Revised Chronic Lowering of Groundwater Level Sustainability Indicator Sustainable Management Criteria: Minimum Thresholds and Measurable Objectives

This handout provides the approach for developing the chronic lowering of groundwater level sustainability indicator proposed sustainable management criteria (SMC) for the Corning Subbasin, based on input received at the May 6, 2021 special CSAB meeting. Specifically, this handout includes the rationale used to develop options for minimum thresholds (MT(s)) and measurable objectives (MO(s)) at proposed representative monitoring point(s) (RMP(s)). The proposed MTs and MOs will be used during GSP implementation to define and assess groundwater sustainability in the Subbasin. The MTs and MOs are potential thresholds and goals to establish a sustainable operating range of water levels for the Subbasin over the GSP 50-year planning and implementation horizon. Water levels will be collected in RMPs and compared to the MTs and MOs during GSP implementation annually, to assess progress towards sustainability. The approach for developing MTs was based on feedback from the Corning Subbasin Advisory Board (CSAB) and public leading up to and during the CSAB meeting on groundwater level MTs and MOs held on May 6th.

This handout includes the following information:

1. Maps of current RMPs and general recent regional trends;
2. Hydrographs showing historical Fall groundwater elevation data and proposed MT and MO options at RMPs; and
3. Maps of the spatial distribution and inferred groundwater elevation contours depicting the two proposed MT options for shallow and deep RMPs.

Representative Monitoring Points (RMP) Network and General Trends

Fall groundwater level data were reviewed to assess recent (2010 to 2019) general trends to identify potential zones of similar characteristics.

Each well was assigned a trend qualitatively using one of the following four classifications:

1. Stable;
2. Slight decline;
3. Decline; or
4. Insufficient data

In general, groundwater elevations have declined in much of the Corning Subbasin since 2012 and have reached historical minimum levels in many wells. The reasons for this overall trend are drought, increased groundwater pumping, and slower than usual recovery of groundwater levels. In general, groundwater level declines are greater in wells to the west of I-5 and lesser in wells to the east of I-5. In some wells closest to the Sacramento River and Stony Creek the groundwater levels have been relatively stable since 2010. There are eight RMP locations with insufficient data to assign a trend, but likely trends can be inferred in these locations based on nearby wells. Thus, 3 general "zones" of similar water level trend characteristics could be identified, from west to east. When looking at a north to south distribution of RMPs within these three zones, there is good spatial representation and this network has good density, except in the western area. The well distribution has data gaps to fill during GSP implementation.

Figure 1 below was presented at the May 6th CSAB meeting and it formed the basis for the development of revised MO and MT options.

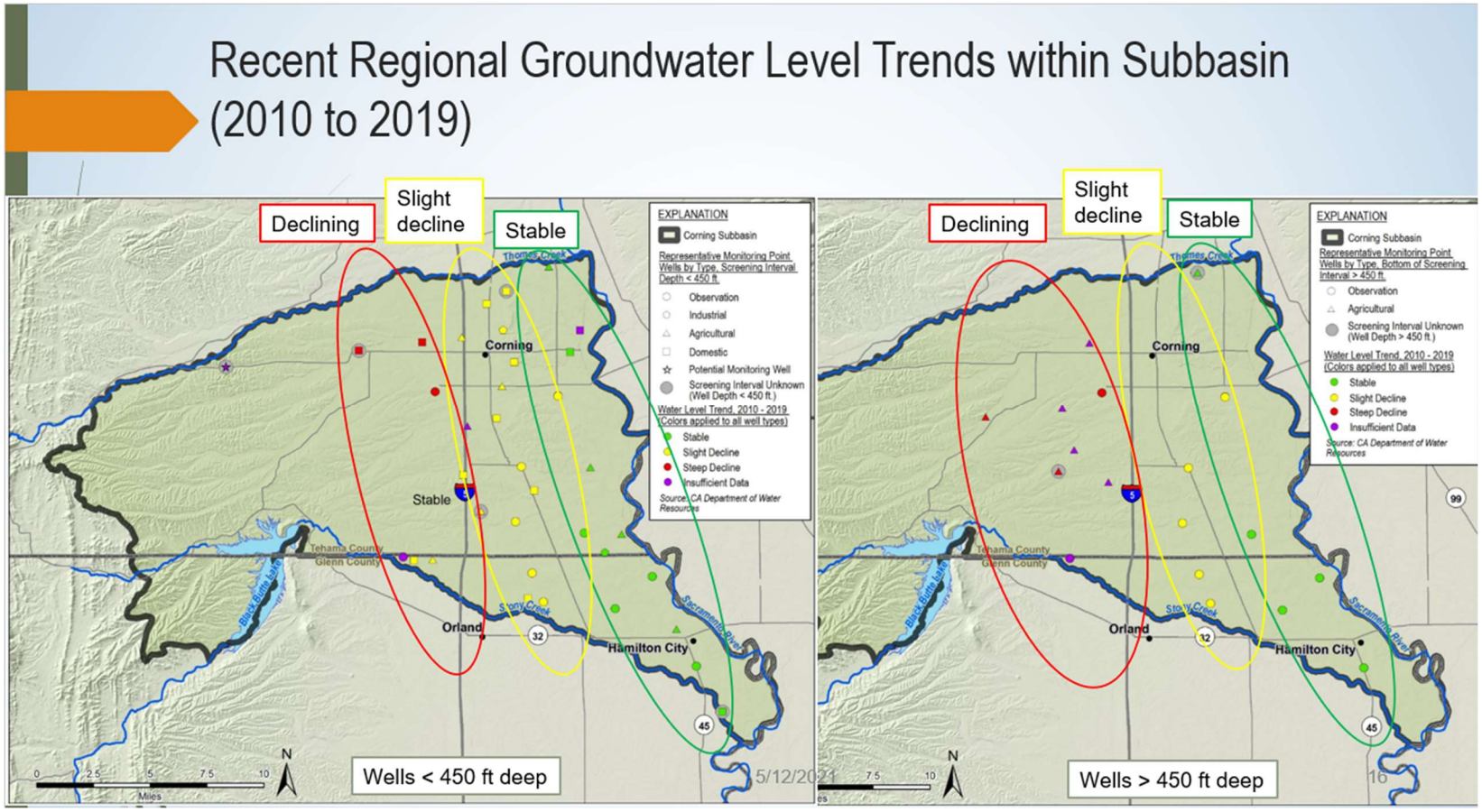

Figure 1. Qualitative groundwater level trends at shallow and deep RMP wells.

