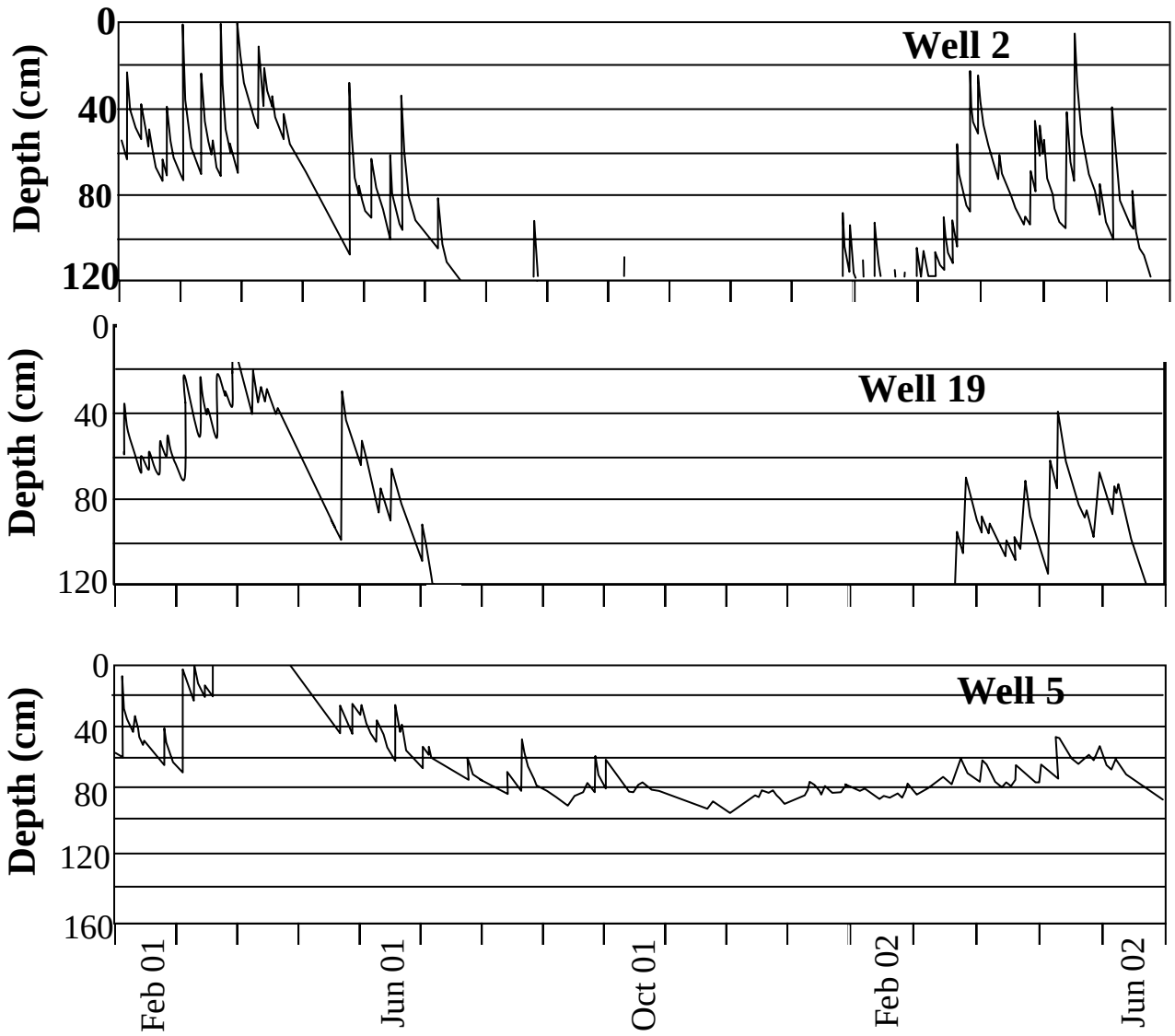
