

**REPORT OF CONSTRUCTION STORMWATER
COMPLIANCE EVALUATION INSPECTION**

**AT
Fort Leonard Wood - Hospital Replacement
4234 Illinois Avenue
Fort Leonard Wood, MO 65473
NPDES NO: MORA20572**

July 12, 2023

**by U. S. ENVIRONMENTAL PROTECTION AGENCY
Region 7: Enforcement and Compliance Assurance Division**

INTRODUCTION

I performed a Compliance Evaluation Inspection at the hospital replacement construction site at Fort Leonard Wood in Missouri on July 12, 2023. The inspection was authorized by Section 308(a) of the Federal Water Pollution Control Act, as amended. I conducted this inspection following the procedures described here and following applicable EPA Region 7 Standard Operating Procedures. This narrative report presents the findings of the inspection.

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INSPECTION PROCEDURES

I, Caitlin Dix, Environmental Protection Agency Region 7 lead inspector, arrived at the construction site for the hospital replacement at Fort Leonard Wood (the “site” or “facility”), located at 4234 Illinois Avenue, Fort Leonard Wood, MO 65473, at 1:00 p.m. (CT) on July 12, 2023, for an announced inspection. I presented credentials to Shannon Cain when the inspection team first arrived at Fort Leonard Wood on Monday, July 10, 2023. We met with JE Dunn and U.S. Army Corps of Engineers representatives at the office for construction site at Fort Leonard Wood Hospital Replacement on July 12, 2023, and I informed Mark French and Kevin Duffey that this was an EPA Region 7 inspection to determine compliance as authorized by Clean Water Act Section 308 and implementing regulations.

This report is based on information supplied by Fort Leonard Wood Hospital Replacement representatives, direct observations made by the EPA Region 7 inspectors, records and reports maintained by the permittee, and other information including:

- photographs taken by the EPA Region 7 inspector,
- physical evidence collected by the EPA Region 7 inspector,
- measurements taken by the EPA Region 7 inspector,
- verbal or written statements made, and information supplied by Fort Leonard Wood Hospital Replacement representatives during or after the on-site inspection, and
- materials, processes, data, photographs, or documents shown, demonstrated, or submitted to the EPA Region 7 inspectors by Fort Leonard Wood Hospital Replacement representatives during or after the on-site inspection.

In addition, information gathered before or after the inspection from a review of EPA, State, and public records may be included in this report.

Before the inspection, the EPA inspectors met with Environmental Division staff at the Directorate of Public Works for Fort Leonard Wood. Tricia Littleton, the construction program specialist for the Directorate of Public Works, provided a list dated April 2022 of the land disturbance permits at Fort Leonard Wood. I reviewed facility background information including existing permits and information on the receiving stream. With the assistance of Tricia Littleton, the EPA inspectors reconned the active construction sites at Fort Leonard Wood on July 11, 2023. We drove by construction sites; Tricia Littleton provided a brief description of the construction site and inspectors noted conditions from the road. The EPA inspectors evaluated potential inspection sites and selected the hospital replacement construction site for a

compliance evaluation inspection. The information provided by Directorate of Public Works shows the hospital replacement permit MORA16017 initiated May 29, 2020, and terminated February 7, 2022, followed by MORA20572 initiated April 5, 2022, and still active. Fort Leonard Wood Directorate of Public Works Environmental Division staff coordinated with Hospital Replacement representatives to be onsite for the inspection. MORA20572 is a Missouri State Operating Permit for construction or land disturbance activity (attachment #3). It is a general permit authorizing only stormwater and certain non-stormwater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; the permit does not apply to other regulated areas.

During the opening conference, I told Fort Leonard Wood Hospital Replacement representatives that the inspection would be a review of required records, their Stormwater Pollution Prevention Plan, and a visual inspection of construction activities.

I completed the visual inspection on July 12, 2023. Site representatives toured the EPA inspectors through the construction site including the site outfall, the structural controls immediately upstream of the outfall, the spoil stockpile sites, and an area of active construction. I documented my observations by taking photographs and taking notes.

At the end of the onsite visual inspection, I discussed observations with the Hospital Replacement stakeholders including representatives from JE Dunn, U.S. Army Corps of Engineers, and Directorate of Public Works. Representatives from JE Dunn and the U.S. Army Corps of Engineers were not available to attend the exit meeting on the morning of July 13, 2023. I summarized the findings of the visual inspection with Directorate of Public Works Environmental Division during the closing conference of the inspection on July 13, 2023. I issued a Notice of Preliminary Findings on July 13, 2023 (attachment #4).

FACILITY DESCRIPTION

Facility Location

Fort Leonard Wood is a United States Army installation located in the south-central Missouri Ozarks and covers more than 61,410 acres mostly in Pulaski County, Missouri. Fort Leonard Wood is constructing a new hospital and will demolish the current General Leonard Wood Army Community Hospital after construction is finished. The new hospital construction is on 52 acres northeast of the current hospital.

The construction site is within the area managed by the Fort Leonard Wood Municipal Separate Storm Sewer System (NPDES permit ID# MO-R040088).

