Seismic Refraction and Double Springs Well Modification on the Walker River Indian Reservation

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and

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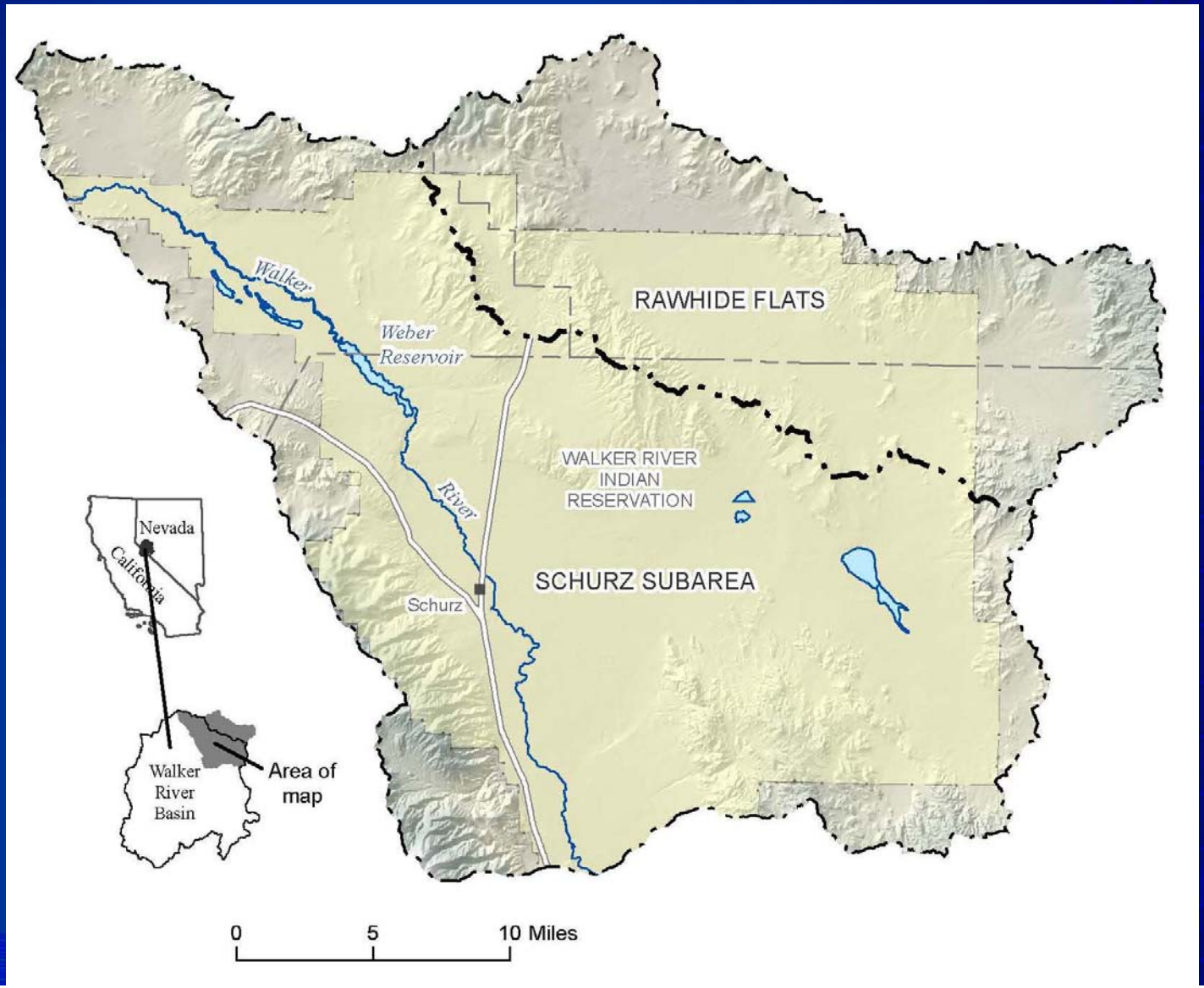
USGS