Fall Hydrograph Data at Proposed Representative Monitoring Points for Groundwater Level Minimum Threshold and Measurable Objective Selection

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Hydrographs were developed for proposed RMPs, showing fall only groundwater elevation data and options for MTs and MOs. The method for analyzing MTs and MOs was based on historical data and feedback from the CSAB and public at the May 6, 2021 CSAB meeting. The MT and MO options are relevant to fall groundwater elevations only and should be compared to annual fall elevations. Two different sets of MT and MO options were developed based on the groundwater level trends in individual RMPs shown on and Figure 2:

1. RMPs with stable groundwater level trends.
2. RMPs with declining ("slightly declining" or "declining") groundwater level trends.

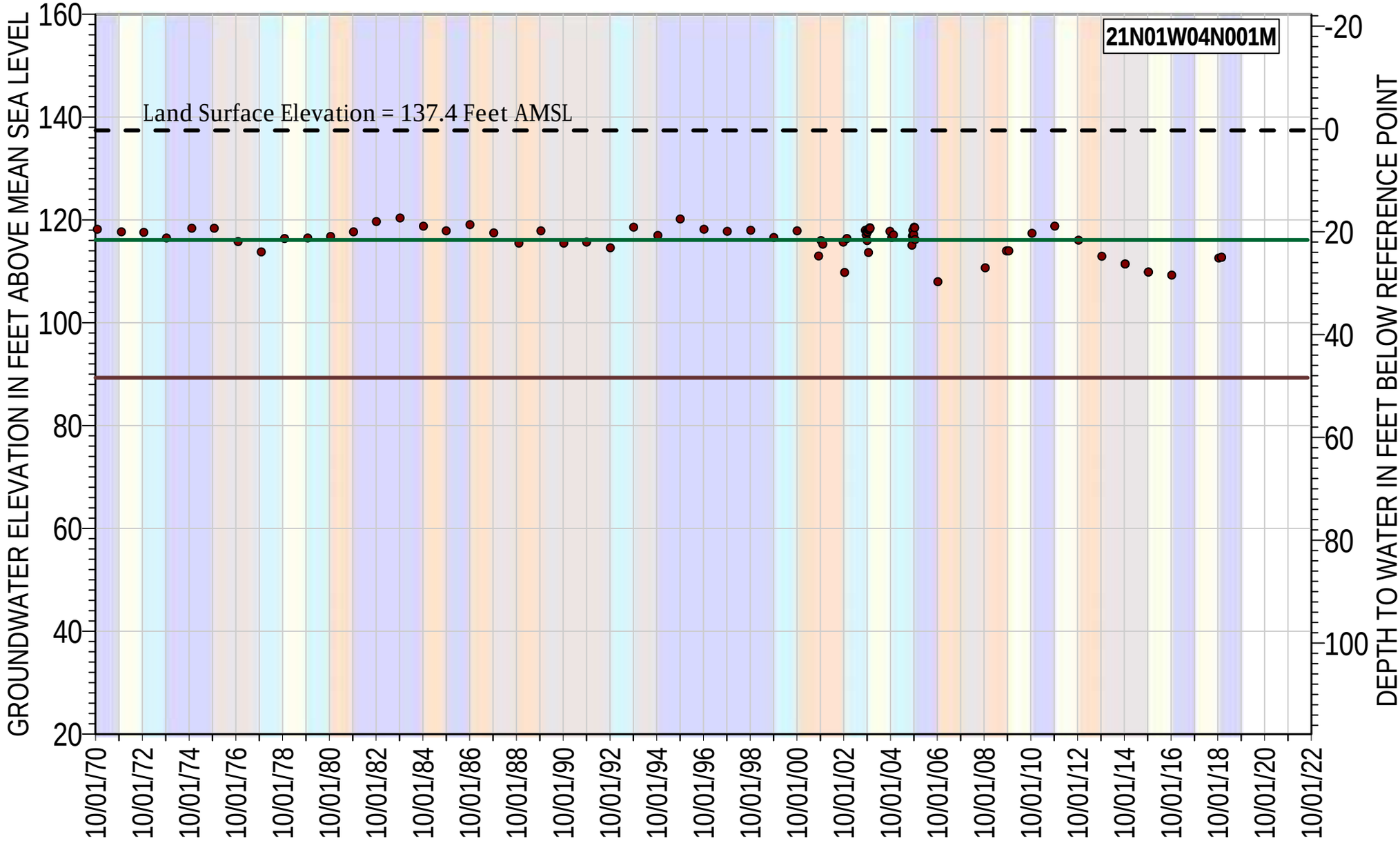
The likely groundwater level trend in wells with insufficient data was inferred based on neighboring wells with groundwater data since at least 2010. Areas with likely stable, slightly declining, and declining groundwater level trends are circled on Figure 1. The wells with insufficient data were recently added to the water level monitoring network; many of these are in locations that expand the footprint of the water level monitoring network and therefore should be included in the RMPs.

The following approaches were used for developing MTs and MOs:

- RMPs with stable groundwater level trends:
    - MT #1: minimum fall groundwater elevation since 2012 minus 20-foot buffer (brown line)
    - MO: maximum fall groundwater elevation since 2012 (green line)
- RMPs with declining groundwater level trends:
    - MT#1: minimum fall groundwater elevation since 2012 minus 20% of minimum water level depth (orange dash)
    - MT#2: minimum fall water elevation since 2012 minus 30% of minimum water level depth (purple dash)
    - MO: maximum fall water level in 2015 (green line):

The MT and MO options were generated using data since 2012, because groundwater elevations since 2012 have reached historical minimum levels. The minimum Fall 2015

groundwater elevation was selected as the proposed MO for declining groundwater level RMPs because this was the first fall after SGMA was enacted. Fall 2015 was generally one of the lower measurements on record in wells with declining groundwater elevations, but was still slightly higher than most groundwater elevations in fall of 2018 or 2019.



