

**REQUEST FOR ADDITIONAL INFORMATION
REGARDING HONEYWELL METROPOLIS WORKS
LICENSE AMENDMENT REQUEST REPORT FOR CLOSURE OF SURFACE
IMPOUNDMENT PONDS B, C, D AND E, VOLUME 2**

The License Amendment Request Report (LARR) serves as the Decommissioning Plan for Honeywell's amendment request. The following requests for additional information (RAIs) pertain to Volume 2 of the LARR. The information requested in the RAIs is needed for the U.S. Nuclear Regulatory Commission's (NRC's) staff to determine compliance with the dose requirement for unrestricted use in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, Subpart E, and to assess the applicant's design of engineered barriers with respect to the guidance in NUREG-1757.

Liquefaction of Soil Unit 4

RAI 1

Section 3.6 of the LARR, Volume 2, describes the additional information needed to confirm the design conditions for liquefaction (prior to construction). The licensee specifically states that:

- "Further characterize the extent of potentially liquefiable soils in soil unit 4 by completing additional boreholes and/or cone penetrometer soundings near the pond berms.
- If warranted by the additional geotechnical data, perform additional slope displacement calculations to demonstrate compliance with the slope displacement criteria.

It is anticipated that these additional investigations and calculations will confirm that the 'partially liquefiable' condition for soil unit 4 is appropriate, with associated 'best estimate' seismic slope displacements. If this is—for some reason—not confirmed, either a subsurface improvement method would be specified to partially stabilize the potentially liquefiable soils; or the closure design would be refined to tolerate marginally larger displacements. For example, this could include localized grouting in portions of soil unit 4 around the perimeters of the pond berms."

The staff is concerned about how liquefaction of soil unit 4 could negatively affect the stability of the erosion protection system. Thus, the staff requests the licensee to explain when and where the new borings will be drilled.

Design Flow

RAI 2

Section 5.4.4 of the LARR, Volume 2, describes the calculation of design flow based on the 100-year, 24-hour event, and estimation of probable maximum precipitation (PMP) flow. In order for the staff to evaluate the acceptability of design flow calculated for this site, the staff requests the licensee explain the following:

- 1) Why Hydrometeorological Report (HMR) 51 was used for calculating the PMP instead of HMR-52, which is applicable to smaller drainage areas and smaller durations; and

- 2) What method was used to calculate the time of concentration? Given the D_{50} sizes obtained for the rip rap in the ditches (interior and exterior) has the licensee considered recalculation of the PMP using a shorter time of concentration interval?

RAI 3

Table 5-4 of the LARR, Volume 2, summarizes the rip rap sizing. In its description of the results presented in Table 5-4, the licensee states that: "The interior berm and exterior perimeter ditch rip rap sizes based on the 100-year, 24-hour storm and a SF of 1.5 are unreasonably large (Table 5-4). For example, the D_{50} rip rap size based on the 100-year event is larger than the calculated maximum flow depth in the ditches. The PMP is the storm event for which there is essentially no risk of exceedence at any recurrence interval; therefore, the rip rap sizing derived from the PMP as listed in Table 5-4 is considered sufficient to manage all storms at the site and is therefore used as the design basis for rip rap sizing." The staff needs the following information to determine the acceptability of the rip rap design:

- 1) Please explain why the D_{50} values calculated for the interior and exterior ditches using the 100-year event are greater than the D_{50} calculated for PMP.
- 2) Please explain why the rip rap's thickness value presented in Figure C-7 (18 inches) is not the same as the values listed in Table 5-4 (8 to 39 inches).
- 3) Please provide the Quality Assurance/Quality Control procedures for rip rap placement (thickness, gradation, uniformity, etc.) in accordance with guidance in NUREG-1623.

RAI 4

In Section 5.4.4 of the LARR, Volume 2, the licensee states that: "In the event of a PMP, the drainage system designed for the pond closure system would be quickly flooded. Stormwater would overtop the interior common berm ditch crests and back up flow over the 4 percent vegetated top slopes prior to natural relief over the berm side slope rip rap. Stormwater would also overtop the berm perimeter ditches and flow into the nearby drainages. Runoff from the PMP would be expected to primarily flow overland to discharge points (DPs) 1, 2, and 3, and eventually offsite through the natural drainage ravines to the Ohio River."

"Even though the PMP event would flood the drainage system, it would not be expected to cause permanent damage to the drainage features nor exposure of the stabilized CaF_2 material. As described below, rip rap on the berm side slopes and ditches is sized to withstand the PMP event."

The following information is needed in order for the staff to evaluate the stability of the proposed erosion protection system:

- 1) What is meant by "permanent damage?"
- 2) Describe the damage to the drainage features that is expected from the PMP event.
- 3) Explain how the design accounts for sediment accumulation at the toe of the slopes, inside the ditches.

- 4) Explain the basis for proposing a V-shape for the ditches considering the difficulty in placement of rock and possible sediment accumulation.
- 5) Explain the basis for choosing 4 percent, top-vegetated slopes. Was wind erosion considered in the design of the vegetated cover?
- 6) Was the probable maximum flow (PMF) for the Ohio River calculated? How would this PMF value affect the erosion protection design?
- 7) Provide additional details on the design of the discharge points.