Technical Data Information Report

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Document Title/Subject

EWDP Manual Water Level Measurements from December 1, 2008 through December 31, 2010.

Data Originator/Preparer

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Data Description

EWDP Manual Water Level Measurements from December 1, 2008 through December 31, 2010. Data package includes Nye County's Regional Groundwater Elevation Database (RGED V. 4.0_031711.mdb) containing Early Warning Drilling Program (EWDP) manual water level measurements, from December 1, 2008 through December 31, 2010, field forms, hydrographs (available upon request) and exported data from database: "Export EWDP QA Data 1210.xlsx" (posted to the nyecounty.com website as "rid7904.xlsx").

Data Collection Method

NWRPO calibrated electric water level sounders in accordance with, Technical Procedure TP-9.9 Revision 4, Measurement of Groundwater Levels Using Electric Sounders, dated 8/6/09.

Data Collection Location

EWDP Wells: 1DX Shallow, 1DX deep, 2DB recompleted 7/08, 3D, 4PA, 4PB, 5SB, 7S, 10P shallow, 10P deep, 12PA, 12PB, 12PC, 13P, 15P, 16P, 18P, 19P, 22PA Shallow, 22PA deep, 22PB shallow, 22PB deep, 22PC shallow, 22PC deep, 22S-Z2, 23P shallow, 23P deep, 24P, 24PB, 27P, 28P, 29P, 32P shallow, 32P intermediate, 32P deep, 33P shallow, 33P intermediate, 33P deep, and Washburn-1X deep.

Data Collection Period

12/1/2008-12/31/2010

Data Sources

1) Department of Energy (DOE) Management and Operating Contractor (M&O) derived latitude and longitude for well location and elevation data for well pad elevation; 2) Depth to groundwater measured with electric water level sounders as recorded either in the Scientific Notebook (SNB) dedicated to each well, EWDP Groundwater Level SNB # 144, EWDP Westbay Instrumented Wells SNB #177, Site 22 Tracer Test SNBs # 166 and #181, and/or on the NWRPO Water Level Measurement Field Form (Form TP-9.9-1 Rev 1, dated 8/6/09); 3) NWRPO approved Well Completion Diagrams for each EWDP well casing type, diameter, and measuring point stickup (as established with engineers steel tape and recorded in Scientific Notebook.
Supporting Data: Metadata fro prior submittals of manual water level measurement sin EWDP wells (RIDs 6360, 6631, 7044, 7122 and 7618).

Data Censoring

Water level measurements in well 19PB, from both the shallow and deep piezometer strings, in the recompleted well (2/06) indicate that there is a hydraulic connection between these two zones. The heads in both zones are identical appear to nearly represent the upper zone head. Details of the problems associated with this completion can be found in RID 7134, "NC-EWDP-19PB field "as-built" Well Recompletion and Well head Protection Diagrams." All data from wells 19PB Deep-recompleted-2/06, and 19PB Shallow-recompleted 2/06 have been censored.
2DB recompleted 7/08-Measurement of 299.81 on 5/13/09 at 16:27 hrs was censored. This measurement was found to be a singularity, and not substantiated by later measurements of backup data.

Data Processing

Routinely, data processing consist of calculations made in the Microsoft Access database (RGED v.4.0_031711.mdb) and exports made from the database to Microsoft Excel. Additionally, data are evaluated through the use of hydrographs to determine whether anomalous data exist. Anomalous data are investigated (through scientific notebooks, earthquake records, etc.) to determine the source of the anomaly. If the anomaly cannot be explained, the data are censored.

Data Limitations

The water level elevations presented must be considered approximate because of the potential error in the GPS-based elevation of the land surface at the well site which is believed to be on the order of +/- 1.75 ft. according to work performed by the Center for Nuclear Waste Regulatory Analyses. The

potential error in the GPS-based elevations does not affect the depth to water nor the absolute change in water levels over time that may be calculated using the elevation datum for land surface. The potential error may, however, result in limitations in the use of these data for the calculation of hydraulic gradients between wells with the error induced in such calculations being inversely proportional to the distance between the two wells being used to perform the calculation.
Water level measurements in well 2DB recompleted 7/08, may not represent water levels of the Paleozoic carbonate aquifer completion as expected. Problems encountered after the completion of the piezometer in the Paleozoic carbonate, primarily clay swelling and/or caving of the open hole completion, likely have isolated the production casing from the aquifer. See RID 7559 for more details.
Water levels in wells 4PA and 4PB may have been affected by the drilling of wells 4PC –abandoned (6/2/08 – 7/10/08), and were affected by the drilling of well 4PD (7/12/08 – 5/5/10), and by pump tests conducted on 4PD (8/30/10 – 9/24/10 at approximately 150 GPM). These wells are all located on the same site and are within approximately 50 ft of each other. See 4PC SNB #151, 4PD SNBs #182, #183, and #186, and SNB #174 for additional information. The DRI-AEA Deep Well Sampler was removed from 4PA on 1/23/09, see SNB #186, p.9, and http://www.dri.edu/images/stories/editors/cermeditor/deep_well_sampling.pdf.
Water levels in well 15P may have been affected by well development (air lifting) (4/20/09 – 4/27/09, at approximately 1 GPM). See Misc. Short-Term Projects SNB #165.
Water levels in wells 22PA Deep, 22PA Shallow, 22PB Deep, 22PB Shallow, 22PC Deep, and 22PC Shallow may have been affected by pump tests conducted on 22S-Z2 (9/9/09 at approximately 42 GPM, and 10/7/09 – 11/16/09 at approximately 33 GPM). These wells are all located on the same site and are within approximately 50 ft of each other. See 22 Site Tracer Test SNB #181.
Water level measurements in well 32P shallow piezometer may be impacted by the presence of polymer-based drilling fluids. These drilling fluids were used in the drilling of the now abandoned USW VA-3 borehole, which was situated approximately 50 feet south of 32P. The borehole was drilled by a Department of Energy contractor, under the Probabilistic Volcanic Hazard Analysis program for the Yucca Mountain project, on magnetic anomaly “g”, with a modified conventional circulation system utilizing Baroid EZ Mud polymer.
Water level measurements in well 33P shallow piezometer may be impacted by the presence of polymer-based drilling fluids. The initial borehole for well NC-EWDP-33P was drilled by Department of Energy contractors as borehole USW VA-5, and used a modified conventional circulation system utilizing Baroid EZ Mud polymer. Details of the completion can be found in RID 7009, “NC-EWDP-33P Field” As-Built” Well Completion and Wellhead Protection Diagrams.” Water levels have been steadily declining in this piezometer since it was developed by airlifting (7/17/07 to 9/20/07), and appear to indicate disequilibrium with the conterminous potentiometric surface.
Water levels were not taken in wells 10P shallow, 10P deep,18P, 22PA shallow, 22PA deep, 22PB shallow, 22PB deep, 22PC shallow, 22PC deep, 22S-Z2, 23P shallow, 23P deep, after 6/7/10, due to Yucca Mountain Project site access issues.

Governing QA Docs:	TP-9.9, Rev. 3 and Rev. 4
Frequency of Transmittal	As necessary.
Direct Questions About Data To:	NWRPO QA Records Center