Stormwater from the construction site flows overland and through a stormwater sewer system to intermittent streams within Fort Leonard Wood. These drainage systems discharge to the Big Piney River, a perennial stream. The Big Piney River flows north to join the Gasconade River.

Outfall 001 is located northeast of the hospital at Universal Transverse Mercator coordinates 15S 578407.123 4180787.686. Hospital replacement representatives identified Outfall 001 as the primary outfall for the construction project. This outfall is downstream from a sediment basin for the construction site. Discharges from the outfall flow into a receiving stream identified by the U.S. Geological Survey and classified by USGS as intermittent. This first receiving stream is also identified as a riverine wetland in the National Wetland Inventory. This first receiving stream flows about a half mile to another stream identified by the Missouri Department of Natural Resources as a Presumed Use Stream (MoDNR Reach Code 10290202001190; Waterbody Identification Number 5063). This stream is tributary to Dry Creek and flows around 1.2 miles before joining Dry Creek. Dry Creek flows around four more miles to the Big Piney (MoDNR Reach Code 10290202000003; Waterbody Identification Number 1566).

Outfall 002 is located at the base of the hill east of the East Fill Site at Universal Transverse Mercator coordinates 15S 578982.850 4180768.809. This outfall discharges to receiving stream tributary to Dry Creek. This is the same receiving stream about a half mile downstream from Outfall 001.

Facility Operations

Fort Leonard Wood is replacing their hospital. Fort Leonard Wood and the Maneuver Support Center of Excellence trains approximately 80,000 soldiers, sailors, airmen, marines, and civilians each year. The new hospital complex will serve military members, 5,700 active duty and 20,400 trainees, as well as their families. Additionally, over 3,500 retirees in the surrounding area are served by the Fort Leonard Wood hospital. New facilities include a 235,400-square-foot hospital, 193,300-square-foot clinic, central utility plant, emergency back-up generators, five-bay ambulance garage, helipad, and additional supporting facilities.

The Kansas City District, U.S. Army Corps of Engineers has oversight on the project with JE Dunn Construction, based in Kansas City, providing the construction. The hospital replacement is a complex “mega project” with significant partnership and coordination. There are many team members and stakeholders involved in the hospital replacement. Fort Leonard Wood held their groundbreaking ceremony on June 22, 2020. The hospital construction was 80% complete during the inspection. The new hospital campus is expected to be ready for occupancy in 2024. Once complete, the existing hospital will be demolished. At groundbreaking, JE Dunn estimated that 4,000 people would be hired as contractors and subcontractor to work on the project over the four-year project plan. At the time of inspection, approximately 327 employees were working on the project; most employees are subcontractors. There are four major contractors on site at this stage of the project, but on any given day there may be 10 to 15 contractors or subcontracting companies working on site.

Kevin Duffey said JE Dunn subcontracts Bloomsdale Excavating as part of the stormwater pollution prevention team for the construction project. No representatives from Bloomsdale participated in the inspection.

REGULATORY HISTORY

The Missouri Department of Natural Resources first authorized JE Dunn Construction to discharge stormwater from Fort Leonard Wood – Replacement Hospital under Missouri State Operating Permit MORA16017 starting May 29, 2020, and terminated February 7, 2022.

There was an additional permit for the fill site from 2021 to 2022. The Missouri Department of Natural Resources authorized JE Dunn Construction to discharge stormwater from Fort Leonard Wood – Replacement Hospital – Fill Site under Missouri State Operating Permit MORA17254 initiated January 21, 2021, and terminated February 7, 2022.

Facility did not submit any documentation about permit coverage from February 8, 2022, to April 4, 2022.

The current permit began April 5, 2022. The Missouri Department of Natural Resources authorized JE Dunn Construction to discharge stormwater from Fort Leonard Wood – Replacement Hospital under Missouri State Operating Permit MORA20572 expiring February 7, 2027. MORA20572 is a general state operating permit for land disturbance and construction activities associated with the Fort Leonard Wood Hospital Replacement.

The permit authorizes the discharge of stormwater and certain non-stormwater discharges from the land disturbance site.

Neither the Missouri Department of Natural Resources nor the EPA has inspected this construction stormwater permit. The MS4 construction program specialist inspects the project monthly.

FINDINGS AND OBSERVATIONS

I noted the following observations during the visual inspection and record review. The weather conditions at the time of the inspection were sunny (91°- 95°F). The heat index conditions were dangerous. U.S. Drought Monitor showed the area was experiencing severe drought. The inspection was during the dry season, but conditions were drier than normal according to the Antecedent Precipitation Tool. The most recent rain event was approximately 0.60 inches on July 02, 2023, using the High Plains Regional Climate Center CLIMOD website. This same weather station recorded 1.34” of rain the day after the inspection, July 13, 2023.

Fort Leonard Wood representatives selected key sheets from the construction plans for the EPA review. At the beginning of the inspection in the construction office I briefly reviewed erosion control site plans. Kevin Duffey and Mark French said the site plans I was reviewing were the current site plans. The plans I saw on site were labeled CORRECTED FINAL and issued 12 June 2020.

