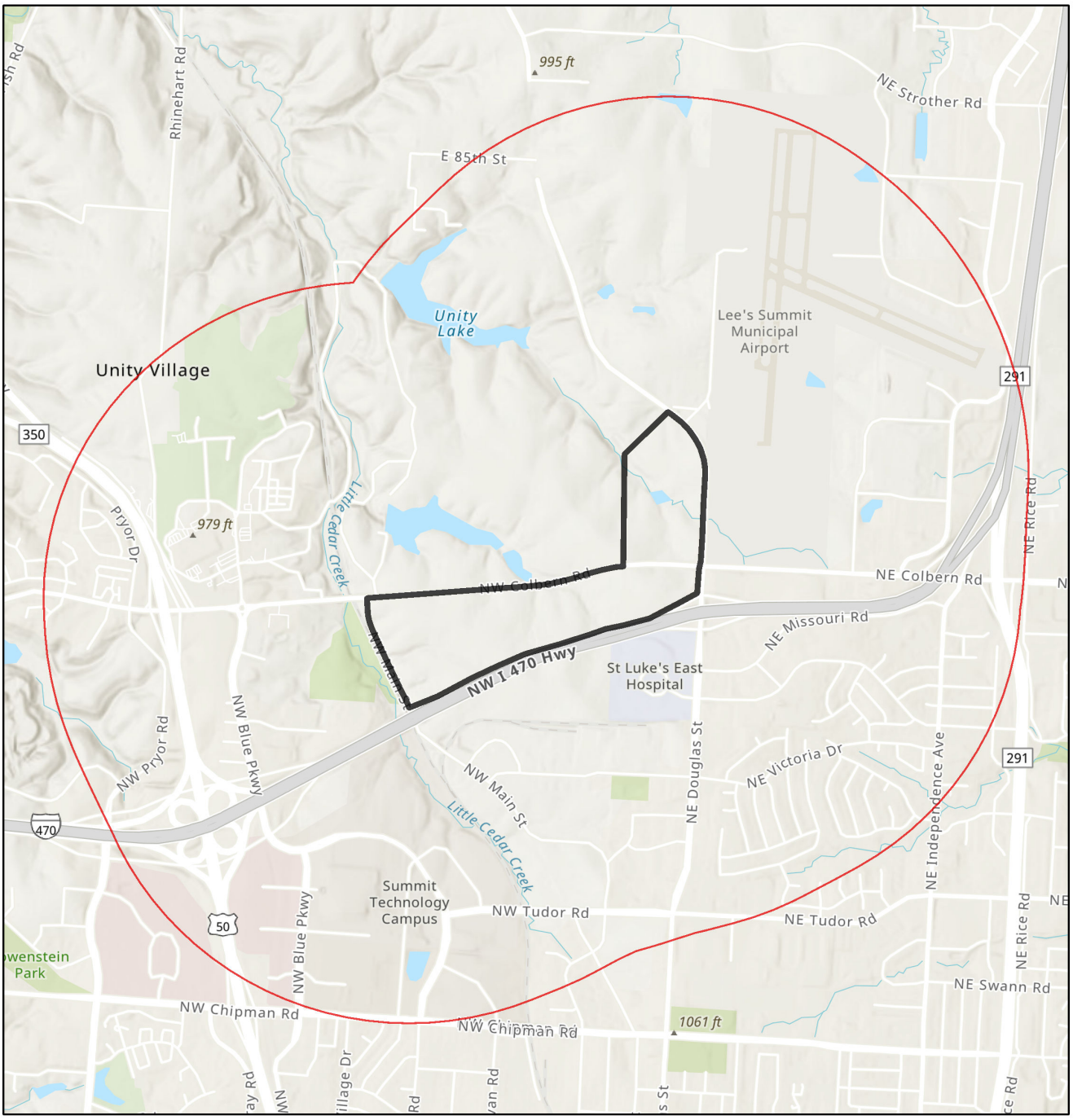
Disclaimer: This NATURAL HERITAGE REVIEW REPORT identifies if a species or natural community tracked by the Natural Heritage Program is known to occur within or near the project area submitted, and shares recommendations to avoid or minimize project impacts to sensitive species or natural habitats. Incorporating information from the Natural Heritage Program into project plans is an important step in reducing impacts to Missouri's sensitive natural resources. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information.

