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Date: July 10, 2001
Refer to: ER2001-0566

JUL 2001 RECEIVED

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

SUBJECT: SUBMITTAL OF SUPPLEMENTAL INFORMATION IN SUPPORT OF THE JUNE 2000 PERMIT MODIFICATION REQUEST (LA-UR-00-2265)

Dear Mr. Young:

Enclosed please find three copies each of the two revised ecological sections of the Environmental Restoration (ER) Project report entitled "RFI Report for Potential Release Sites in the Eastern and Western Aggregates at Technical Area 6" (LA-UR-98-3710). As per your instructions, the revised portions of this report are for the Western Aggregate only and consist of the ecological risk screening assessment portion of Chapter 3 (section 3.4.2.2) and sections 2.0 through 2.2 of Appendix F.

The revised portions of this document, inadvertently omitted from the Permit Modification Request (LA-UR-00-2265) for nine Solid Waste Management Units (SWMUs) submitted to your office in June of 2000, support the permit modification request for SWMU 06-003(g) (located in the Western Aggregate at TA-6).

Please call Dave McInroy at (505) 667-0819 should you have any questions.

Sincerely,

Julie A. Canepa, Program Manager
Environmental Restoration Project
Los Alamos National Laboratory

Sincerely,

for Mat Johansen, Project Manager
Department of Energy
Los Alamos Area Office

JC/TT/LN/ev

Enclosures: 1) Section 3.4.2.2 Ecological risk screening assessment for the Western Aggregate
2) Sections 2.0 through 2.2 Appendix F

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3.4.2.2 Ecological

The ecological risk screening assessment process is described in Ryti et al. (1999, 64783). It consists of four parts: (1) the scoping evaluation, (2) the screening evaluation, (3) the uncertainty analysis, and (4) the interpretation section.

The scoping evaluation includes: (1) evaluating the PRS for its biotic associations, including T&E species association, (2) evaluating the PRS for the nature of suspected contamination and mechanisms of contaminant transport onto or away from the site, (3) evaluating the PRS for aggregation with neighboring PRSs due to process knowledge and/or geographical associations, (4) the data assessment step, which identifies the list of COPCs for the PRS, (5) evaluating the ecological conceptual site model for the specific PRSs under investigation, and (6) evaluating the level of concern from potential persistent bioaccumulators and biomagnifiers identified at the PRSs. The basis for the PRS-specific ecological problem formulation is found in the scoping checklist, which is included as Appendix F-2.1. The scoping checklist is a useful tool for organizing existing ecological information and focusing information needed to develop the site conceptual model. The scoping checklist also provides the basis for evaluating the adequacy of the data for ecological risk screening.

The screening evaluation [Section 2.4.2.2(b)] includes calculating hazard quotients (HQs) and hazard indices (HIs) for all COPCs. The HQs and HIs are used to assess whether COPCs should be carried forward to an uncertainty analysis, Section 2.4.2.2(c), as chemicals of potential ecological concern (COPECs), and/or retained as COPECs for further evaluation in the interpretation section, Section 2.4.2.2(d). Details of the HI/HQ calculations, as well as their interpretations, are left to Section 2.4.2.2(b) and Appendix F-2.2.

An uncertainty analysis follows the COPEC identification. This analysis describes the key sources of uncertainty in the screening assessment, and might include information on sampling processes, analytical data quality, and assessment of COPECs in terms of their fate in the natural environment and their relevance with respect to receptors and biotic processes. The uncertainty analysis can result in adding chemical constituents to, or removing them from, the list of COPECs.

Following the uncertainty analysis, the results of the screening assessment are interpreted and discussed in the context of a risk management decision. This discussion may draw on information from process knowledge of the PRS and from information derived from ecological scoping in order to evaluate the relevance of COPEC data in the context of biotic associations involving the PRS. Possible decisions include a recommendation of the appropriate corrective action or best management practice to address ecological concerns. Actions may include ecological NFA, VCA, VCM, and CMS. Recommendations will be incorporated into an integrated risk management decision to include human health risk evaluations, ground and surface water issues, and other applicable regulations.

(a) Scoping

The following scoping and screening evaluations are for PRSs C-06-003, C-06-007, C-06-008, C-06-009, C-06-010, C-06-011, C-06-012, C-06-013, C-06-014, C-06-015, C-06-017, C-06-018, C-06-021, and PRS 6-003(g). This group of PRSs has been designated as the Western Aggregate and is considered to be a single unit based on geographical proximity and process history. The process history of PRS 6-003(g) is more involved than that for the rest of the Western Aggregate. This is described in detail in LANL (1997, 56664). The bulk of the Western Aggregate consists of magazines and small building structures used to store HE (see Section 3.2). However, PRS 6-003(g) was used for a short time as a primacord test pad for detonator timing experiments prior to construction of structure TA-6-10 over the pad. The ecological

scoping checklist for the Western Aggregate PRSs is found in Appendix F-2.1. Information from this checklist is summarized in the sections below.