21N01W04N001M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 137.7 ft AMSL

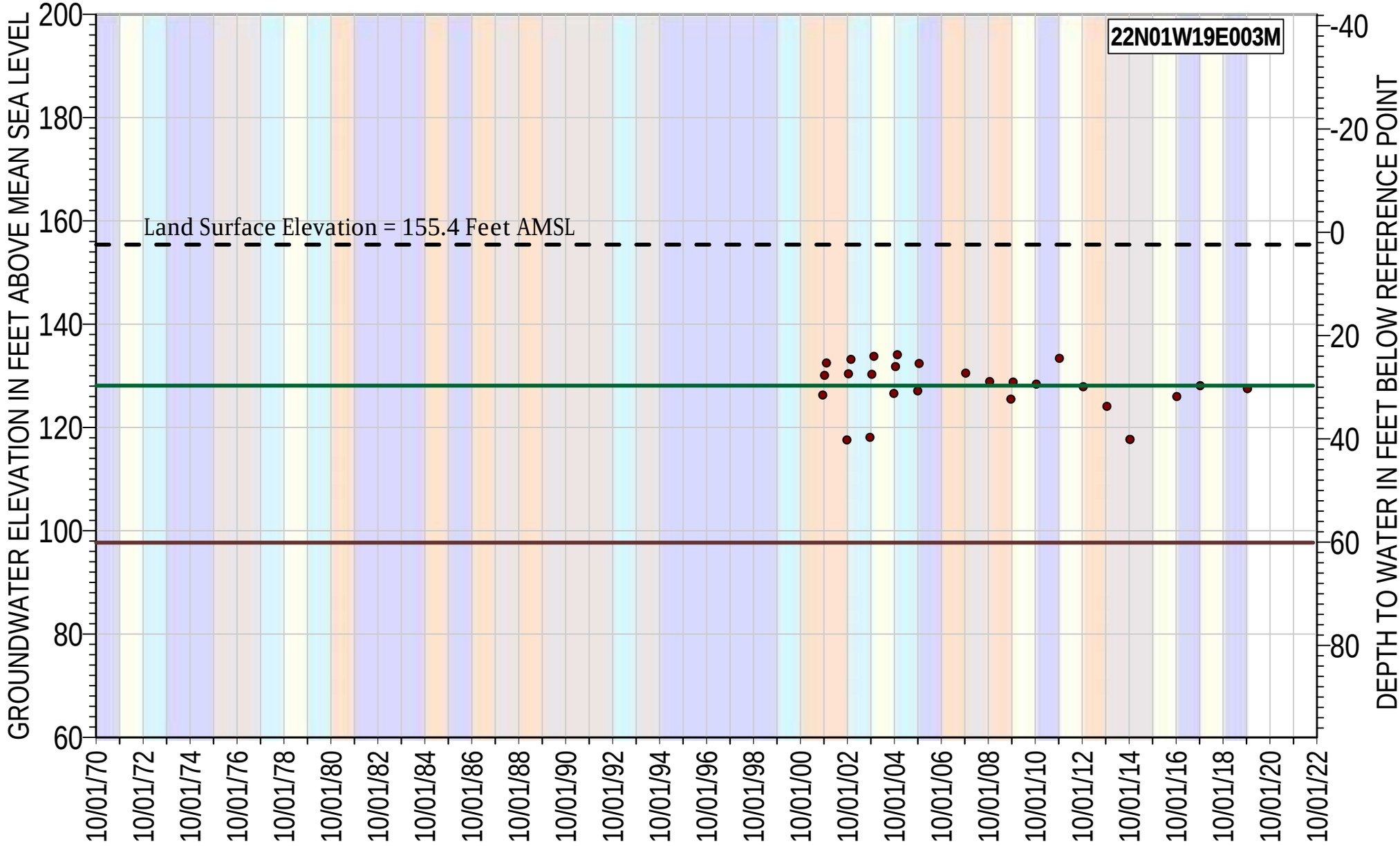
Well Type: Domestic

Total Depth: 100 ft bgs

Well Screen Interval= Unknown ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