The erosion and sediment control staging chart on Sheet CG111-1 through Sheet CG116-1 shows structural controls for each stage of the construction project:

Table 1. Excerpts from erosion and sediment control staging chart on sheet showing North Erosion Control – Site Construction

Project Stage	Structural Control Description	Remove after stage
A. Pre-construction	A1. Temporary construction entrance	D
	A2. Stockpiles east staging area	C
	A3. Rock check dam	D
	A4. Temporary compost filter sock	D
	A5 Tree protection	D
	A6. Inlet protection	D
	A7. Installation of north BMP (Detention Plan)	Not applicable
	A8. Temporary diversion berm	C
	A9. Temporary storm culvert	D
B. Clearing and grading	B1. Temporary compost filter sock	D
	B2. Temporary diversion berm	C
	B3. Temporary storm culvert protection	D
	B4. Install slope protection	Not applicable
	B5. Concrete washout	C
	B6. Rock check dam	C
C. Onsite development and building construction	C1. Inlet protection	D
D. Final stabilization	D1. Replace topsoil, seed and mulch, sod, landscape	Not applicable
[Handwritten addition below chart]	3' Tall Mulch Berm	Not specified

The chart on the site plans provides a column for plan reference number, BMP description, remove after stage, detail sheet, and notes.

On the site drawings in the office some structural controls were drawn or highlighted (Photos 5-11). The corresponding control is highlighted in the same color on the plan legend and the staging chart. The control is highlighted in the same color for planned locations and the same color is used to draw locations where the controls were added.

Structural Control	Plan Reference Number	Color
Rock Check Dam	A3, B6	Green
Temporary Compost Filter Sock	A1, B1	Orange
Inlet Protection	A6, C1	Blue
3' Tall Mulch Berm	No reference number	Yellow

Handwritten notes and drawings date highlighted controls, show added controls and provide more detail. Example of handwritten notes and updates include:

- Handwritten date 10-10-20 show the temporary compost filter sock and/or 3' mulch berm on the southeast side of the stockpile along the boundary of construction activities.
- Mulch berm addition 10-15-20 at the limits of construction activity on the north stockpile.
- Wash out pit.
- Spoils removed City of St. Reports 1-14-21.
- Temporary compost filter sock around the first spoils pile dated 4-15-21, 4-16-21.
- Temporary compost filter sock around added along north side of spoil pile dated 3-6-21.
- Spoil removal City St Robert 2-14-23.
- Temporary compost filter sock at stockpile area 11-5-20.
- "Track out" at First Street.
- Rock check dam added east side of stockpile 12-14-2020.
- Rock check dam added to stormwater channel flowing north 12-14-20.
- Inlet protection added to sediment basin outlet pipe.
- Two rock check dams added downstream of sediment basin (no date).
- Establish over 70% cover is highlighted in bright yellow for emphases and the same bright yellow is used to circle A. Pre-construction and B. Clearing and Mass Grading

This is not an all-inclusive list of handwritten notes and additions on the site plans.

Sheet CG111-1 to CG116-1 has a notes section,

"Notes: This Sheet Only:

Erosion control blanket (Note 1).

1. If any seeded areas fail to establish over 70% cover density, the area shall be reseeded. If reseeding is ineffective an alternative method (such as sodding, mulching, netting, binders, or blankets) shall be used. If winter weather prevents adequate grass growth, this time limit be replaced at the discretion of Fort Leonard Wood and USACE when sensitive areas would otherwise be protected.

Miscellaneous notes (Notes 2-4)

2. Fill sites shown east of Nebraska do not have enough volume to accommodate all spoils generated from this project. It is estimated that 20,000 cubic yards will be required to be hauled to an additional fill site. Design Build contractors shall modify existing stormwater pollution prevention (SWPPP) if the additional fill site is less than 1 acre. If the additional fill site is larger than 1 acre, the SWPPP will need to be amended by adding a new state land disturbance in addition to the state permit of this project.

3. All exist. Infrastructure shown to be demolished on the demolition plans is not shown on this plan sheet.

4. Contractor shall seed all disturbed areas after grading activities have ceased in the area or if site the area is to remain dormant for 14 days or more. See sheet GI1003-1 for more information.”

Kevin Duffey provided a three-ring notebook with a Stormwater Pollution Prevention Plan prepared for MORA16017 by Olsson and dated June 2020 (Photo #10). The Stormwater Pollution Prevention Plan was certified by the Olsson Senior Project Manager Jeff Yartz on May 15, 2020. I saw the 2020 date for the Stormwater Pollution Prevention Plan, and I requested the most up to date Stormwater Pollution Prevention Plan be sent to the EPA.

Outfall

We started the onsite tour near the construction site outfall. I saw sediment deposits at the outfall. I saw sediment in the bottom of the stream channel downstream from the outfall. Naji Ahmad used a rock to disturb the deposited sediment in the channel bed and the rock readily suspended deposited sediment (Photo #15).

I saw clear water flowing through the outfall.

North BMP

There is a rock ditch check upstream of the receiving stream and outside the construction boundary fencing at the construction activity limits (Photo #14). This rock ditch check is hand drawn on the active site plans in the construction office (Photo #11). There is not a date adjacent the added rock ditch check, but other rock ditch checks on this section of the site plan are dated “12-14-20.”