Biotic Associations

The Western Aggregate lies on a mesa top with a relatively flat topographic grade that drains into Tributary B, a branch of the Pajarito Canyon drainage. This area can be characterized as mixed grassland and ponderosa pine forest and was farmland prior to Laboratory control. The area appears to be undergoing natural plant succession from a predominantly grassland community to a predominantly ponderosa pine community. Since the removal of storage bunkers and building structures in 1960, the area has remained largely undisturbed, as indicated by trees that seem to be greater than 25 years of age.

The Western Aggregate is replete with elk and deer sign, as well as fossorial mammal sign. The area is supportive of a typical biotic community for the mesa tops of the Los Alamos area of the Pajarito Plateau, because the plant structural horizon is well developed. Soils over the site are well developed and humic, typical of grassland soils of the area. There have been no formal biotic surveys of TA-6; however, there have been biotic surveys of similar areas at the Laboratory, for instance, TA-16, that provide an adequate review of the flora and fauna likely to be found in the area (Raymer 1996, 59186).

The Western Aggregate is not in the core or buffer areas of the Mexican spotted owl, bald eagle, peregrine falcon, or southwestern willow fly catcher. There is no evident habitat for any other species of special concern in the area (ESH 1996, 59384). Wetlands habitat, approximately 1/4 mile to the south of the Western Aggregate, is in the core area of the Mexican spotted owl and might be suitable habitat for the New Mexico meadow jumping mouse.

Potential Contamination Effects on Biotic Media

The Western Aggregate structures were either burned or removed from the area around 1960 (see Section 3.2.2). The former structures and sites were potentially contaminated with HE and organic chemicals as major contaminants from past HE storage processing and detonator development operations. Some metals were also potentially present and may have been released from unspecified operations and/or D&D activities. Radiological constituents were not historically associated with the operations in the Western Aggregate and, therefore, were not included in the characterization of most of the site. However, cesium-137, strontium-90, and isotopic uranium were analyzed for during the 1994 investigation of PRS 6-003(g) as part of the group of analytical suites designated for characterization of the site and not because of any potential operational release.

Aerial photographs (circa 1948) of the Western Aggregate indicate that the area was largely devoid of trees and that a dirt surface road was constructed around a cluster of small structures for access. Approximately 1/4 mile to the south of the structures, in the natural drainage that separates the Western Aggregate from TA-22 facilities, historical aerial photographs show insignificant vegetative development, implying that the present-day wetlands are a post-Laboratory establishment (Figure 3.4-2). East of the aggregate there appears to have been forest with substantial canopy development. This forest, however, was not present over the area of the Western Aggregate at the time that photographs were taken.