This Natural Heritage Review Report is not a site clearance letter for the project. Rather, it identifies public lands and records of sensitive resources located close to and/or potentially affected by the proposed project. If project plans or location change, this report may no longer be valid. Because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, reports include information about records near but not necessarily on the project site. Lack of an occurrence record does not mean that a sensitive species or natural community is not present on or near the project area. On-site verification is the responsibility of the project. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts and additional information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. This report does not fulfill Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit IPaC: Home (fws.gov) to initiate USFWS Information for Planning and Conservation (IPaC) consultation. Contact the Columbia Missouri Ecological Field Services Office (573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203) for more information.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or visit Home Page | Missouri Department of Transportation (modot.org) for additional information on recommendations.

Discovery Park Zone 1-4 and Aria 1st Plat Lot 1



February 27, 2023

1:27,834

0 0.23 0.45 0.9 mi

0 0.38 0.75 1.5 km

Buffered Project Boundary

Project Boundary

Species or Communities of Conservation Concern within the Area:

There are records of state-listed Endangered Species, or Missouri Species or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact the Missouri Department of Conservation for further coordination.

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

Other Special Search Results:

No results have been identified for this project location.

Project Type Recommendations:
New construction, maintenance and remodeling, including government, commercial and residential buildings and other structures. Fish, forest, and wildlife impacts can be avoided by siting projects in locations that have already been disturbed or previously developed, where and when feasible, and by avoiding alteration of areas providing existing habitat, such as wetlands, streams, forest, native grassland, etc. The project should be managed to minimize erosion and sedimentation/runoff to nearby wetlands, streams and lakes, including adherence to any Clean Water Act permit conditions. Project design should include stormwater management elements that assure storm discharge rates to streams for heavy rain events will not increase from present levels. Revegetate areas in which the natural cover is disturbed to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crownvetch and sericea lespedeza. Pollutants, including sediment, can have significant impacts far downstream. Use silt fences and/or vegetative filter strips to buffer streams and drainages, and monitor the site after rain events and until a well-rooted ground cover is reestablished. Please see Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams (mo.gov).

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - If this project has the potential to alter habitat (e.g. tree removal, projects in karst habitat) or cause direct mortality of bats, please coordinate directly with U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act. Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April.

Karst: This county has known karst geologic features (e.g., caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural Heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are Species of Conservation Concern) are influenced by changes to water quality; please check your project site for any karst features and make every effort to protect groundwater in the project area. Additional information and specific recommendations are available at Management Recommendations for Construction and Development Projects Affecting Missouri Karst Habitat (mo.gov).

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See Managing Invasive Species in Your Community | Missouri Department of Conservation (mo.gov) for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (>140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (Kansas City District Regulatory Branch (army.mil)) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (Section 401 Water Quality Certification | Missouri Department of Natural Resources (mo.gov)), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit Wastewater Permits | Missouri Department of Natural Resources (mo.gov) for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below:

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

See Missouri Species and Communities of Conservation Concern Checklist (mo.gov) for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at Mofwis Search Results. Please contact the Missouri Department of Conservation to request printed copies of any materials linked in this document.

SECTION 11

Historic Preservation Documentation

Section 106 of the 1966 National Historic Preservation Act (as amended) aims to protect historic and cultural properties from unintentional federal action. A federal action can be through a permit, license or funding. If the preceding situations do not apply to this project a Section 106 review is not required. The permittee must still comply with relevant state and local regulations.