The site plan’s B6 Rock Ditch Check Detail shows two types of rock ditch checks. Type I rock ditch check is two feet wide and two feet tall using 3” to 6” aggregate, 2:1 slopes, and perpendicular to the flow. Type I is for two acres or less of drainage area. Type II rock ditch check is for two to ten acres of drainage area. Type II is perpendicular to the flow with 2:1 slopes and the upstream half is 3” to 6” aggregate and downstream is 12” riprap. This rock ditch check at the outfall does not resemble the Type I or Type II rock ditch check in the plan details (Photo #14). Some of the rocks are three to four feet wide and many are around two feet wide; the upstream side does not have 3” to 6” aggregate with a 2:1 slope.

Vegetation is growing up in between the rocks of the ditch check. On the site plan maintenance for the rock ditch check is “1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of the ditch. 2. Replace and reshape as necessary to maintain function and integrity of installation.” Sediment is undercutting the rock ditch check and flowing downstream out the outfall and into the receiving stream. I saw sediment deposits upstream, at and below the rock ditch check at the outfall (Photo #13, #15, and #16). Upstream from this outfall is the “North BMP,” a stormwater basin and associated supporting structures designed as a permanent stormwater detention basin and used as a temporary sediment basin. I describe

the treatment train leading to the outfall below. Also uphill of the sediment basin are areas of recent disturbance where stockpiles removed by St. Roberts, Missouri, and ground with less than 70% vegetation cover also described below.

Controls at the construction site boundary on the northeast side of the construction site were weathered and degraded. The construction fencing at the site limits was in disrepair and lying on the ground; almost all sections I saw were only partially attached or fully detached from the metal T-posts and lying on the ground (Photo #19). Near the construction boundary and north of the outfall there is a ten-to-twelve-foot section of silt fence behind the rock ditch check. The silt fence was not in good working order nor properly installed. The silt fence was sagging, and the fabric was attached to the downstream side of the posts (Photo #19).

Upstream of the rock ditch check and construction activity limit is a vegetated swale (Photo #12 and #19). I saw active flow from the sediment basin outlet to the outfall. The conveyance between the sediment basin to the outfall has visible surface water and green vegetation (Photo #19). The center of the vegetated swale is dominated by cattails in the wettest areas. Cattails are an obligate wetland species according to the National Wetland Plant List. Outward from the center of the channel there is green vegetation a few feet on each side of the wet area (Photo #12 and #19). Some of the low-growing vegetation in the swale is covered in a white substance (Photo #13 and #028). The surrounding ground more than a few feet from the conveyance is brown, barren with no vegetative cover or with very dry vegetation (Photo #12 and #19). As mentioned above, severe drought is impacting the region. The inspection was during the dry season for the area and the conditions were drier than normal. The dry vegetation surrounding the vegetated swale is less than 70% coverage (Photo #12, #19, and #20). I saw accumulated sediment deposits in the vegetated swale (Photo #13, #16, and #17). There is trash and litter in the vegetated swale, including chunks of old foam (Photo #18). There is litter, trash, and shredded litter or trash on the ground surrounding the vegetated swale (Photo #20).

Between the rock ditch check at the outfall and the outlet of the sediment basin there is another rock ditch check (Photo #12 and #19). This rock ditch check is drawn in the site plans for pre-construction installation and planned to be removed after final stabilization (Photo #11). This rock check dam looks like a Type I rock ditch check. In the center of the rock ditch check accumulated sediment is near level with the top of the rock ditch check (Photo #18). Vegetation like cattails, sedges, and grass is growing up in the accumulated sediment and rocks (Photo #18). This rock ditch check is not maintained in good working order with deposits more than ½ the height of rock ditch check and has not been maintained or replaced to maintain the integrity of the structural control.

Upstream of the vegetated swale is the outlet of the 72" concrete pipe and the embankment of the sediment basin. There is clear water flowing from the basin outlet into the vegetated swale. The embankment has less than 70% vegetative cover and there are rills in the embankment (Photo #12).

The plans show more controls are required downstream of the basin outlet, like turf reinforcement mats and riprap aprons. The “North BMP Plan and Profile” key notes say after the installation for the concrete headwall the next step is “12. Following permanent site stabilization, install MoDOT Type 4 Riprap Apron.” I did not see the permanent erosion controls described in sheet “North BMP Permanent Erosion Control.” The permanent erosion controls include 580 square yards of turf reinforcement mat at the base of the embankment downstream of the pipe outlet. I did not see turf reinforcement. Further downstream the plan specifies 80 square yards of MODOT Type 4 riprap apron to remain permanently and says to remove deposited sediment, if necessary, after final stabilization. The riprap apron is specified as 20 feet wide with three feet thick MODOT Type 4 rock ditch liner. Below the riprap apron should be filter fabric liner topped with a four-inch granular bedding below the Type 4 ditch liner. I did not see a riprap apron. This sheet also notes that if any seeded areas fail to establish over 70% cover density, the area shall be reseeded. If reseeding is ineffective, an alternative method (such as sodding, mulching, netting, binders, or blankets) must be used (Sheet ID CG118-1). I did not see alternative methods used in this area and I did see areas with less than 70% groundcover. The Erosion and Sediment Control Staging Chart says both riprap aprons at the detention outlet must be installed as soon as basin is constructed. Sheet “North BMP Details” provides the riprap apron details (Sheet ID CG501-1).