Location of Schurz Subarea



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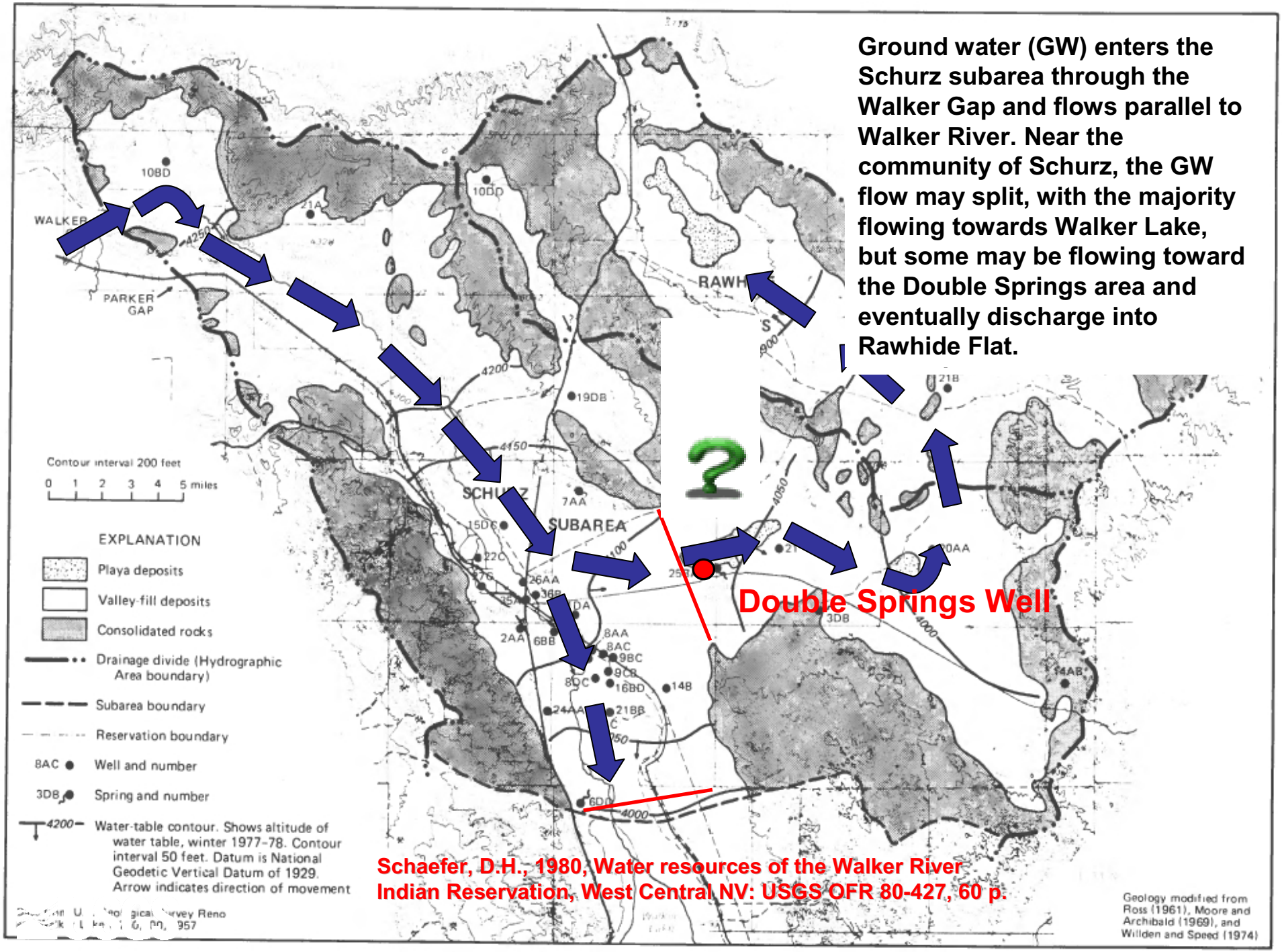
Ground water (GW) enters the Schurz subarea through the Walker Gap and flows parallel to Walker River. Near the community of Schurz, the GW flow may split, with the majority flowing towards Walker Lake, but some may be flowing toward the Double Springs area and eventually discharge into Rawhide Flat.
?
Double Springs Well
WALKER
PARKER GAP
SCHURZ SUBAREA
RAWH
Contour interval 200 feet
0 1 2 3 4 5 miles
EXPLANATION
Playa deposits
Valley-fill deposits
Consolidated rocks
Drainage divide (Hydrographic Area boundary)
Subarea boundary
Reservation boundary
8AC Well and number
3DB Spring and number
4200 Water-table contour. Shows altitude of water table, winter 1977-78. Contour interval 50 feet. Datum is National Geodetic Vertical Datum of 1929. Arrow indicates direction of movement
Schaefer, D.H., 1980, Water resources of the Walker River Indian Reservation, West Central NV: USGS OFR 80-427, 60 p.
Geology modified from Ross (1961), Moore and Archibald (1969), and Willden and Speed (1974)

