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Project 014697

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Voluntary Cleanup Program Site Manager
Toxics Cleanup Program – Northwest Regional Office
Washington State Department of Ecology
3190 160th Ave. SE
Bellevue, WA 98008

Subject: Additional Monitoring Well Installation Work Plan
Former Kelly-Moore Manufacturing Facility
5400–5800 Airport Way South
Seattle, Washington

Dear Jing,

Wood Environment & Infrastructure Solutions, Inc., (Wood) has prepared this work plan on behalf of Kelly-Moore Paint Company, Inc. (Kelly-Moore), to install two new monitoring wells as part of conducting additional soil and groundwater investigations at the former Kelly Moore production facility located at 5400–5580 Airport Way South in Seattle, Washington. The purpose of the additional investigation is to determine concentrations of constituents of potential concern (COPCs) in groundwater east and southeast of known groundwater concentrations. These additional monitoring wells will also help to determine groundwater concentrations of COPCs during operation of the soil vapor extraction (SVE) system.

In 2016, five new monitoring wells were installed and soil and groundwater samples were collected and analyzed, as detailed in the June 2016 Additional Investigation Work Plan. Because of Ecology's request for further soil and groundwater characterization, two additional monitoring wells will be installed. The locations of proposed monitoring wells are shown on Figure 1. The actual locations of these monitoring wells may change slightly depending on locations of underground utilities and access agreements for installing the off-site monitoring well.

This letter describes the methods that will be used for well installation, including site preparation and well installation procedures. The horizontal position of the monitoring well locations will be surveyed by a professional surveyor. Horizontal survey data will be based on the horizontal Washington State Plane coordinate system.

The ground surface at each location will be surveyed for elevation. The groundwater monitoring wells will also be surveyed for elevation of the top-of-casing. Vertical survey data will be based on the North American Vertical Datum of 1988 (NAVD88). All survey data will be compatible with Environmental Information Management (EIM) submission requirements. The survey shall use practices that result in horizontal errors no greater than 0.10 foot.



Monitoring well construction and development

Construction

All drilling and well installation will be performed by a licensed well drilling contractor in compliance with Washington Administrative Code (WAC) 173-160 (Minimum Standards for Construction and Maintenance of Wells). Borings will be advanced by direct-push rig to obtain soil samples for lithologic logging.

The wells will be constructed using 2-inch-diameter, Schedule 40 flush-thread polyvinyl chloride (PVC) casing. All wells will be constructed using pre-packed well screens, in which the sand pack medium is held in place by a mesh screen secured to the outside of the well casing. After the boring has been logged, a "macro-core" 3.5-inch-diameter core casing will be driven back through the narrower direct-push boring to the total depth. The plug at the end of the core barrel will be removed, and the pre-pack well screen and well casing will be assembled and lowered into the core barrel.

Loose filter pack sand will be added slowly into the annulus as the core barrel is retracted. The filter pack sand is used to stabilize the well screen and casing as the core is removed. Once the loose filter pack is approximately 1 to 2 feet above the top of the prepack well screen, bentonite chips will be used to seal the boring. The bentonite chips will be hydrated after placement. The remaining portion of the boring will be filled with neat cement during installation of the flush-mount well monument.

For both monitoring wells, a 10-foot-long screen will be used unless the depth to any lower confining layer does not allow for it. Care will be taken to prevent any materials from entering the well during down-hole assembly. A well cap will be used to prevent materials from entering the well. All new wells will be completed with a locking cap and a flush-mounted well completion.

Development

Monitoring wells will be developed using a bailer and/or submersible pump combined with surging. The well will be surged for 5 minutes, after which two borehole volumes of water will be removed. Water quality parameters (temperature, pH, specific conductivity, dissolved oxygen [DO], oxidation reduction potential [ORP], and turbidity) of well development water will be measured and recorded, and another borehole volume of well water will be removed. Development will be considered complete when one of the following conditions is met:

1. The development water is free of sediment and turbidity compared to the beginning of development. If zero turbidity cannot be achieved, then a target of less than 10 nephelometric turbidity units (NTU) will be established.
2. Three consecutive measurements of all water quality parameters do not vary by more than 10 percent.
3. A maximum of five borehole volumes of water have been removed.

If parameters have not stabilized after five borehole volumes of water have been purged or the well runs dry, then well development will be considered complete. All well development water will be placed in containers and held on site pending analysis to determine the appropriate disposal method. The bottom of the well will be "sounded" to verify that fine material has been removed from the interior of the well casing.