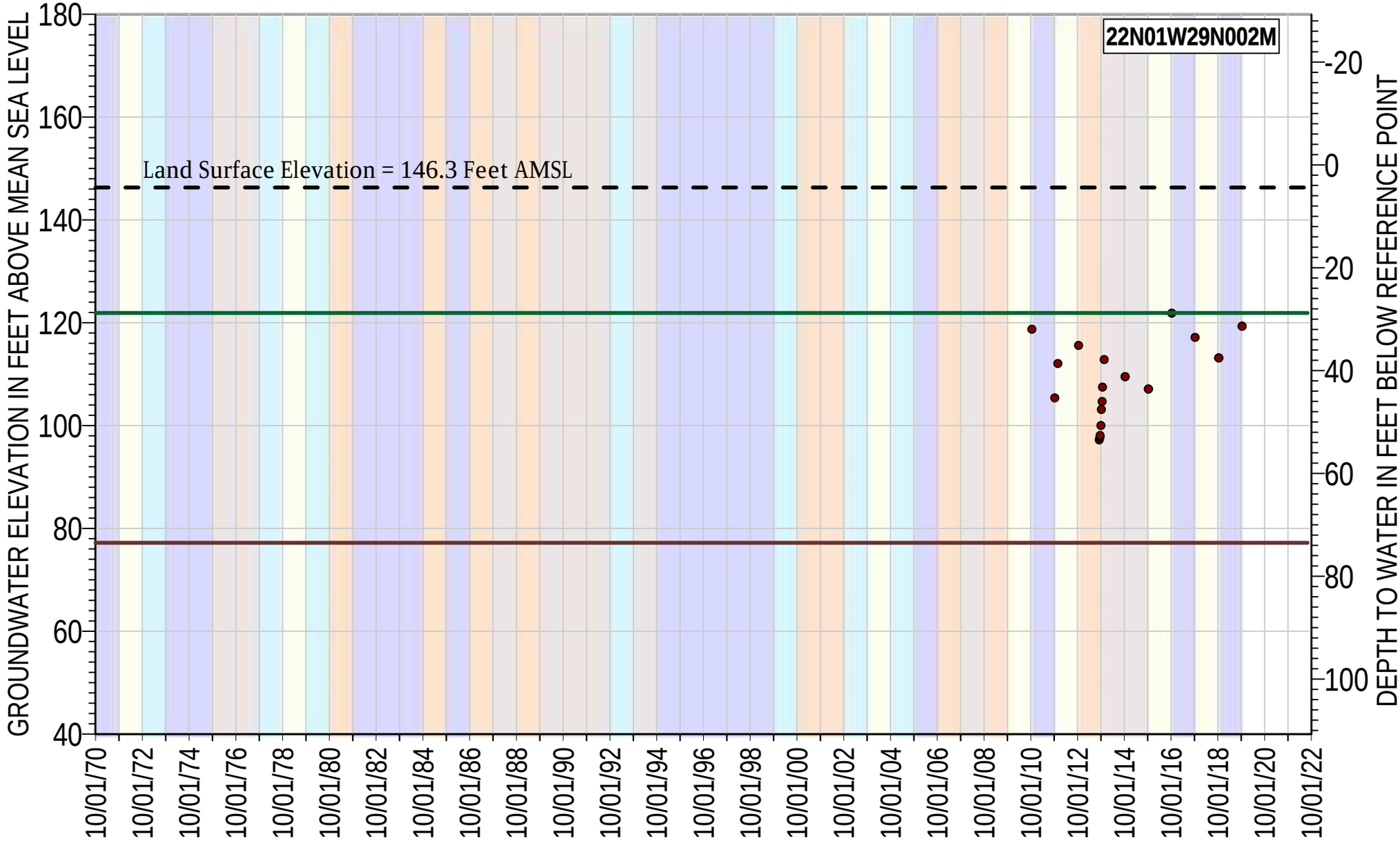


22N01W19E003M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 157.8 ft AMSL
Well Type: Irrigation
Total Depth: 500 ft bgs
Well Screen Interval= 80 - 400 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

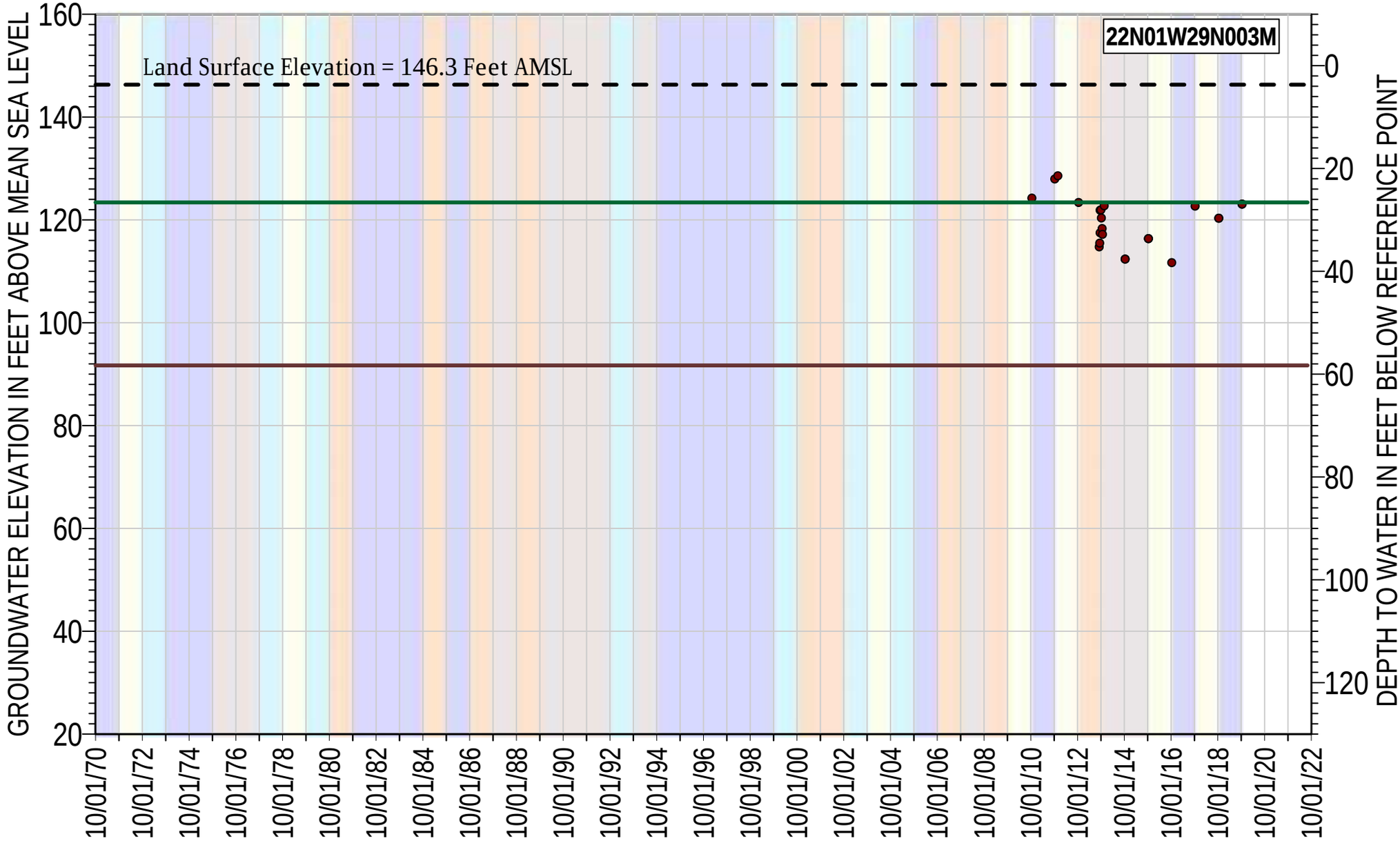


22N01W29N002M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 150.7 ft AMSL
Well Type: Observation
Total Depth: 670 ft bgs
Well Screen Interval= 549 - 641 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