According to MODOT 609.60.2.4 Type 4 Rock Ditch Liner must consist of material with a predominant rock size of 19 inches, a maximum rock size of 28 inches and a gradation such that no more than 15 percent will be less than 6 inches. 609.60.2.5 Bedding material must be used under Type 3 and Type 4 Rock Ditch Liner. Bedding material must consist of crushed stone or gravel with a gradation consisting of 100 percent passing the 3-inch sieve, 30 to 70 percent passing the 1 1/2-inch sieve and 0 to 15 percent passing the No. 4 sieve.

Some stages of the north detention basin installation are reserved for Phase D – Final Stabilization, like the underdrain and sand-soil medium installation, to prevent clogging of the sand-soil medium by construction sediment. That said, appurtenances like the riprap aprons at the detention basin must be installed as soon as the basin is constructed according to the plans. The plans specify no other work can commence until basin has been installed and functional with exception of sanitary sewer relocations northeast of First Street and Nebraska Avenue (Sheet CG109-1). I did not see any information in the Stormwater Pollution Prevention Plan describing the departure from the specified erosion and sediment controls.

I saw an outlet structure for the sediment basin (Photo #12 and #21). The cross section of the outlet structure detail is on sheet “North BMP Details” (Sheet ID CG501-1). The 72” concrete outlet pipe of the sediment basin is attached to an eight foot by eight-foot modified junction box with eight foot wide by one foot high openings on four sides. The junction box is topped with a trash rack (Photo #21). I saw clear water flowing through the outlet structure (Photo #22).

I saw a skimmer surface drain attached to the outlet structure of the sediment basin (Photo #24). Floating outlets are typically used to promote withdrawal from the surface of the retained water and the least sediment laden water in the water column. The sheet North BMP Temporary Erosion Control says an 8"-orifice Faircloth skimmer (or approved equal) will be installed. Sheet "North erosion control – post construction" says to remove sediment build up from the basin and remove the skimmer from the outlet shown on sheet CG117-1 before installing the underdrains and sand-soil medium. I did not see the maintenance rope attached to the skimmer and secured to a stake on the side of the basin as described in the skimmer manual. The skimmer manual says improperly selected or installed rope may sink, be covered by sediment and act as an anchor to keep the skimmer from floating.

The manual for the Faircloth skimmers says "[s]ome sediment basin requirements may conflict with permanent detention basin standards; if this is the case the features needed to create an effective basin must be provided during construction. At the end of construction (when the drainage area is successfully stabilized) the basin is converted to the permanent configuration." The manual provides a brief list of requirements and components with details and explanations in the illustrations and appendix. The manual says a pit must be excavated in the basin below the skimmer to accommodate sediment that reaches the outlet end and settles around the skimmer. The pit under the skimmer should be below the invert of the outlet pipe the skimmer is attach to. There are deposits of sediment higher than the invert of the pipe (Photo #24). The skimmer manual uses a basin with baffles and says "[b]affles are necessary to keep sediment away from the skimmer and to limit resuspension of accumulated sediment; they are not optional." The maintenance manual says sediment removal is needed before the sediment accumulates up to the crest of the weir in the first baffle. Baffles are not installed (Photo #21). I saw sediment accumulating around the skimmer including a small mound of deposited sediment (Photo #24). Sediment accumulating around the skimmer is considered a problem according to the Faircloth skimmer manuals. Sediment accumulated around the skimmer can restrict skimmer movement. The skimmer sediment basin is not installed or maintained following the skimmer manual.

Lush, green vegetation covers about half of the basin floor. There is a low flow channel formed from the upper end of the basin to the outlet defined by changes in vegetation, standing water, and deposited sediment (Photo #21 and #24).

There is trash throughout the basin flow, including aluminum cans, water bottles, shredded foam pieces and other shredded trash and litter such as food wrappers (Photo #23). The size of the shredded trash and uniform distribution on the basin floor suggest that the trash and litter was mowed over.

Stockpiles

As mentioned above, there was an area of construction activity uphill of the outfall that did not drain to the sediment basin. This area did not have greater than 70% vegetation cover. Some of this area uphill of the outfall had been recently hydromulched. I asked Mark French and Kevin

Duffey why the broader area had not been hydromulched since there wasn't sufficient coverage. Kevin Duffey and Mark French explained that St. Roberts, Missouri had recently finished removing spoil stockpiles from the area through their cooperative agreement. As part of the agreement, St. Roberts was required to hydromulch the area where they removed stockpiles, but they were not required to mulch the surrounding area.

The main stockpile is on the land southeast of the intersection of First Avenue and Nebraska Avenue (Photo #4). The bulk of spoil is at this site. I saw established vegetation covering most of the stockpile and temporary filter sock on the contours. I saw exposed soil at the top of the hill suggesting recent activity, but I did not see any loading activities at this stockpile during the inspection. The view from the roadway looks like this stockpile is stabilized with erosion controls.