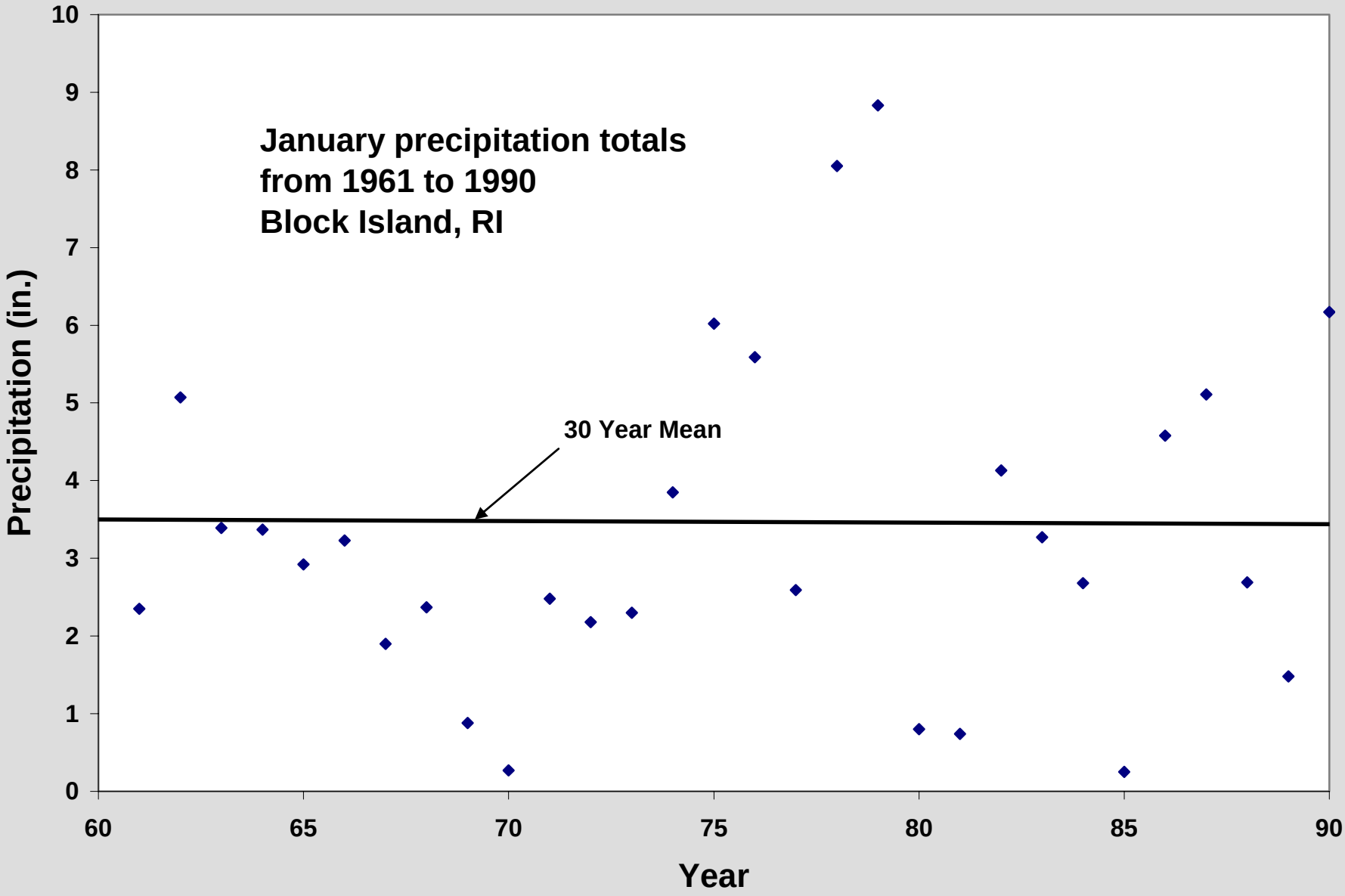