Seismic Refraction

- Used to explore subsurface structural geometry
- Cost effective – non-invasive method
- Would be used to find depth to bedrock

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Energy propagation

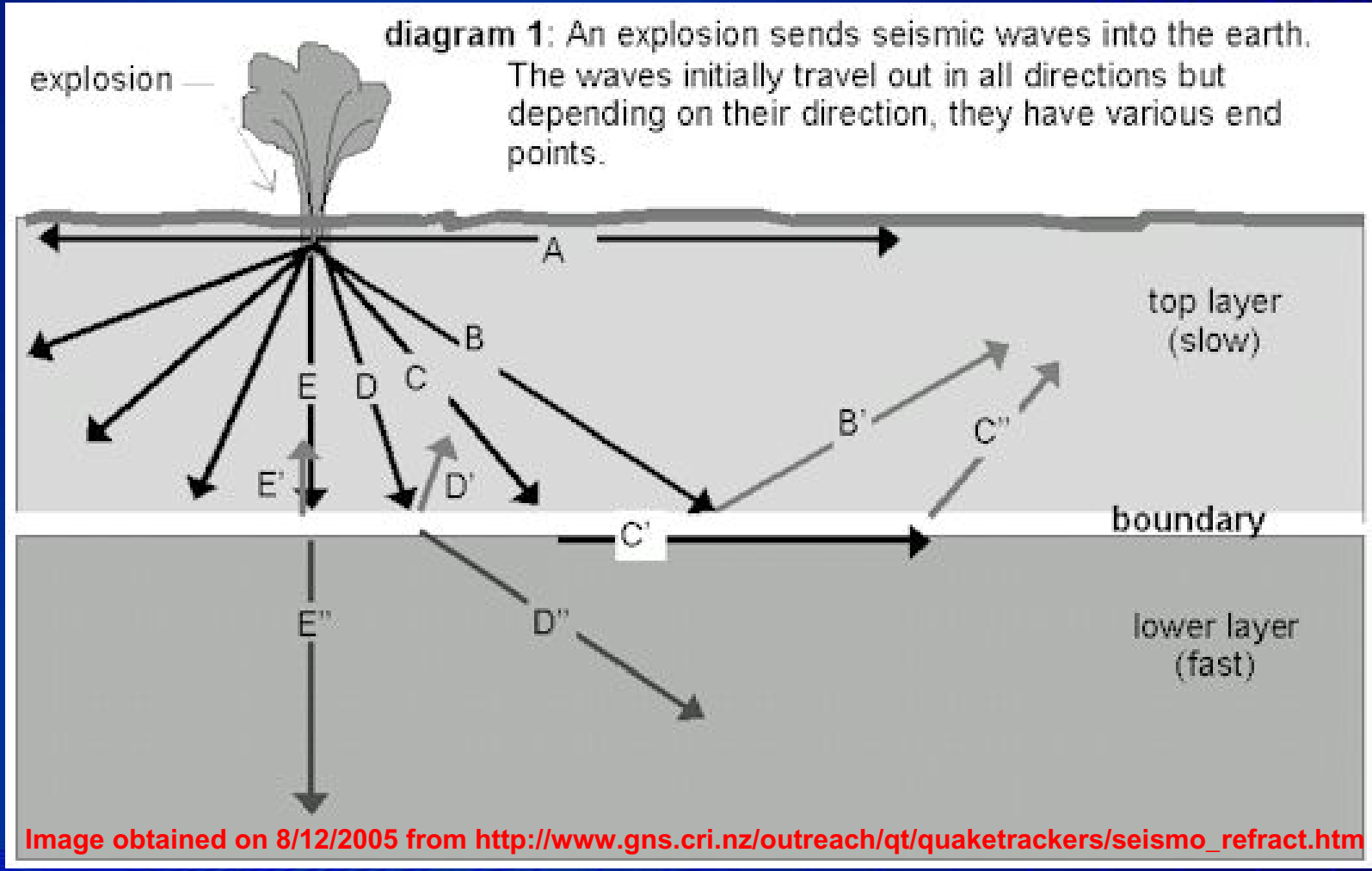

