

NEMO EDB WASTE DETERMINATION RATIONALE & ASSOCIATED COST

Continued operation of the groundwater treatment system that uses granular, activated carbon (GAC) – filled treatment vessels for EDB removal at the Nemo WC site requires that the USFS complete a waste determination based on RCRA in order to properly manage spent GAC media.

This document lays out the RCRA rationale for such waste determination, as well as providing information regarding vendors and costs from the USFS experience at Woodland Park WC EDB site (where GAC treatment is also being used to remove EDB).

STEP 1: Does this waste exhibit any HW characteristics? Spent GAC is not expected to exhibit any hazardous waste characteristics, including toxicity due to the large volume of GAC, minute volume of EDB, and the strong adsorption of EDB to the GAC media.

STEP 2: Is EDB a listed hazardous waste? EDB is a listed hazardous waste (U-listed, U067), but this listing applies only if the EDB was disposed of in an unused state. As we know from the historical site documentation of interviews, the EDB that the USFS used was mixed with water or diesel fuel before its use as a spray to kill pine beetles. During this mixing and when sprayers were washed out at the end of the spray job, EDB mixtures were discarded to the ground. Additionally, despite repeated attempts, the USFS has been unable to locate any EDB-drum burial at the NEMO site – the USFS did not discard unused EDB (residual in drums) directly. Therefore, based on operational history knowledge, we know that this waste is not a listed waste, as it does not satisfy the definition for listing.

CONCLUSION: Therefore, the GAC is not a hazardous waste, and can be managed as either a solid waste, or as a material that will be recycled. I recommend that this material be recycled via a GAC “regeneration” process (whereby the chemicals adsorbed to the GAC are driven off, & the GAC surfaces are again available for adsorption). In addition to being a more-environmentally-friendly/sustainable approach than disposal as solid waste, this recycling option is less expensive than disposal and replacement. The GAC at the USFS Woodland Park WC EDB site is recycled.

Companies in Casper and Gillette, WY, Rapid, SD, and Denver, CO metropolitan area provide water treatment vessel maintenance services, including media replacement & disposal.

The approach taken at our Woodland Park system (by various companies) has been consistent, where the company makes a single trip to remove spent carbon, re-charge the vessel with new/regenerated carbon, & removes the spent carbon for recycle/disposal. Denver, CO front-range companies that have provided this service at Woodland Park include: M&M Tank, Baker Corp., and Stonehand Industries. Culligan, a national water-treatment company, can also provide this service.

Recent cost for removal, recycle/disposal, & replacement (including transportation from Denver, Co to Woodland Park, CO) of GAC media cost about \$16,000 for 6,000 lbs. (estimate \$2.50 \$3.00/lb at this quantity).