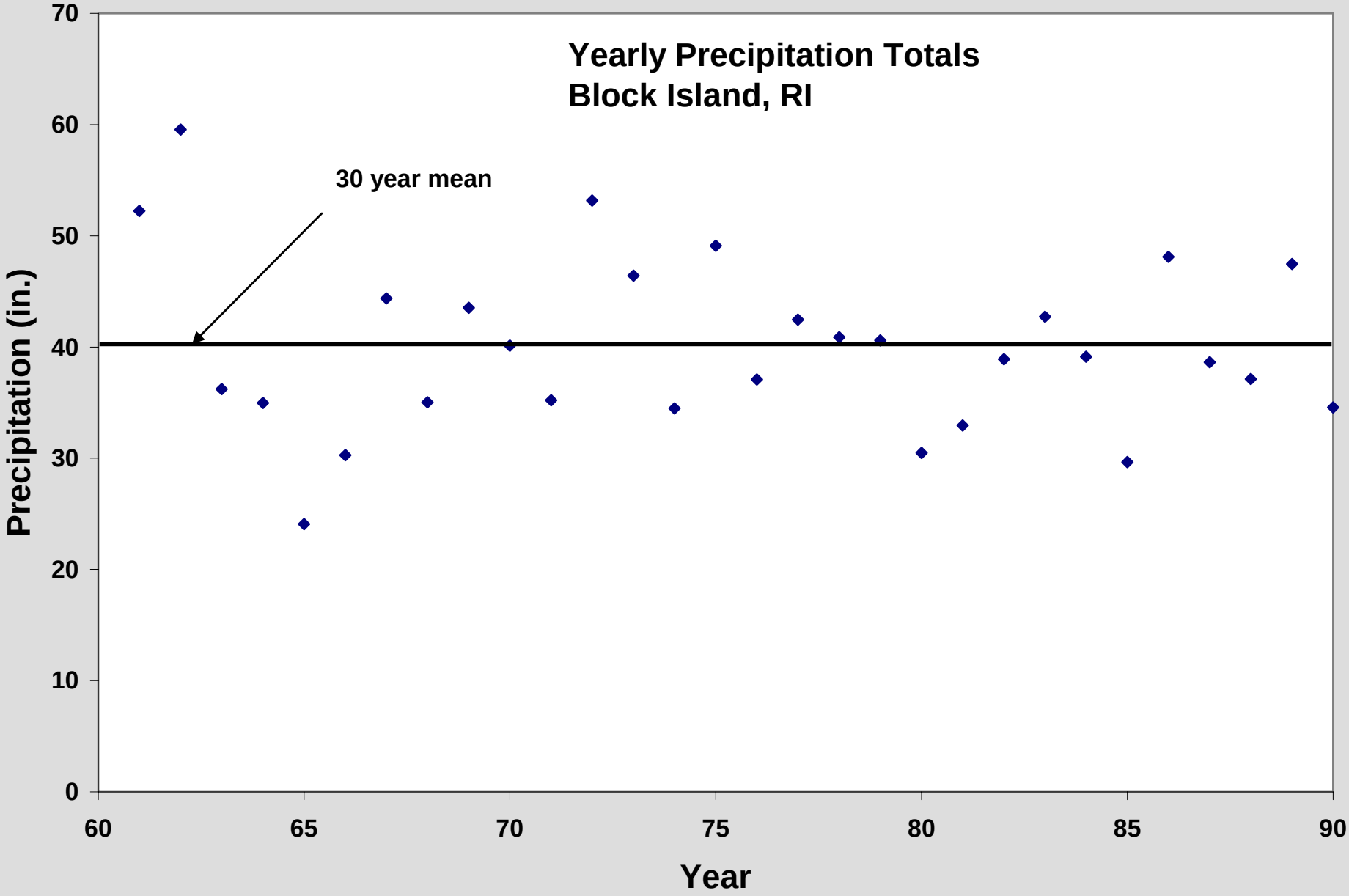