Image obtained on 8/12/2005 from http://www.gns.cri.nz/outreach/qt/quaketrackers/seismo_refract.htm

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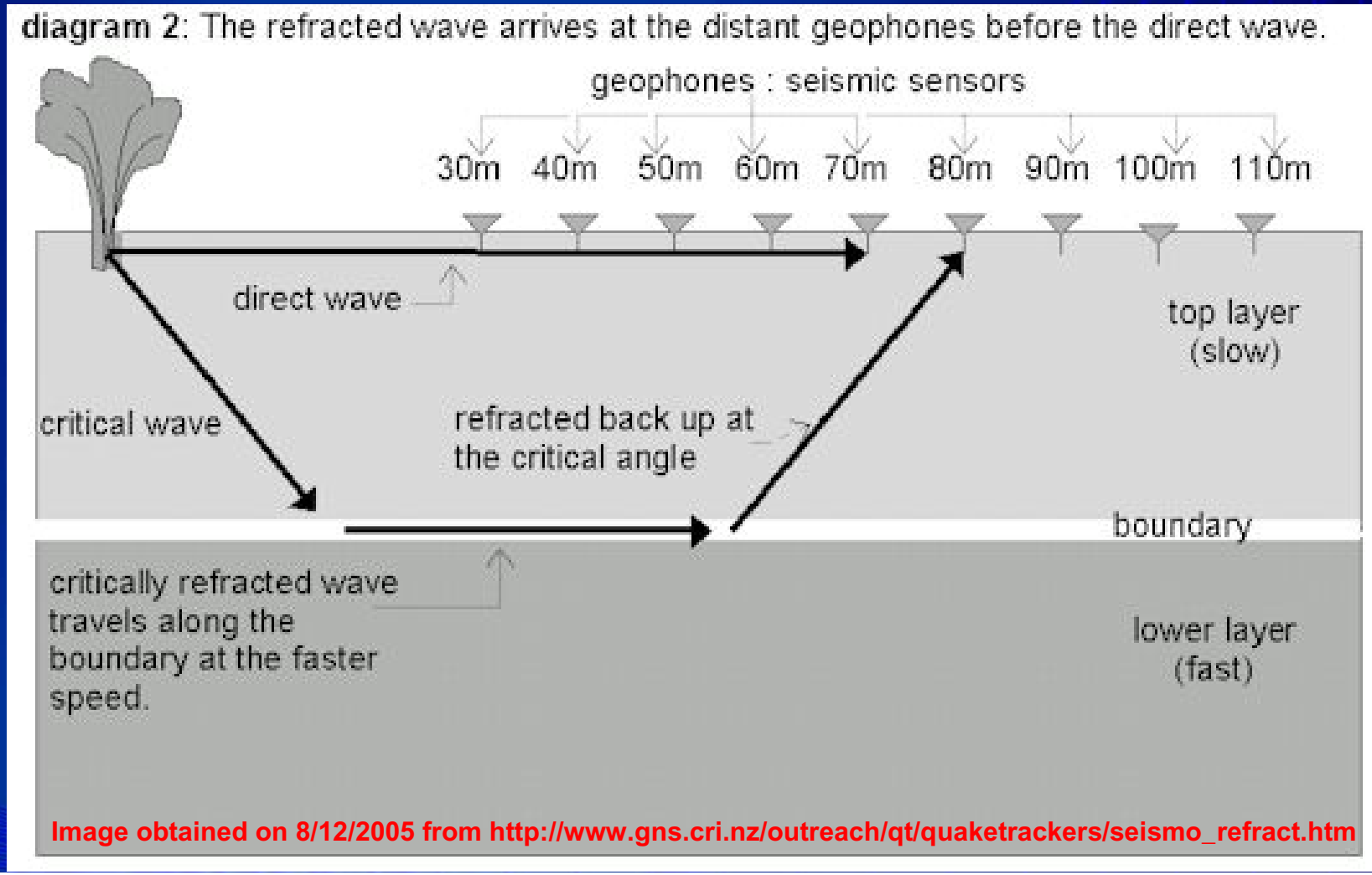
Direct and refracted waves