The soccer stockpile was the last stockpile formed. Fort Leonard Wood hospital replacement representatives referred to the East Fill Site as the soccer stockpile during the inspection due to its relative proximity to soccer fields. This stockpile is north of First Street with the temporary construction entrance on First Street. A receiving stream is visible at the base of the hill below this stockpile (Photo #28). The stream is approximately 75 feet from the construction boundary below the stockpile. This stockpile was actively being removed during the inspection (Photo #25). I saw heavy equipment for loading spoils into trucks. The area around the stockpiles slopes to the north (Photo #26) toward a receiving stream and to the east towards a receiving stream (Photo #27 and #28) and to the south to a ditch along First Avenue that then discharges to the same receiving stream to the east (Photo #34 and #35). Pre-construction plans show temporary compost filter sock surrounding the stockpile at the base and along the contours (Detail G1 See Sheet CG109-1). A single mulch berm was used in lieu of multiple filter socks. The Erosion Control Notes sections says that the plan represents the minimum erosion control required. Based on the plans, the side of the stockpile sloped to the stream would have four to five compost filter socks on the contours about every six feet. There were no filter socks surrounding or on the contour of this stockpile (Photo #28). There was a degraded mulch berm at the base of the hill with some sections washed out by previous stormwater flows and supplemented with rock checks (Photo #33). The rock checks at the base of the hill do not follow plan specifications for rock checks in the plan details (Sheet ID CG503-1).

Sheet CG109-1 inset G1 also shows A5 tree protection on the north edge of the East Fill Site. Tree Protection Detail (B1) shows construction fencing and compost filter sock "around entire outer perimeter of construction fence." The construction fencing I saw on the north side of the stockpile was degraded and falling down. I did not see compost filter socks as shown in the detailed site plans.

On the east slope of the stockpile there was at least one deep rill more than a foot deep; I could stand in the rill. (Photo #29 and #30). There is an area of deposited sediment at the base of the stockpile and the rill (Photo #31). At the construction activity limit there is the mulch berm and construction fencing (Photo #33). The construction fencing is degraded and laying down or not

fully attached to the posts. The mulch berm is grey and weathered. The mulch berm is degraded and missing in some places. Rocks from the spoil piles have been used to supplement areas that have been washed out in previous stormwater flows (Photo #28 and #33). I saw no sediment deposits beyond the construction boundary on the downhill side of this stockpile. On the south side of the stockpile is an open channel of mowed turf; this channel receives stormwater from the stockpile and loading area (Photo#34 and #35). I did not see temporary compost filter sock on this side of the stockpile as shown on the site drawings. Further downstream the swale there is a pile of rocks in the swale. The rocks do not cover the width of the channel and the pile of rocks does not meet the specifications of a rock ditch check in the site plans. Stockpiles are not contained, and materials can flow into the open channel towards the receiving stream without appropriate controls. I could see sediment affecting vegetation growth and sediment flow paths towards the receiving stream (Photo #34).

Building Construction Area

The building construction was in an advanced stage of the project. Representatives estimated that the project was around 80% complete; there was limited outdoor construction activities as more construction activities have shifted inside the buildings. I saw most inlets on First Street and Nebraska Avenue did not have inlet protection. Kevin Duffey said inlet protection had been removed recently. I did not see documentation on when operators removed the inlet protection. Site maps did not show areas where final stabilization had been achieved. Uphill from the inlets without protection are areas of active construction, disturbed land, or not fully stabilized land.

I saw track out of sediment and gravel from the construction area on the south side of the hospital replacement building onto Nebraska Avenue (Photo #37).

On the east side of Nebraska Avenue, I saw a construction staging and storage area (Photos #38, #40, and #42). Kevin Duffey said there was a three-foot mulch berm on the other side of the fence or downslope of the fence. I did not see the berm on the other side of the fence. This side of Nebraska Avenue slopes to drain to the south and east and would not flow towards the outfall. These areas drain down a hill towards a receiving stream to the east. Staged materials against the fence include:

- blocks,
- 55-gallon barrel of oil with dispenser,
- boards,
- pieces of pipe,
- geotextiles,
- 5-gallon bucket of CONSPEC AQUAFILM (an emulsion product for concrete work),
- metal forms,
- uncovered scrap metal dumpsters,
- stains on the ground from leaks or spills of oils,
- discarded glove, and
- litter.

On the ground around the stored materials there is accumulated debris, dust, and sediment (Photos #38, #40, and #42). In areas of the accumulated sediment, I saw rills and flow paths through the sediment showing that water flows east and under the fence (Photo #38). Screening makes it difficult to see any impacts on the other side of the fence, but I saw deposited sediment and debris beyond the fence line and migrating away from the construction site (Photos #39 and #41).

The area on the south side of the newly constructed building was an area still under construction (Photo #36). Concrete patios and walkways contained most of the disturbed ground in this area. In the disturbed areas I saw a small stockpile of dirt and some small piles of excess concrete and concrete washout on the ground (Photo #36).