Well 2
Depth (cm)
0
40
80
120
Well 19
Depth (cm)
0
40
80
120
Well 5
Depth (cm)
0
40
80
120
160
Feb 01
Jun 01
Oct 01
Feb 02
Jun 02


January precipitation totals
from 1961 to 1990
Block Island, RI
30 Year Mean
Precipitation (in.)
Year
0
1
2
3
4
5
6
7
8
9
10
60
65
70
75
80
85
90


Yearly Precipitation Totals
Block Island, RI
30 year mean
Precipitation (in.)
Year
70
60
50
40
30
20
10
0
60
65
70
75
80
85
90

So what is normal?

• For hydric soils the requirement is that a certain layer must be saturated at a frequency of more than 50% of the time (more than 1 out of 2 years).

• The frequency requirement is assumed to be met if data are collected during a period that falls in between the 30-70 percentile precipitation probability. These probabilities are calculated from something that is called a 2-parameter gamma distribution.

• The distributions are available in what is called a WETS Table available on line at: http://www.wcc.nrcs.usda.gov/climate/climate-map.html

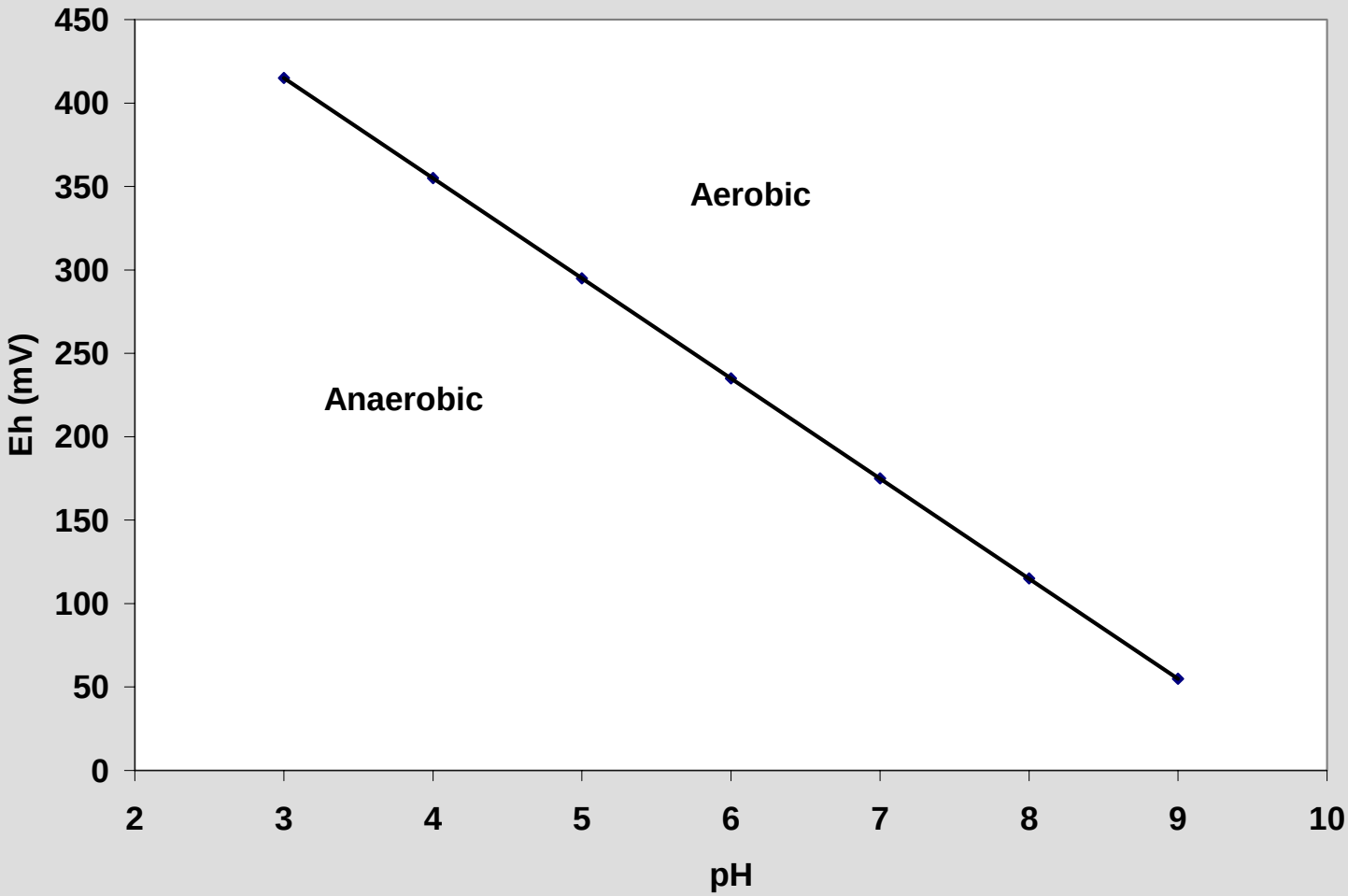
• **Hydric Soil Definition** (1994) – A soil that formed under conditions of saturation, flooding, or ponding long enough during the ***growing season*** to develop ***anaerobic conditions*** in the **upper part**. See *Federal Register*, July 13, 1994.