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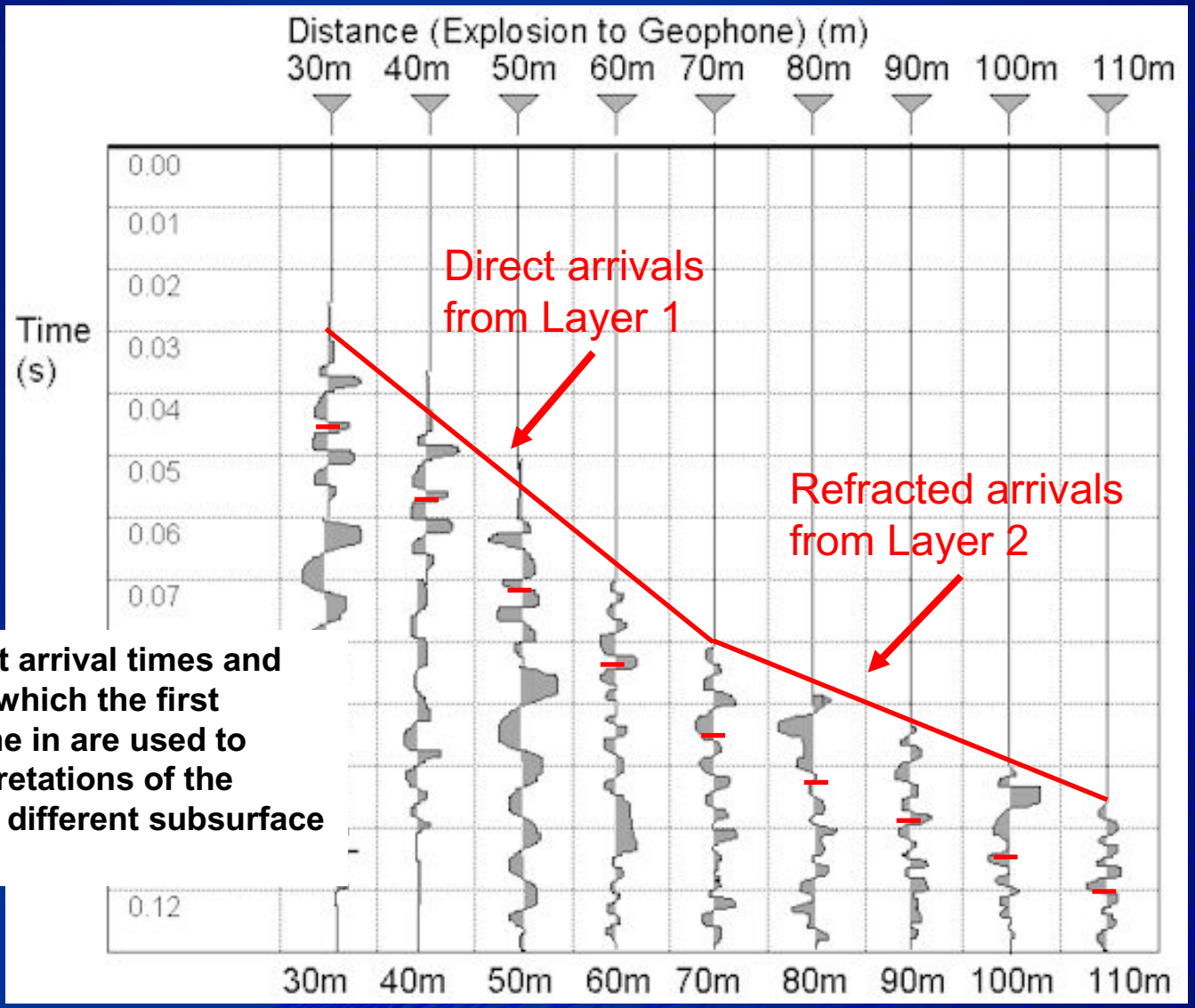
Interpreting first arrivals