22N01W29N003M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 150 ft AMSL

Well Type: Observation

Total Depth: 400 ft bgs

Well Screen Interval= 189 - 380 ft bgs

Water Year Classification

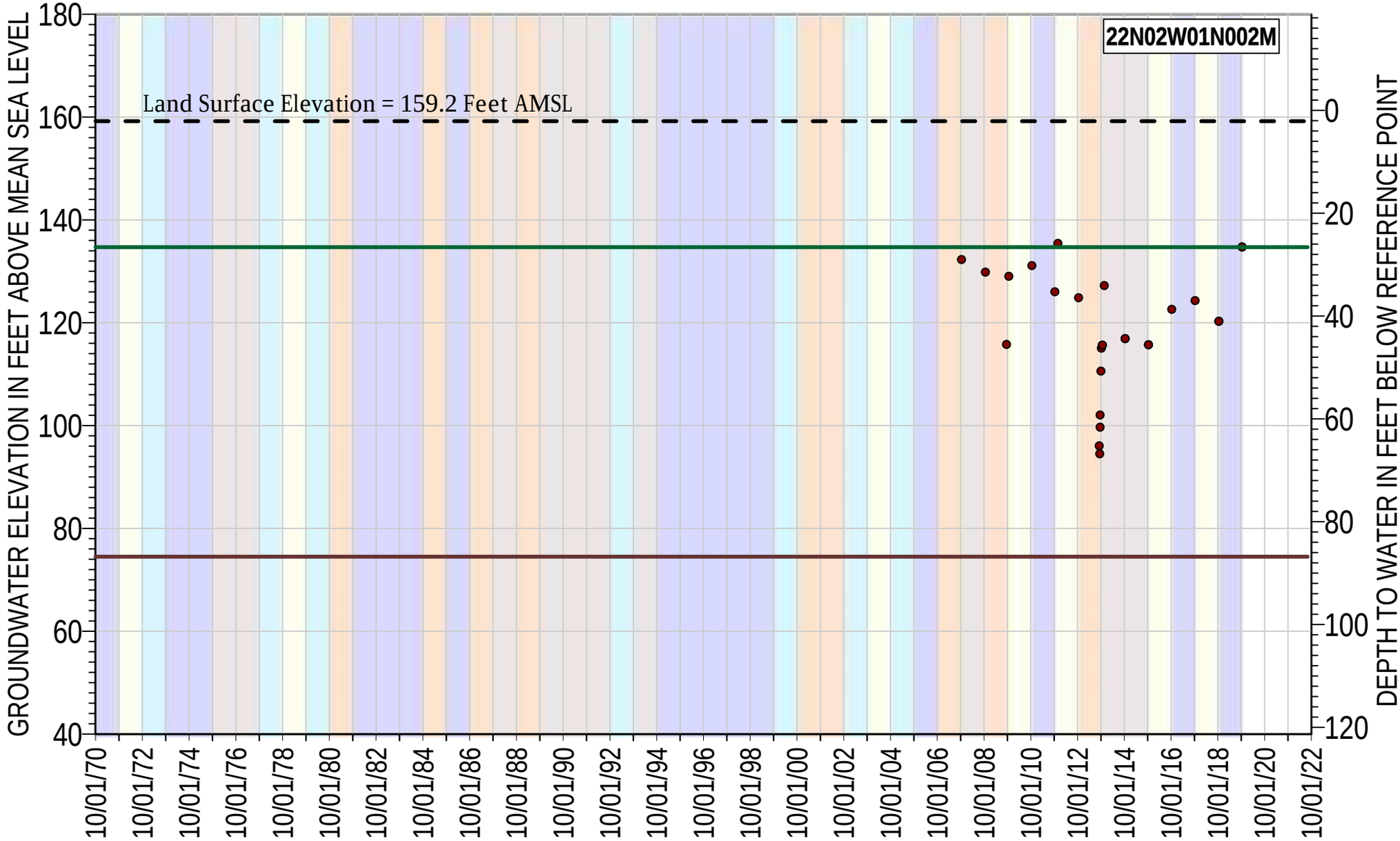
Wet

Above Normal

Below Normal

Dry

Critically Dry



22N02W01N002M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 161.3 ft AMSL

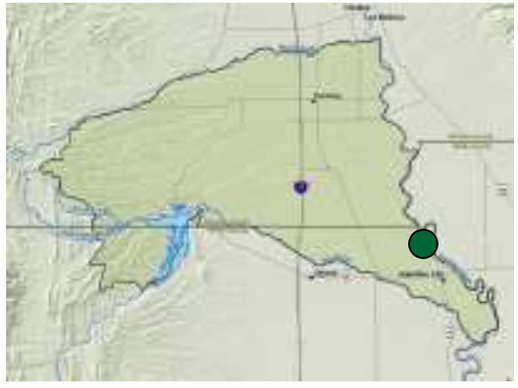
Well Type: Observation