SECTION 12

Inspection Reports

-Log of Inspections
-Inspection Reports
-Inspector Credentials

Log of Inspections

Inspection Date	Inspector Name	Type of Inspection

Inspection Date	Inspector Name	Type of Inspection

Stormwater Construction Site Inspection Report

General Information			
Project Name		**Date of Inspection**	
Permit Number		**Time of Inspection**	
Inspector's Name(s)		**Inspector's Title**	
Inspector's Contact Information			
Describe present phase of construction			
Type of Inspection:	❑ Routine ❑ Post-storm event		

Weather Information
Has there been a storm event since the last inspection? ❑Yes ❑No **If yes, provide:** Storm Start Date: Approximate Amount of Precipitation (in):
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:
Were any discharges noted at the time of inspection? ❑Yes ❑No **If yes, describe:**

BMP Effectiveness
Were BMPs operating effectively during inspection? ❑Yes ❑No **If no, does SWPPP need to be amended?**
List any non-effective BMPs in the corrective action log on the next page.
List any amendments to the SWPPP that were identified as being necessary during inspection:

Areas Where Land Disturbance Operations Have Permanently or Temporarily Stopped		

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print name and title: _____

Signature: _____ **Date:**_____

#	BMP Location	Corrective Action Needed	Date Corrected	Corrective Actions Taken

Stormwater Construction Site Inspection Report

General Information			
Project Name		**Date of Inspection**	
Permit Number		**Time of Inspection**	
Inspector's Name(s)		**Inspector's Title**	
Inspector's Contact Information			
Describe present phase of construction			
Type of Inspection:	❑ Routine ❑ Post-storm event		

Weather Information
Has there been a storm event since the last inspection? ❑Yes ❑No **If yes, provide:** Storm Start Date: Approximate Amount of Precipitation (in):
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:
Were any discharges noted at the time of inspection? ❑Yes ❑No **If yes, describe:**

BMP Effectiveness
Were BMPs operating effectively during inspection? ❑Yes ❑No **If no, does SWPPP need to be amended?**
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Print name and title: _____

Signature: _____ **Date:**_____

#	BMP Location	Corrective Action Needed	Date Corrected	Corrective Actions Taken

Stormwater Construction Site Inspection Report

General Information			
Project Name		**Date of Inspection**	
Permit Number		**Time of Inspection**	
Inspector's Name(s)		**Inspector's Title**	
Inspector's Contact Information			
Describe present phase of construction			
Type of Inspection:	❑ Routine ❑ Post-storm event		

Weather Information
Has there been a storm event since the last inspection? ❑Yes ❑No **If yes, provide:** Storm Start Date: Approximate Amount of Precipitation (in):
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:
Were any discharges noted at the time of inspection? ❑Yes ❑No **If yes, describe:**

BMP Effectiveness
Were BMPs operating effectively during inspection? ❑Yes ❑No **If no, does SWPPP need to be amended?**
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List any amendments to the SWPPP that were identified as being necessary during inspection:

Areas Where Land Disturbance Operations Have Permanently or Temporarily Stopped		

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print name and title: _____

Signature: _____ **Date:**_____

#	BMP Location	Corrective Action Needed	Date Corrected	Corrective Actions Taken

Stormwater Construction Site Inspection Report

General Information			
Project Name		**Date of Inspection**	
Permit Number		**Time of Inspection**	
Inspector's Name(s)		**Inspector's Title**	
Inspector's Contact Information			
Describe present phase of construction			
Type of Inspection:	❑ Routine ❑ Post-storm event		

Weather Information
Has there been a storm event since the last inspection? ❑Yes ❑No **If yes, provide:** Storm Start Date: Approximate Amount of Precipitation (in):
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:
Were any discharges noted at the time of inspection? ❑Yes ❑No **If yes, describe:**

BMP Effectiveness
Were BMPs operating effectively during inspection? ❑Yes ❑No **If no, does SWPPP need to be amended?**
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Areas Where Land Disturbance Operations Have Permanently or Temporarily Stopped		