The different arrival times and the rates at which the first arrivals come in are used to make interpretations of the depth to the different subsurface layers.

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Image obtained on 8/12/2005 from
http://www.gns.cri.nz/outreach/qt/quaketrackers/seismo_refract.htm

Example of raw data

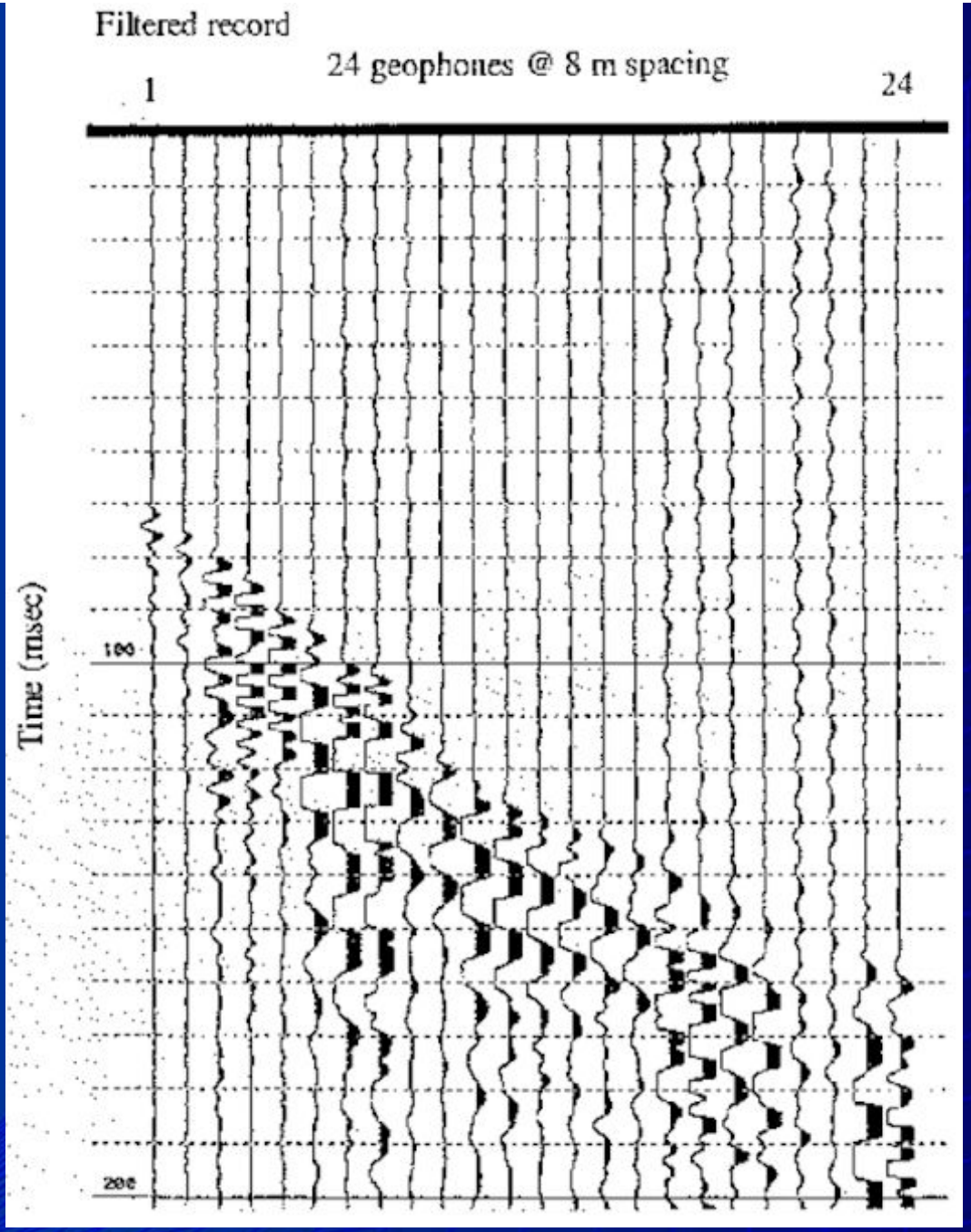

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Image obtained on 8/12/2005 from
http://www.gns.cri.nz/outreach/qt/quaketrackers/seismo_refract.htm

Double Springs Well