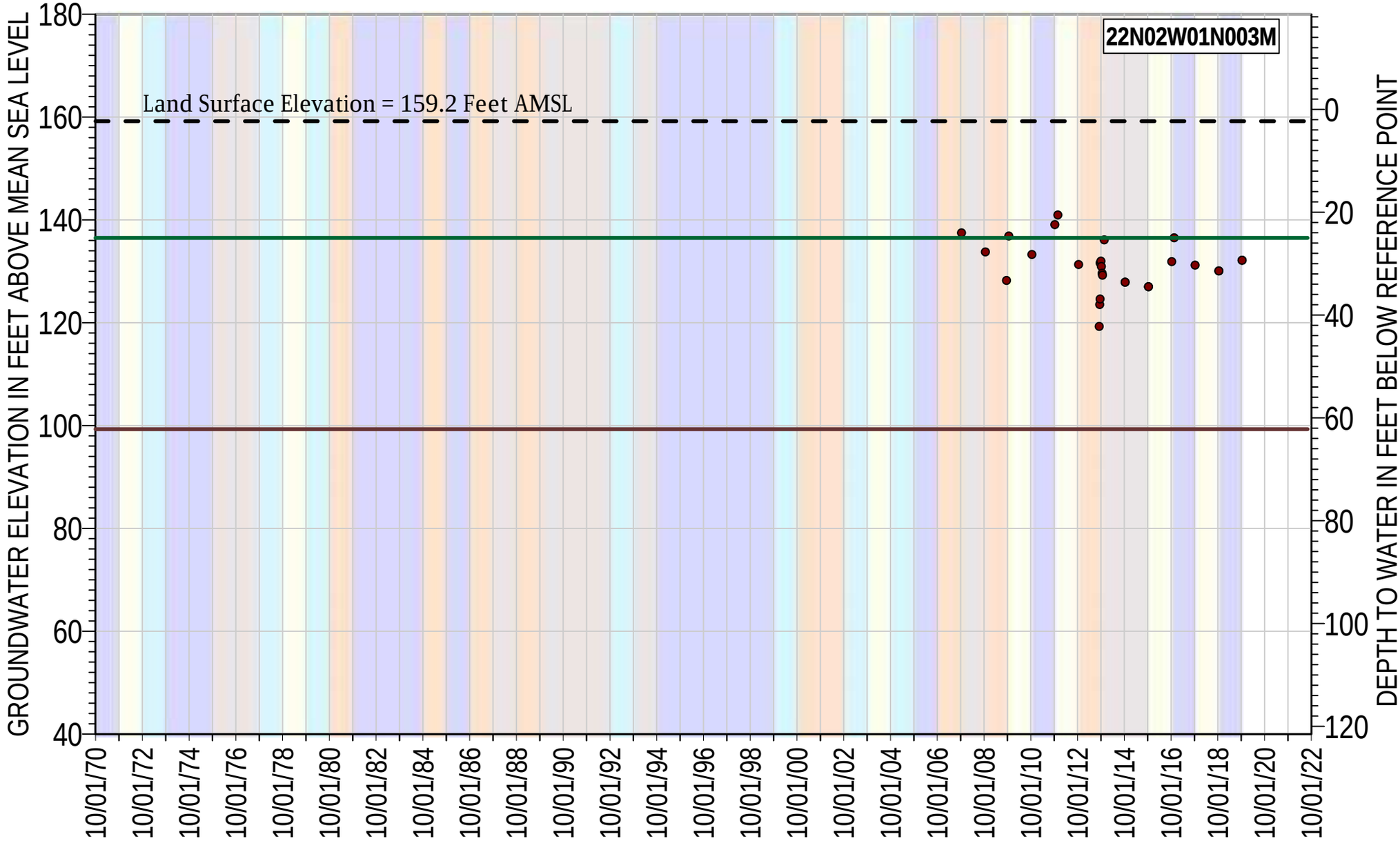
Total Depth: 730 ft bgs

Well Screen Interval= 700 - 710 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



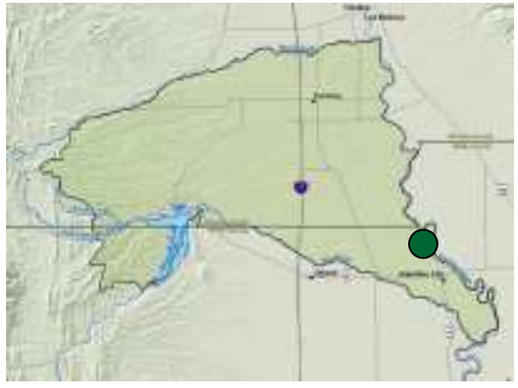


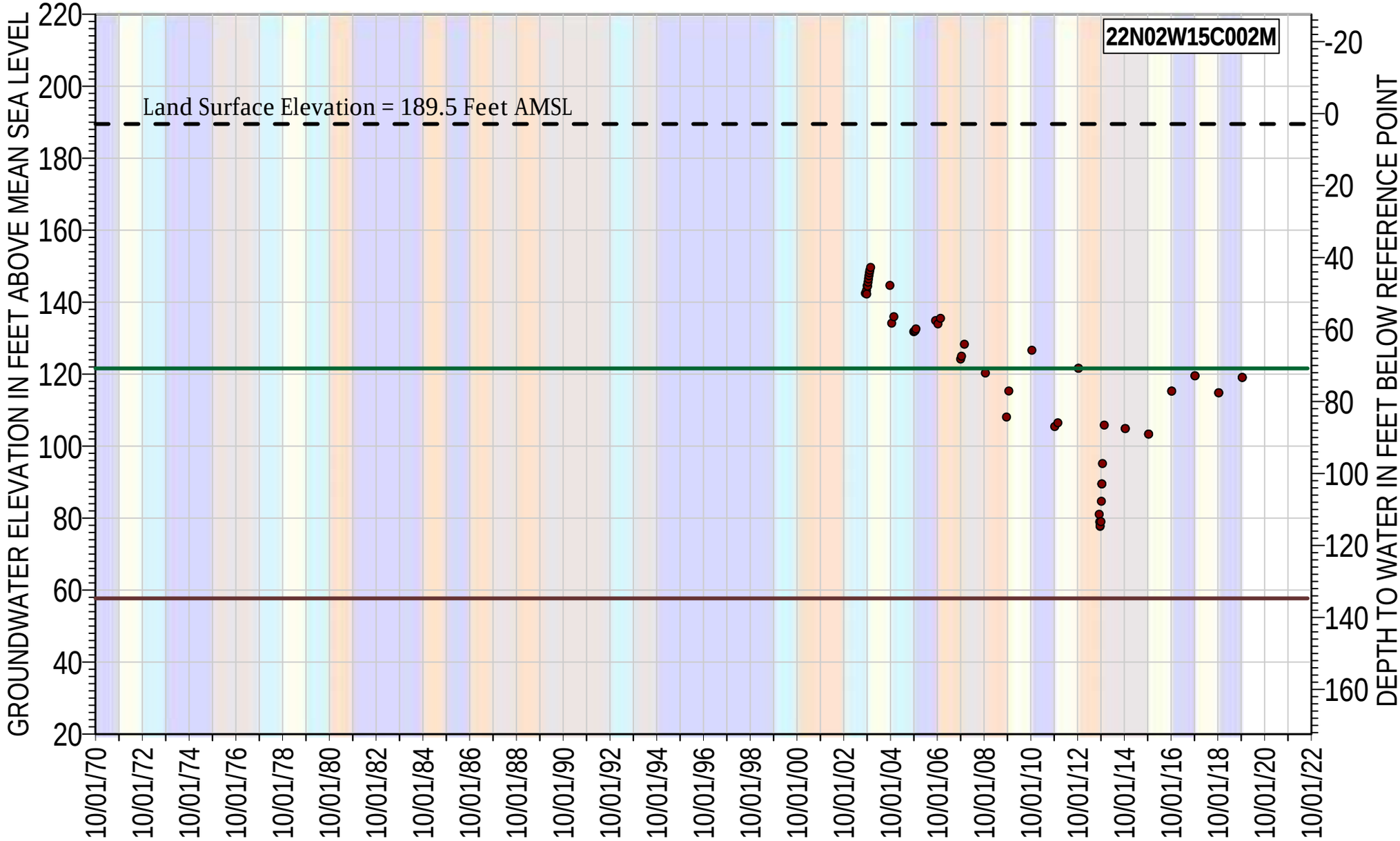
22N02W01N003M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 161.5 ft AMSL
Well Type: Observation
Total Depth: 440 ft bgs
Well Screen Interval= 210 - 370 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