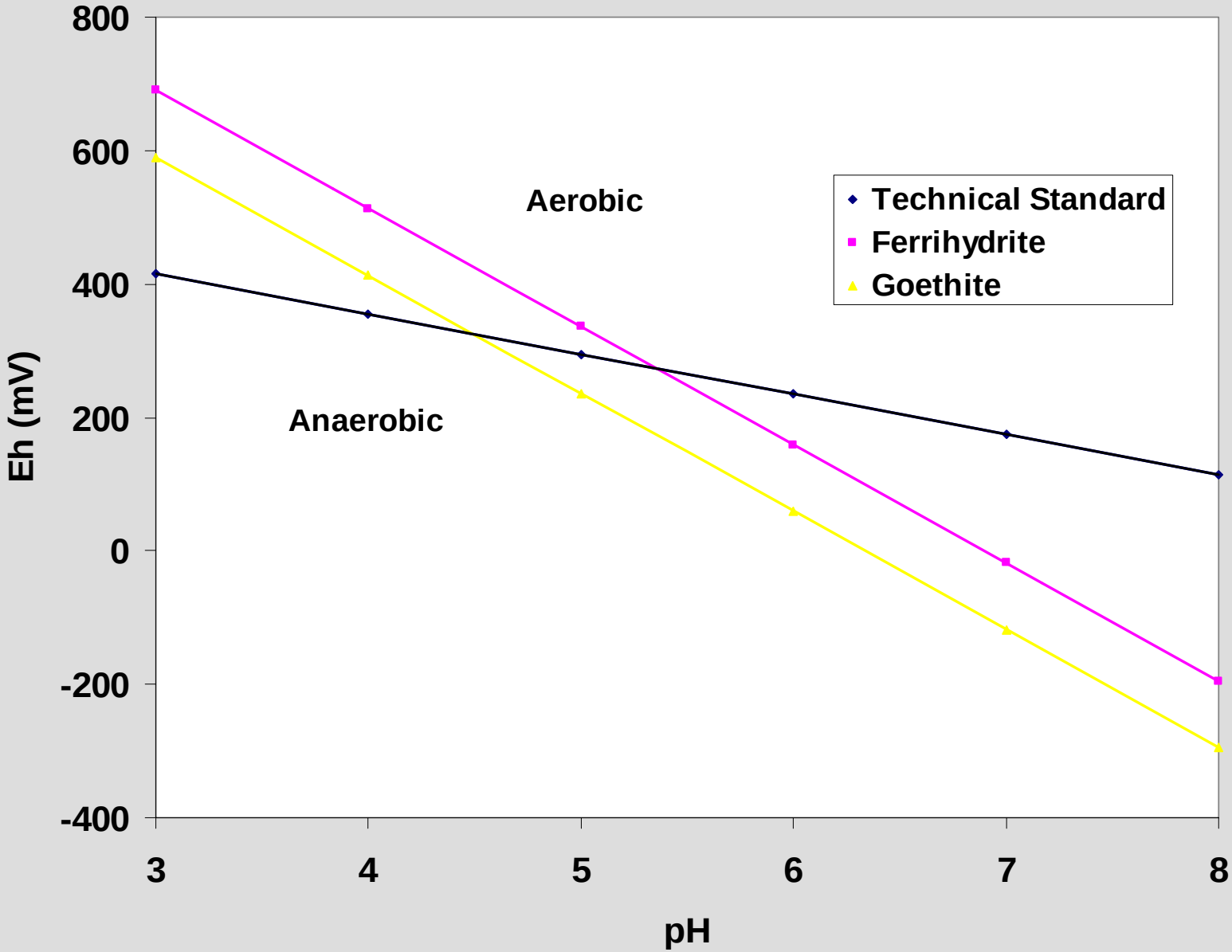
• Standards for defining a functionally hydric soil are maintained by the National Technical Committee at the following website:

http://soils.usda.gov/use/hydric/ntchs/tech_notes/index.html.

• The current technical standard indicates that for a soil to be considered hydric both anaerobic and saturated conditions must exist for at least 14 consecutive days. The growing season is not used in the technical definition of a functionally hydric soil.

Confirmation of Anaerobic Conditions: voltage readings below the Eh/pH line or positive reaction to alpha-alpha-Dipyridyl. Eh is determined from 5 platinum electrodes installed at 25 cm In loamy soil materials, 12.5 cm in most sandy soil materials, or 10 cm in soils that inundate but do not saturate to a significant depth. Readings are made a least once a week.




800
600
400
200
0
-200
-400
Eh (mV)
3
4
5
6
7
8
pH
Aerobic
Anaerobic
Technical Standard
Ferrihydrite
Goethite

Using IRIS (Indicator of Reduction in Soil) Tubes to document saturation and reduction

Jenkinson and Franzmeier (2006) introduced the use of IRIS tubes to monitor wet soil environments and document soil reduction. These tubes consist of PVC pipe coated with ferrihydrite paint. They found a significant correlation between depth to water table and removal of Fe(III) from the IRIS tubes. Iron(III) was removed from the tubes in locations where the soil was saturated by the seasonally high water table.

Castenson and Rabenhorst (2006) also found that IRIS tubes are a useful tool in the identification of reduced soil conditions. They found that if a tube is installed in the soil for a period of approximately 3 weeks the soil layers that were below the technical standard for hydric soils had at least 20% of the ferrihydrite paint is removed. This was found to occur in 87% of the observations. If 30% of the ferrihydrite was removed from the tube, then essentially 100% of the time that layer had a Eh below the technical standard.


8 Days-8 Sep.
14 Days-14 Sep.
21 Days-21 Sep
28 Days-28 Sep.