- Flowing Well with substantial discharge (60 gallons per minute)
- Water level is above land surface, but elevation is uncertain?
- Water level is needed to determine direction of ground-water flow and hydraulic gradient

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Proposed modification

- Would allow us to obtain a measurement of the head pressure
- Well would still continuously flow into cattle trough

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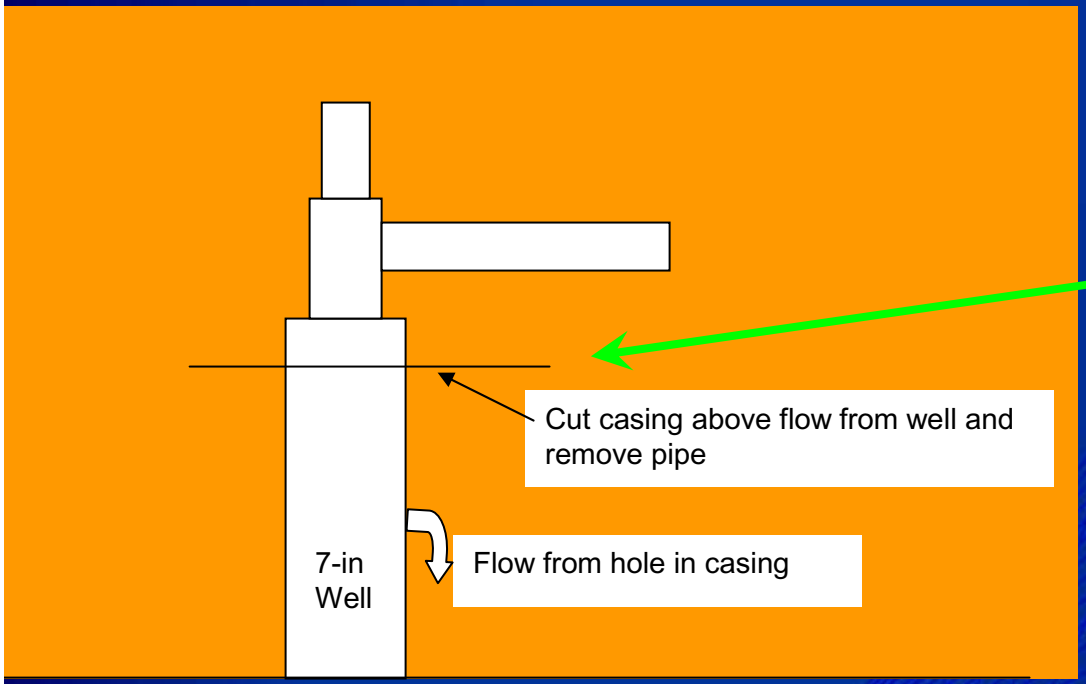
Proposed modification (cont.)



