

October 25, 2000

Dr. H. Larry McKague, Manager
Geology/Geophysics Program Element
Center for Nuclear Waste Regulatory Analyses
6220 Culebra Road, Building 189
San Antonio, Texas 78238-5166

SUBJECT: ACCEPTANCE OF "PRELIMINARY HYDROSTRATIGRAPHY OF THE VALLEY-FILL AQUIFER IN FORTY MILE WASH AND THE AMARGOSA DESERT"
(INTERMEDIATE MILESTONE 20.01402.471.060)

Dear Dr. McKague:

I received the report "Preliminary Hydrostratigraphy of the Valley-Fill Aquifer in Fortymile Wash and the Amargosa Desert" by T.R. Ressler, J.A. Stamatakos, K.D., Ridgway and J. Winterle (IM 20.01402.471.060) on October 3, 2000. You sent it to me by letter dated September 28, 2000 via overnight mail guaranteed to be delivered on September 29, 2000, the due date. You traced the delayed package and determined that the Fedex Company's records showed it to have erred in its pickup and delivery. Because this mitigating circumstance caused no disruption to our program or to my commitment as the responsible reviewer, there are no repercussions for the delayed delivery. It will not be considered late.

The subject report emanated from the Structural Effects on Groundwater Flow Working Group which began in 1998. At one of its meetings it was agreed that the Structural Deformation and Seismicity KTI (John Stamatakos, Principal Investigator) would conduct a joint project (with USFIC KTI) that would have as its objectives investigations of valley-fill deposits at Fortymile Wash to: (1) delineate sedimentary structure in the surface alluvium; (2) determine if the alluvium can be used as an analog of the alluvium in the saturated zone (SZ); (3) estimate values for the hydraulic properties and the distribution of these hydraulic properties within the alluvium; and (4) develop a 3D conceptual model of the stratigraphic and structural framework. The subject of the report is a work in progress. The report describes preliminary results of investigations, specifically: (1) field observations regarding the sediment types comprising the valley-fill deposits of Fortymile Wash; (2) the subdivision of the valley-fill deposits into lithofacies; (3) the interpreted depositional processes responsible for the different facies; (4) the distribution of the facies within Fortymile Wash; (5) permeability estimates for sediment samples from various facies; and (6) surface to subsurface comparisons of the valley-fill deposits. Some sections of the report are incomplete and future results of investigations will be reported. However, plans have not been completed, flexibility exists, and continued activity on this subject has been budgeted for FY2001.

The subject report has been reviewed for programmatic and technical adequacy, and is acceptable. It fulfills the requirements of the Center FY2000 Operations Plans. We suggest that the report be modified in several ways: (1) address explicitly how each of the objectives

have been or are expected to be met; (2) avoid giving the impression that NRC (or DOE) needs to conduct very detailed in situ measurements of individual facies in alluvium, or, alternatively, explain more clearly why (a) "...more rigorous permeability sampling is needed to assign hydraulic properties to individual facies and to understand the variations in permeability between facies." and (b) "...(one may need to) collect actual in situ measurements of permeability in the field using an air minipermeameter." The staff has stated that what is needed is large-scale hydraulic testing of permeability. With such modifications, the report may be placed in the Public Document Room, with the figure-format as is, or, as proposed by the Center. We have no concerns about the technical work performed so far. The authors are commended on their clearly and systematically documented contribution to the otherwise limited body of knowledge of what the little-known valley-fill medium- to coarse-grained hydrostratigraphic unit is like (by analogy).

The insights into the attributes of valley-fill derived from this study, for example, the variability of permeability values within two orders of magnitude, need to be discussed by the joint USFIC-SDS working group. In addition to such insights, we would want the joint working group to take stock of the developments in understanding valley-fill deposits recovered by the Nye County drilling operations (including clay deposits, for example), and developments in process and performance modeling of valley-fill by both DOE and NRC. Moreover, the joint working group may want to modify the current plan in light of discussions with DOE next week concerning resolution of saturated zone flow and transport issues. The joint working group will be reconvened (probably November, 2000) to further develop the objectives of the FY2001 work. Though not a requirement for acceptance of this preliminary report, I will recommend to the working group that Mr. Ressler and others brief the DOE and interested parties in the field about the findings and potential significance of this work. I am sending separately, Mr. Hamdan's comments on this report and his recommendations for future work or redirection; Mr. Coleman's comments have been sent.

The report was reviewed by Latif Hamdan, Neil Coleman and me. If you have any questions on the review, please contact me by phone at 301-415-6745, or by e-mail at psj@nrc.gov.

Sincerely,

/RA/

Philip S. Justus
GLGP Program Element Manager
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

cc: J. Linehan
B. Meehan
B. Caudle

have been or are expected to be met; (2) avoid giving the impression that NRC (or DOE) needs to conduct very detailed in situ measurements of individual facies in alluvium, or, alternatively, explain more clearly why (a) "...more rigorous permeability sampling is needed to assign hydraulic properties to individual facies and to understand the variations in permeability between facies." and (b) "...(one may need to) collect actual in situ measurements of permeability in the field using an air minipermeameter." The staff has stated that what is needed is large-scale hydraulic testing of permeability. With such modifications, the report may be placed in the Public Document Room, with the figure-format as is, or, as proposed by the Center. We have no concerns about the technical work performed so far. The authors are commended on their clearly and systematically documented contribution to the otherwise limited body of knowledge of what the little-known valley-fill medium- to coarse-grained hydrostratigraphic unit is like (by analogy).

The insights into the attributes of valley-fill derived from this study, for example, the variability of permeability values within two orders of magnitude, need to be discussed by the joint USFIC-SDS working group. In addition to such insights, we would want the joint working group to take stock of the developments in understanding valley-fill deposits recovered by the Nye County drilling operations (including clay deposits, for example), and developments in process and performance modeling of valley-fill by both DOE and NRC. Moreover, the joint working group may want to modify the current plan in light of discussions with DOE next week concerning resolution of saturated zone flow and transport issues. The joint working group will be reconvened (probably November, 2000) to further develop the objectives of the FY2001 work. Though not a requirement for acceptance of this preliminary report, I will recommend to the working group that Mr. Ressler and others brief the DOE and interested parties in the field about the findings and potential significance of this work. I am sending separately, Mr. Hamdan's comments on this report and his recommendations for future work or redirection; Mr. Coleman's comments have been sent.

The report was reviewed by Latif Hamdan, Neil Coleman and me. If you have any questions on the review, please contact me by phone at 301-415-6745, or by e-mail at psj@nrc.gov.

Sincerely,

Philip S. Justus
 GLGP Program Element Manager
 High-Level Waste Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

cc: J. Linehan
 B. Meehan
 B. Caudle

DISTRIBUTION: File Center
 PUBLIC HLWB r/f
 Dr. McKague DDeMarco
 DEsh TMcCartin
 ADAMS Accession No.: ML003762729
 TICKET No.: C2000 0168

NMSS r/f
 CWReamer
 LGilbert
 JWinterle

DWM r/f CNWRA
 KStablein JGreeves
 EWhitt SWastler
 RCodell JStamatakis
 HArtt

OFC	HLWB		HLWB		HLWB		HLWB	
NAME	PJustus/vlm		NColeman		LHamdan		DBrooks	
DATE	10/25/00		10/25/00		10/25/00		10/25/00	

OFFICIAL RECORD COPY

- ACNW: YES ___ NO Delete file after distribution: YES ___ NO
- 1) This document should be made available to the PUBLIC. ___
 - 2) This document is related to the HLWB program. It should not be placed in the LSS.