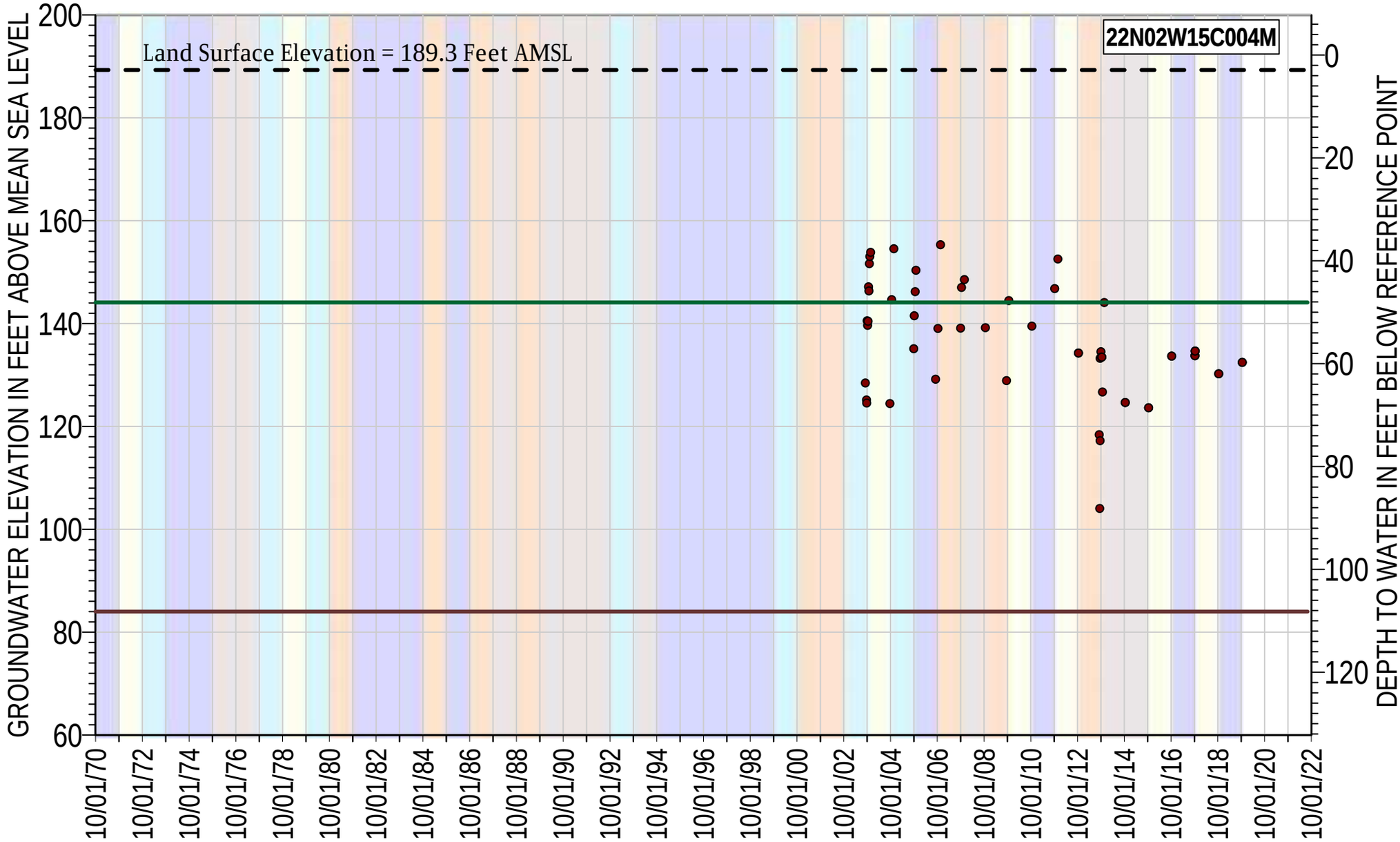


22N02W15C002M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 192.4 ft AMSL
Well Type: Observation
Total Depth: 825 ft bgs
Well Screen Interval= 760 - 781 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