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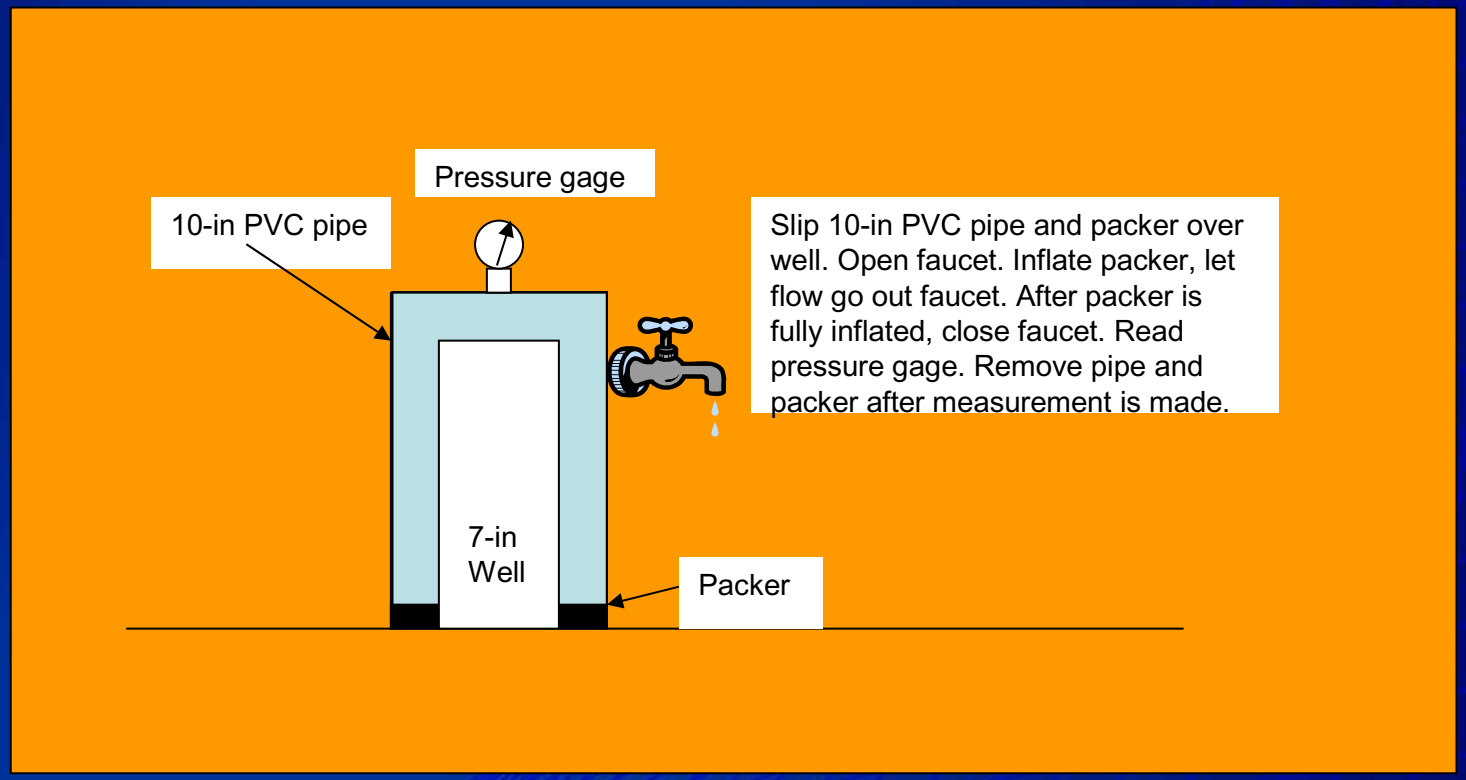
Water level measurement



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After modification and water level measurement, Double Springs well would look like this

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