There was an inlet south and west of the parking area surrounded by turf (Photo #43). I was told by MoDNR inspectors that this inlet does not drain to the sediment basin, and they were told that this is the only area that does not drain to the outfall. There was inlet protection at this inlet. The inlet protection was not properly installed, and I saw sediment undercutting the inlet protection (Photo #44).

I saw sediment in the conveyance under the parking lot entrance on Nebraska Avenue (Photo #45).

During site reconnaissance I saw unprotected inlets with a white flow path flowing from the construction site to the inlet (Photo #2). There is white dust on the ground of the construction site that matches and looks to be the potential source material (Photo #1).

After the site tour, I reviewed more documents associated with the Stormwater Pollution Prevention Plan. Kevin Duffey said that inspections were weekly and the SWPPP contractor completed weekly or biweekly inspections. Reviewing the inspections documents I saw inspection reports were highly generalized and did not provide sufficient detail on observations, deficiencies, or corrective action. The inspection documentation did not reflect the scope, size, or complexity of the project. Inspections did not identify deficiencies. Inspection reports did not identify corrective actions.

Inspection notes were highly generalized, often repeated, or the inspection document appears to be duplicated with few unique observations and updates. As an example, the December 21, 2022, inspection report does not make any observations of deficiencies or corrective actions. The Directorate of Public Works completed an inspection on December 21, 2022, and documented deficiencies. Another example, the January 19, 2023, inspection report does not make any observations of deficiencies or corrective actions. The Directorate of Public Works completed an inspection on January 19, 2023, and documented deficiencies. The site operator's inspection report for January 19, 2023, at 10:00 a.m. shows it is a post-storm event inspection but checks "no" that there has been a storm event since the last inspection and does not provide a storm start date or an approximate amount of precipitation. Directorate of Public

Works inspected the site at 1:00 p.m. on January 19, 2023, and documented 0.73 inches of rain for the previous 24 hours. I checked hourly precipitation data from the Waynesville Regional Airport Forney Field and that station recorded rain on January 18, 2023. A two-year, 24-hour storm event for the project area is 3.44 inches using the NOAA Atlas 14-point precipitation frequency estimates. Corrective actions in response to the Directorate of Public Works inspection was either not documented or not provided. Page two of the inspection report for non-effective BMPs and corrective action log is identical for inspections:

- 01/19/2023
- 02/02/2023
- 02/09/2023
- 02/16/2023

There is a single change on page two between the 02/16/2023 and the 02/24/2023 inspection with the addition of “site wide storage” under BMP location. Page two of the inspection report for non-effective BMPs and corrective action log is identical for inspections:

- 2/24/2023
- 3/3/2023
- 3/9/2023
- 3/16/2023
- 3/23/2023
- 3/30/2023
- 4/6/2023
- 4/13/2023
- 4/20/2023
- 4/27/2023
- 5/4/2023
- 5/11/2023
- 5/18/2023
- 5/25/2023
- 6/1/2023
- 6/8/2023
- 6/15/2023
- 6/22/2023
- 6/29/2023
- 7/6/2023

Stormwater Pollution Prevention Plan

The primary requirement of the permit is the development and implementation of a Stormwater Pollution Prevention Plan which includes site specific practices to best minimize the soil exposure, soil erosion, and the discharge of pollutants, including solids. During the on-site inspection there was a three-ring binder with the Stormwater Pollution Prevention Plan. The cover sheet for the plan available in the office trailer was dated 2020 for Permit # MORA16017. I asked the Fort Leonard Wood hospital replacement representative to send a copy of the updated SWPPP to the EPA.

On Friday, July 21, 2023, Kevin Duffey requested additional time to gather documents and respond to the Notice of Preliminary Findings. Documents were sent on Friday, August 4, 2023, in response to the Notice of Preliminary Findings:

- Response to NOPF (3 pages),
- Photo documentation of corrective actions (27 pages),
- Log of dates the SWPPP was amended (1 page),
- Copies of the permit cover sheets (3 pages),
- Erosion and Control Drawings (45 pages),
- Drawings – architect’s supplemental instructions #6 (7 pages),
- Drawing markups (6 pages), and
- SWPPP Inspection Reports (191 pages).

A complete Stormwater Pollution Prevention Plan was not provided to the EPA. I reviewed the submitted documents for meeting requirements of a SWPPP. I reviewed the erosion and sediment control drawings and site plans, notes on the construction site plans, and the other records listed above for meeting the requirements of a SWPPP. The submitted documents do not meet the minimum requirements of a SWPPP and the SWPPP is incomplete.