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All well development field gear will be decontaminated before being used in subsequent wells. Baseline sampling will proceed in the new wells no sooner than 24 hours following well development.

Groundwater sampling

Groundwater will be sampled as described in the June 2016 Additional Investigation Work Plan. The groundwater samples will be collected during the dry-season sampling event which will take place in August or September 2019.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.



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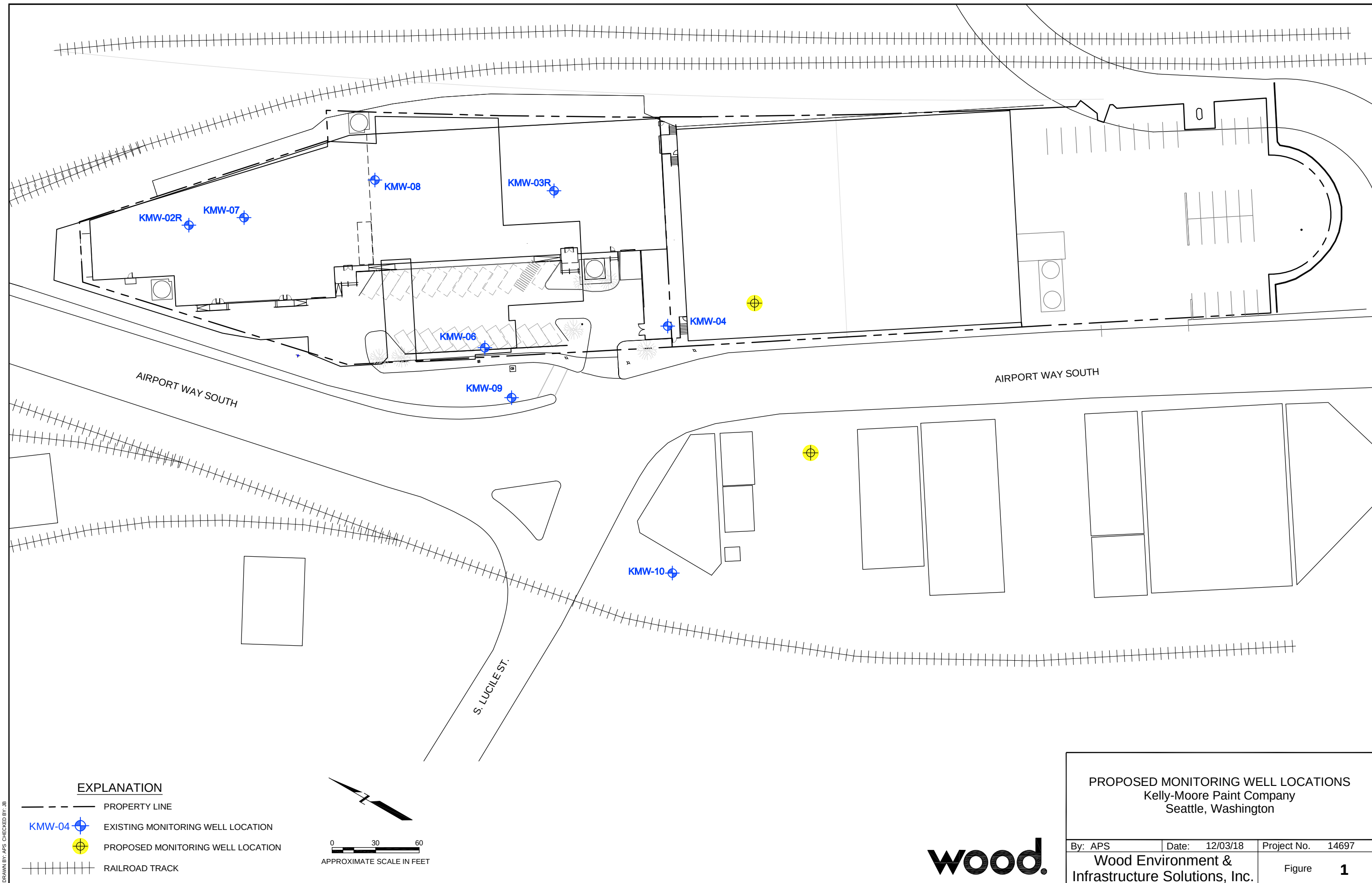
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Attachment: Figure 1. Proposed Monitoring Well Locations





DRAWN BY: APS CHECKED BY: JB

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