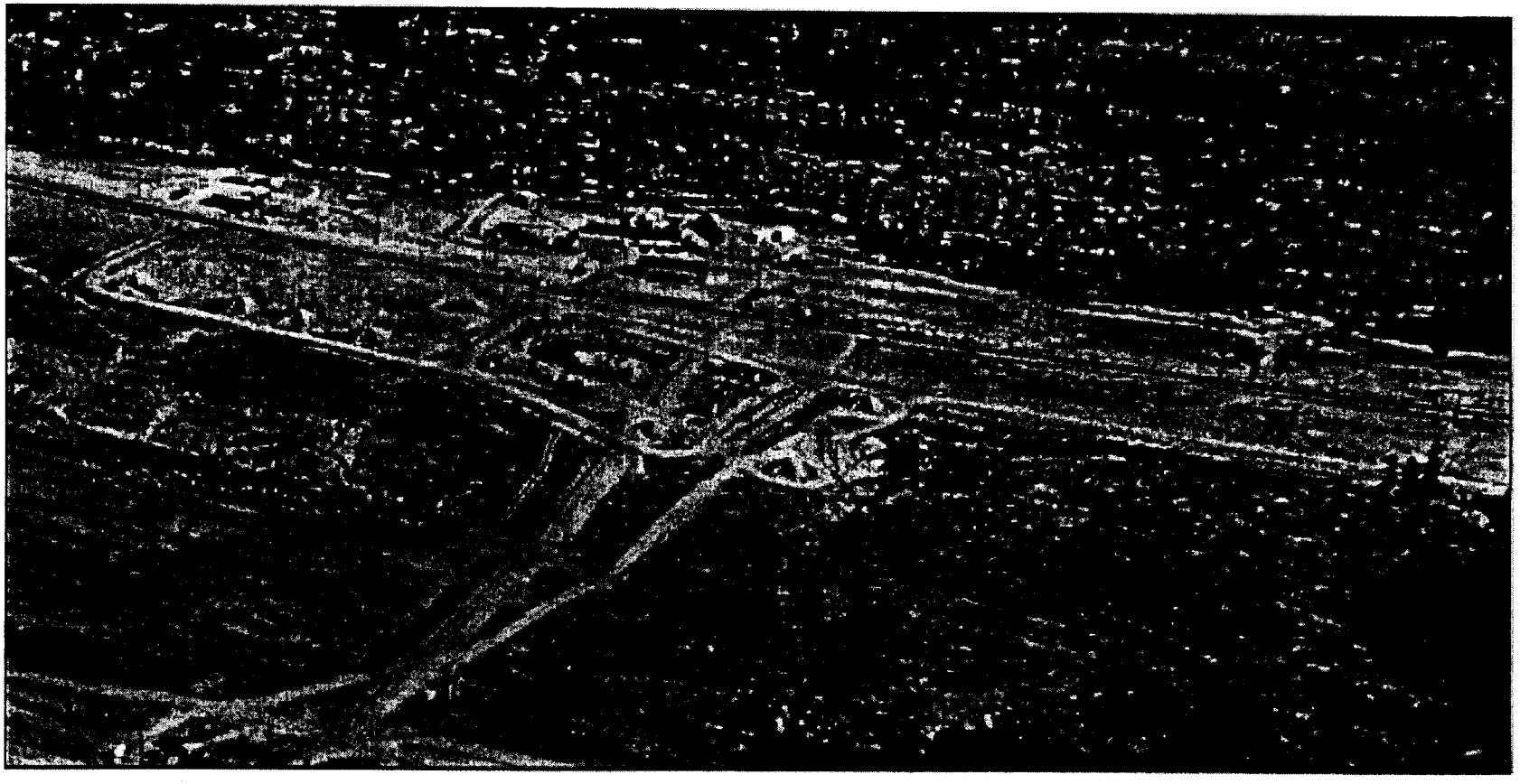

Figure 3.4-2. Aerial photograph of TA-6 (1950).

As observed and documented during the site field-scoping visits, the current ecological condition of the Western Aggregate does not indicate any biotic effects from residual contamination. Additionally, there is no overt evidence that the PRSs have had any effect on wetlands species downgradient of the site and it does not appear that surface or subsurface water transport are viable pathways to receptors in wetlands habitats. There is no evidence of ecological disturbance within the Western Aggregate. The only physical disturbances remaining are the footprints of former structures. PRS 6-003(g) was initially described as vegetated to a lesser degree than the area immediately surrounding it following the April 27, 1998 site visit. However, an April 26, 2001 site visit found that the area contains nominally the same substantial vegetative cover as the surrounding PRSs and the intervening areas (see memo from Kirby Olson with NMED as part of ecological scoping checklist in Appendix F). Figures 3.4-3 and 3.4-4 document the conditions of PRS 6-003(g) as of May 2001. Much of the area is covered with tufts of grass and also has two small ponderosa pine seedlings growing within the PRS boundary. Juniper trees *(Juniperus sp.)* occupy the northern and southern ends of the building footprint and herbaceous annuals are also present. The soil at one end of the foundation has a slightly darker color than the surrounding soil but show no visible signs of contamination such as oiliness, odor, or a sooty appearance as initially described. The slightly darker soil is located at the base of a juniper tree that was partially burned during the Cerro Grande fire and may be the reason for the darker color. This PRS was also reseeded by the Laboratory two years ago so the vegetation that has become established may be due in part to this latter activity. In either case, the area does not currently display any visible ecological effects. Other PRSs in the Western Aggregate are vegetated identically to their surroundings and also show no sign of disturbance or effects.

Off-site transport pathways for potential contaminants are limited. There is little evidence of surface water flow away from the Western Aggregate. Surrounding the aggregate is a low road berm that has a bordering ditch. This ditch has an exit on the south side of the aggregate. There are no signs in the ditch that significant quantities of water have flowed in recent times; i.e., there is very little erosion of the ditch or its embankments and it is filled with vegetation. It appears that most surface water, even during heavy rainfall and snow melt events, percolates downward into the soil. Transport of some contaminants by wind might have occurred at the time that structures were burned or razed; however, at the present time the vegetative development is such that wind transport from the area is highly unlikely.

PRS Aggregation for Ecological Evaluation

The PRSs of the Western Aggregate are naturally associated geographically and by the nature of historic Laboratory activities. Biotically, the Western Aggregate forms a natural extension of the vegetative continuum found on the mesa top to the east. There are no geographical barriers, natural or man-made, that separate the Western Aggregate from other biotic communities on the mesa on which it resides. Immediately to the north of the Western Aggregate is a road that influences the natural drainage patterns of the mesa top and likely slows natural succession of vegetation across the mesa top. The aforementioned road might influence animal movement; however, it is unlikely that this road inhibits animal populations to any significant extent. PRSs on the north side of the road are isolated geographically by drainage patterns, generally draining to the north side of the mesa. Thus, the Western Aggregate forms a reasonably natural aggregation of PRSs for consideration of ecological effects.

COPC Identification

COPCs are identified in Section 3.3 of the RFI report. Full suite analyses were performed in 1995 at all PRSs, except PRS 06-003(g), for HE, TAL metals, and VOCs. Analyses were prescribed in accordance with the conceptual site model (see Sections 3.3.3 and 3.3.5 of RFI report). Because the original data did not adequately address the nature and extent of contamination at the Western Aggregate, an additional sampling campaign was launched in 1998 to fill the data gaps (see Section 3.3.4 of the RFI report). PRS 6-003(g) was sampled in 1994 for metals, VOCs, HE, and limited radionuclides, and again in 1997 for