The SWPPP did not:

- List and describe the location of all outfalls (Permit §IV.3.(a)).
- List any allowable non-stormwater discharges occurring on site and where these discharges occur (Permit §IV.3.(b)).
- Discuss whether or not a 404 Permit is required for the project; (Permit §IV.3.(e)).
- Discuss whether the discharges are in the watershed of Outstanding National or State Resource Water or in the watershed of a water impaired for sediment (Permit §IV.3.(f)).
- Name the person(s) responsible for inspection, operation, and maintenance of BMPs. The SWPPP shall list the names and describe the role of all owners/primary operators (such as general contractor, project manager) responsible for environmental or sediment and erosion control at the land disturbance site (Permit §IV.3.(g)).
 - The site plan notes partially describe some SWPPP-related responsibilities for the Design Build contractor in the general notes, the erosion control notes and stormwater pollution procedures notes. These notes on the site plan do not list the names and roles of all operators nor describe all SWPPP responsibilities.
- Briefly describe the estimates of the total area expected to be disturbed by excavation, grading, or other land disturbance support activities (Permit §IV.4.(c)).
- Include a complete site map (Permit §IV.7.). The site map did not include:
 - Location of all waters within the site and half a mile downstream of the site's outfalls;
 - The map in photo #5 does show a tributary to Dry Creek for about half a mile downstream from the outfall. This map does not show all streams identified by the U.S. Geological Survey or the riverine wetlands identified in the National Wetland Inventory within a half mile of the outfall and tributary to Dry Creek.
 - Location of all outfalls;
 - Directions of stormwater flow
- Provide signed and dated amendments when requirements in permit section IV.9. like:
 - Location, design, operation, or maintenance of BMPs changed,
 - Inspections showed deficiencies in the SWPPP and BMPs, and
 - Observations showed the SWPPP was ineffective in minimizing or controlling erosion and sedimentation and there was visual evidence of excessive site erosion and sediment migrating offsite.
- A description of the mulch berms used on site in substitute for other controls, including a physical description of the BMP, site conditions that must be met for effective use of the BMP, BMP installation/construction procedures, typical drawings, operation and maintenance procedures, schedules, and phase and removal information (Permit §V.4).

The site plans do incorporate some of the required practices from the permit in the notes section (Permit IV.3.(c)). Site plans do incorporate sediment and erosion control practices specific to site conditions (Permit IV.3.(d)). The site plans briefly describe the function of the project, a hospital replacement project (Permit IV.4.(a)). The site plans do show a general sequence of activities that disturb soils at the site (Permit IV.4.(b)).

Other Observations

In aerial images from the State of Missouri dated March 13, 2022, heavy sediment loads are visible in the retention basin and downstream channel (see the base map in the photo location map included in attachment #2). The current permit did not begin until April 5, 2022. The March 13, 2022, aerial image shows the project was not effectively controlling sediment discharges. The previous permit expired February 7, 2022. The facility did not provide documentation to the EPA of permit coverage between February 8, 2022, and April 4, 2022. The ePermitting Certification and Signature Document shared by the Missouri Department of Natural Resource shows electronic certifications by "Springfield GNCV" on March 9, 2022, and certification by Kevin Duffey on April 5, 2022. Laura Grootens from the MoDNR Central Field Operations Office said that there were known issues with online ePermitting system around this time.

CONCLUSION

At the end of the onsite visual inspection, I discussed observations with the Hospital Replacement stakeholders including representatives from JE Dunn, U.S. Army Corps of Engineers, and Directorate of Public Works. Representatives from JE Dunn and the U.S. Army Corps of Engineers were not available to attend the exit meeting on the morning of July 13, 2023. I summarized the findings of the visual inspection with Directorate of Public Works Environmental Division during a closing conference on July 13, 2023. I issued a Notice of Preliminary Findings on July 13, 2023 (attachment #4) for the following findings:

- 1) Sediment deposits in stream downstream of final sediment basin and beyond construction boundary (Permit §III.3.(e), §V.6. and §V.9.).
- 2) BMPs at downgradient project boundary not installed (Permit §III.6 and §V.5.).
- 3) BMPs not maintained in effective operating condition (Permit §III.8).
- 4) Inlets, susceptible to receiving sediment, without protection (Permit §III.9.(e)).
- 5) Litter and trash on ground and accumulated in structural control (Permit §III.11.).
- 6) Provided SWPPP was last updated in 2020 (Permit §IV.1.(c) and §IV.8.).
- 7) Inspection reports are inadequate and do not include BMP observations or corrective action (Permit §IV.10., §IV.12., and §IV.13.).
- 8) Outfalls not identified on SWPPP map (Permit §IV.3. and §IV.7.).

The Notice of Preliminary Findings was signed as received by Kevin Duffey on July 13, 2023. A response to the Notice of Preliminary Findings was sent by Kevin Duffey on August 03, 2023.

The response includes corrective action and preventative actions to each item in the Notice of Preliminary Findings. Drawings were updated to show at least five outfalls.

Overall, the SWPPP controls were not well tracked or documented. The structural and nonstructural controls were not appropriate based on scope and sophistication of project, stage of project, ongoing disturbance and construction activities, requirements in site plan, and ease and simplicity of ongoing controls.

**CAITLIN
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Caitlin Dix
Physical Scientist, ECAD/WB

**NICOLE
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Nicole Moran
Section Chief, ECAD/WB/DWIS

ATTACHMENTS:

1. Photo log (37 pages)
2. Photo location maps (5 pages)
3. Missouri state operating permit (30 pages)
4. Notice of preliminary findings (1 page)
5. NOPF responses (283 pages)