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print name and title: _____

Signature: _____ **Date:**_____

#	BMP Location	Corrective Action Needed	Date Corrected	Corrective Actions Taken

Stormwater Construction Site Inspection Report

General Information			
Project Name		**Date of Inspection**	
Permit Number		**Time of Inspection**	
Inspector's Name(s)		**Inspector's Title**	
Inspector's Contact Information			
Describe present phase of construction			
Type of Inspection:	❑ Routine ❑ Post-storm event		

Weather Information
Has there been a storm event since the last inspection? ❑Yes ❑No **If yes, provide:** Storm Start Date: Approximate Amount of Precipitation (in):
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:
Were any discharges noted at the time of inspection? ❑Yes ❑No **If yes, describe:**

BMP Effectiveness
Were BMPs operating effectively during inspection? ❑Yes ❑No **If no, does SWPPP need to be amended?**
List any non-effective BMPs in the corrective action log on the next page.
List any amendments to the SWPPP that were identified as being necessary during inspection:

Areas Where Land Disturbance Operations Have Permanently or Temporarily Stopped		

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print name and title: _____

Signature: _____ **Date:**_____

#	BMP Location	Corrective Action Needed	Date Corrected	Corrective Actions Taken

SECTION 13

Regulatory Correspondence

Pertinent correspondence from regulatory agencies relating to this project can be located here.

SECTION 14

Notice of Termination

This section contains the Notice of Termination form for the project. The form should be filled out, signed and sent to the applicable MDNR regional office (see map).

Documentation of acceptance from the DNR should also be kept here and all documents must be retained for 3 years after the date of NOT acceptance.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

REQUEST FOR TERMINATION OF OPERATING PERMIT

(REPLACES TERMINATION FORMS H AND J)

FOR OFFICE USE ONLY
DATE RECEIVED

IF A FACILITY OR SITE HAS BEEN SOLD, BUT PERMITTED ACTIVITIES HAVE NOT CEASED, A TRANSFER OF OWNERSHIP FORM (MO 780-1517) MUST BE COMPLETED RATHER THAN A TERMINATION FORM.

ALL APPLICABLE SECTIONS OF THIS FORM MUST BE COMPLETED.

1. FACILITY INFORMATION

PERMIT NUMBER	COUNTY		
NAME OF FACILITY			
PHYSICAL ADDRESS	CITY	STATE	ZIP CODE
FACILITY CONTACT NAME	FACILITY CONTACT TELEPHONE NUMBER	FACILITY CONTACT EMAIL	

2. OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE		
ADDRESS	CITY	STATE	ZIP CODE
EMAIL			

3. CONTINUING AUTHORITY

NAME	TELEPHONE NUMBER WITH AREA CODE		
ADDRESS	CITY	STATE	ZIP CODE
EMAIL			

4. REASON FOR TERMINATION REQUEST (CHECK ONE)

☐ Permitted activities have ceased, or facility is closed (must select facility type in section five and attach photographs or any other supporting documents as required).

☐ General Permit MO-G _____or MO-R _____ has been issued and covers all regulated activities.

☐ Site specific permit MO- _____ has been issued and covers all regulated activities.

☐ Facility has obtained a “No Exposure” certification, MO-NX_____.

☐ Industrial activity (SIC Code # _____) is not regulated.

☐ For CAFOs, facility size is unregulated (Class II and smaller operations only).

☐ Other (Specify).

5. FACILITY TYPE (CHECK ONE FACILITY TYPE, COMPLETE ONLY IF PERMITTED ACTIVITY HAS CEASED OR FACILITY HAS CLOSED)

☐ For land disturbance sites, the area is stabilized; perennial vegetation, pavement, buildings or other permanent structures cover all areas that have been disturbed; no further land disturbance activities are planned; all building construction (commercial or residential) is completed; temporary best management practices are removed, and construction equipment is removed. With respect to areas that have been vegetated, vegetation cover shall be at least 70 percent over 100 percent of the site not covered in impervious material. Attach photographs showing stabilized areas.

☐ For wastewater treatment plants, the treatment plant is removed and sludge was removed and properly disposed of, and a closure plan in accordance with 10 CSR 20-6.010(12) or 10 CSR 20-6.015(5) was approved and implemented. Attach documentation required by the approved closure plan and photographs of the closed area. See the *Water Treatment Plant Closure* -PUB2568 fact sheet at dnr.mo.gov/pubs/pub2568.htm for more information on closure requirements for wastewater treatment plants.

☐ For industrial facilities, regulated activities have ceased, no "significant materials" remain on-site and disturbed areas are properly stabilized or vegetated. The area is stabilized when perennial vegetation, pavement, buildings or structures using permanent materials cover all areas that have been disturbed. Vegetation cover shall be at least 70 percent over 100 percent of the site not covered in impervious material. Attach applicable closure documents and photographs of the closed area that demonstrate no permitted activities or materials remain.

☐ For quarries or sand and gravel operations, submit documentation of release from the department's Land Reclamation Program.

☐ For landfills, official closure has been received from department's Solid Waste Management Program (SWMP); cap is vegetated as required by SWMP; and any additional industrial activities are permitted appropriately (i.e., transfer stations, mulching operations, land disturbance, etc.). Attach the official SWMP closure letter and permit numbers of any continuing active industrial or land disturbance activities.

☐ For CAFOs

- ☐ Class I CAFOs must properly close lagoons and waste storage structures per a closure plan in accordance with 10 CSR 20-6.300(6) and approved by the department. Attach photographs of closed lagoons. Also attach any additional information that supports closure of the facility.
- ☐ Class II CAFOs must close waste storage structures in accordance with 10 CSR 20-6.300(6)(B), or shall continue to maintain all storage structures so there is no discharge to waters of the state. Attach photographs of closed or re-purposed lagoons, or an explanation of "no discharge" methods. Also attach any additional information that supports closure of the facility.

6. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	TELEPHONE NUMBER WITH AREA CODE
SIGNATURE	DATE SIGNED

7. MAIL COMPLETED COPY TO:

For Site Specific (MO-), Abandoned Mine And Land Reclamation (MO-G05), Land Disturbance By County Or City (MO-R100), Pesticide Application (MO-G87), Sewer Extension Construction (MO-GC) and CAFO (MO-G01, MO-GS1) Permit Terminations:

Missouri Department of Natural Resources
Water Protection Program
Water Pollution Control Branch
Attn: Operating Permits Section
P.O. Box 176
Jefferson City, MO 65102-0176

For General Permit Terminations (MO-G or MO-R):

Send to the appropriate regional office.
Regional office is determined based on the county where the facility is physically located.

To determine the correct regional office for the permitted facility, see **dnr.mo.gov/regions.**

MISSOURI DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality Regional Offices

Kansas City Area

Kansas City Regional Office
500 NE Colbern Rd.
Lee's Summit, MO 64086-4710
816-251-0700 FAX: 816-622-7044

St. Louis Area

St. Louis Regional Office
7545 S. Lindbergh, Ste 210
St. Louis, MO 63125
314-416-2960 FAX: 314-416-2970

Northeast Area

Northeast Regional Office
1709 Prospect Drive
Macon, MO 63552-2602
660-385-8000 FAX: 660-385-8090

Southwest Area

Southwest Regional Office
2040 W. Woodland
Springfield, MO 65807-5912
417-891-4300 FAX: 417-891-4399

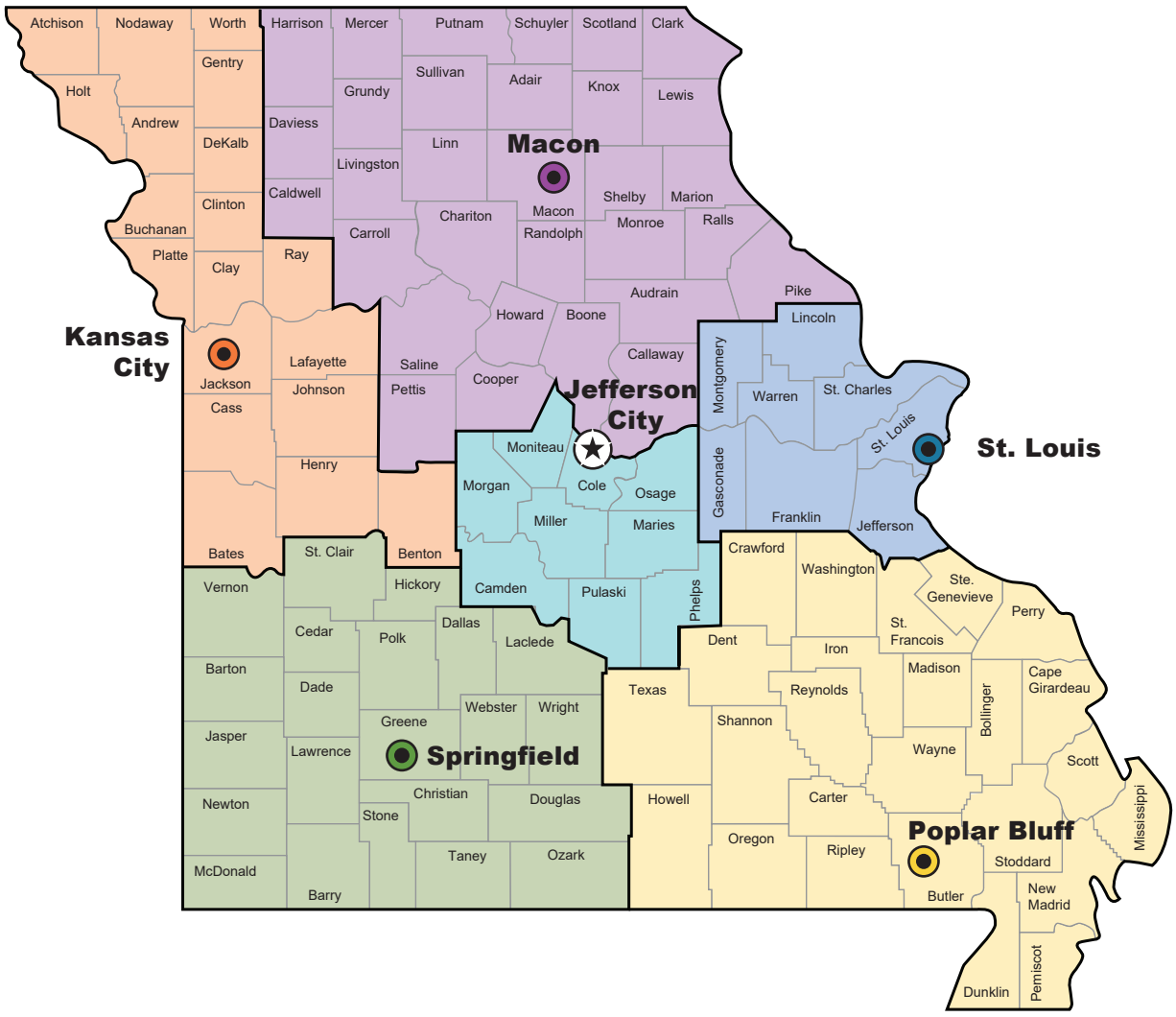
Southeast Area

Southeast Regional Office
2155 North Westwood Blvd.
Poplar Bluff, MO 63901
573-840-9750 FAX: 573-840-9754

Central Area

Department Central Offices
P.O. Box 176
Jefferson City, MO 65102-0176
573-751-3443

Central Field Operations
P.O. Box 176
Jefferson City, MO 65102-0176
573-522-3322 FAX: 573-522-3522



6/25/19

For more information on the department, visit dnr.mo.gov or call 800-361-4827