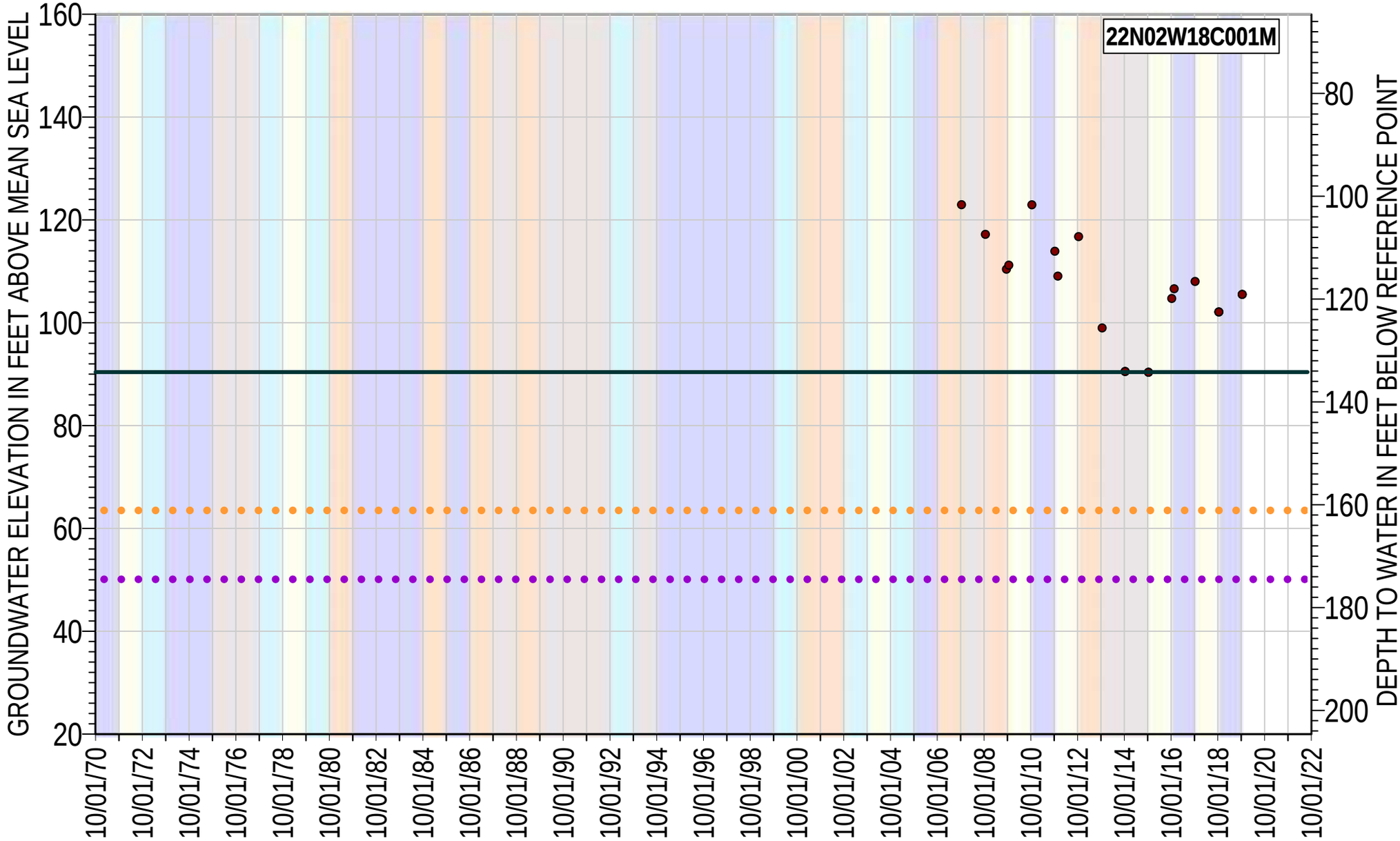


22N02W15C004M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 192.2 ft AMSL
Well Type: Observation
Total Depth: 258 ft bgs
Well Screen Interval= 210 - 220 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



22N02W18C001M Fall Groundwater Elevation

Proposed MO: Fall 2015 Max

Proposed MT: Fall Min Since 2012 -20% min depth

Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 224.6 ft AMSL

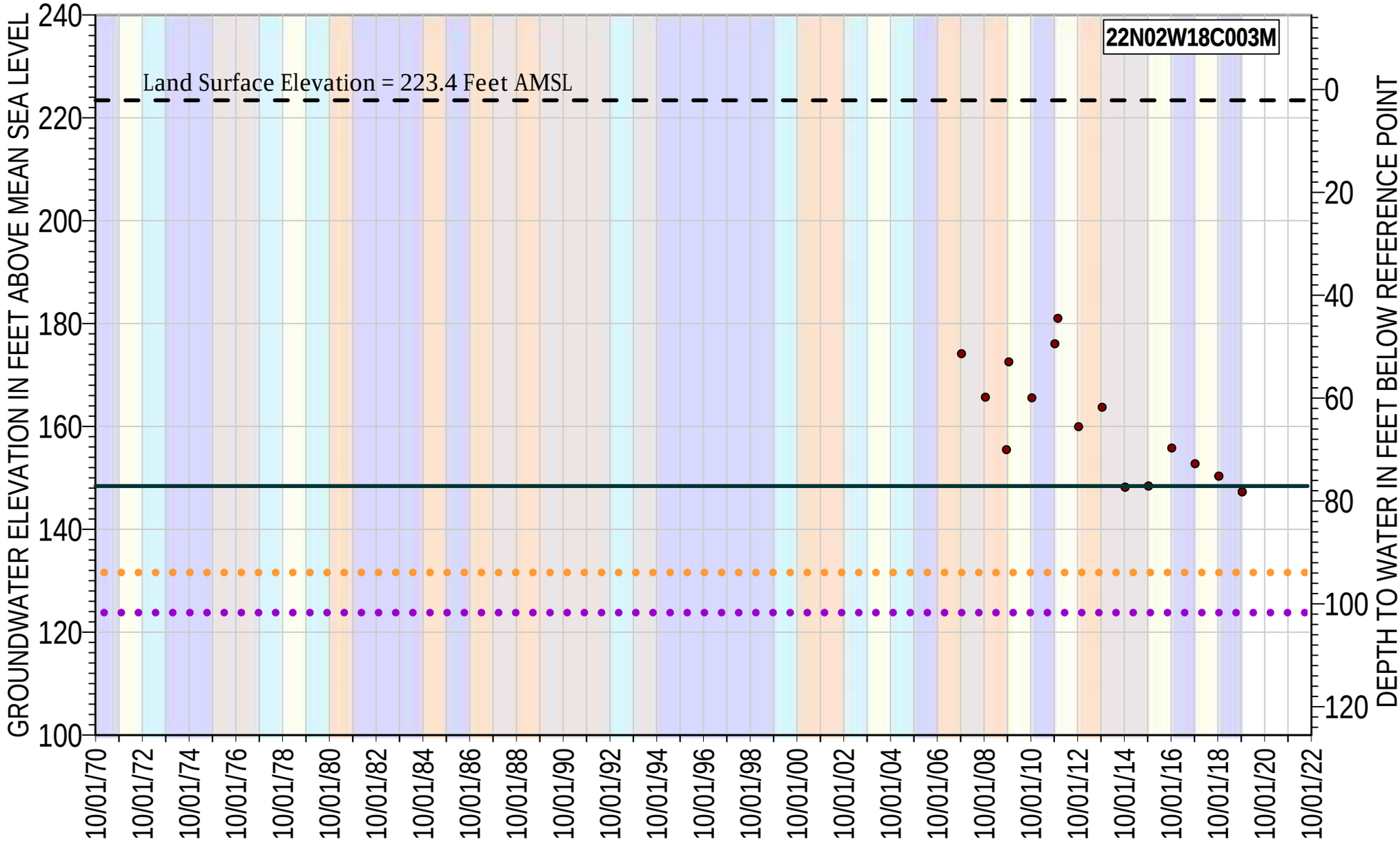
Well Type: Observation

Total Depth: 1062 ft bgs

Well Screen Interval= 841 - 1029 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

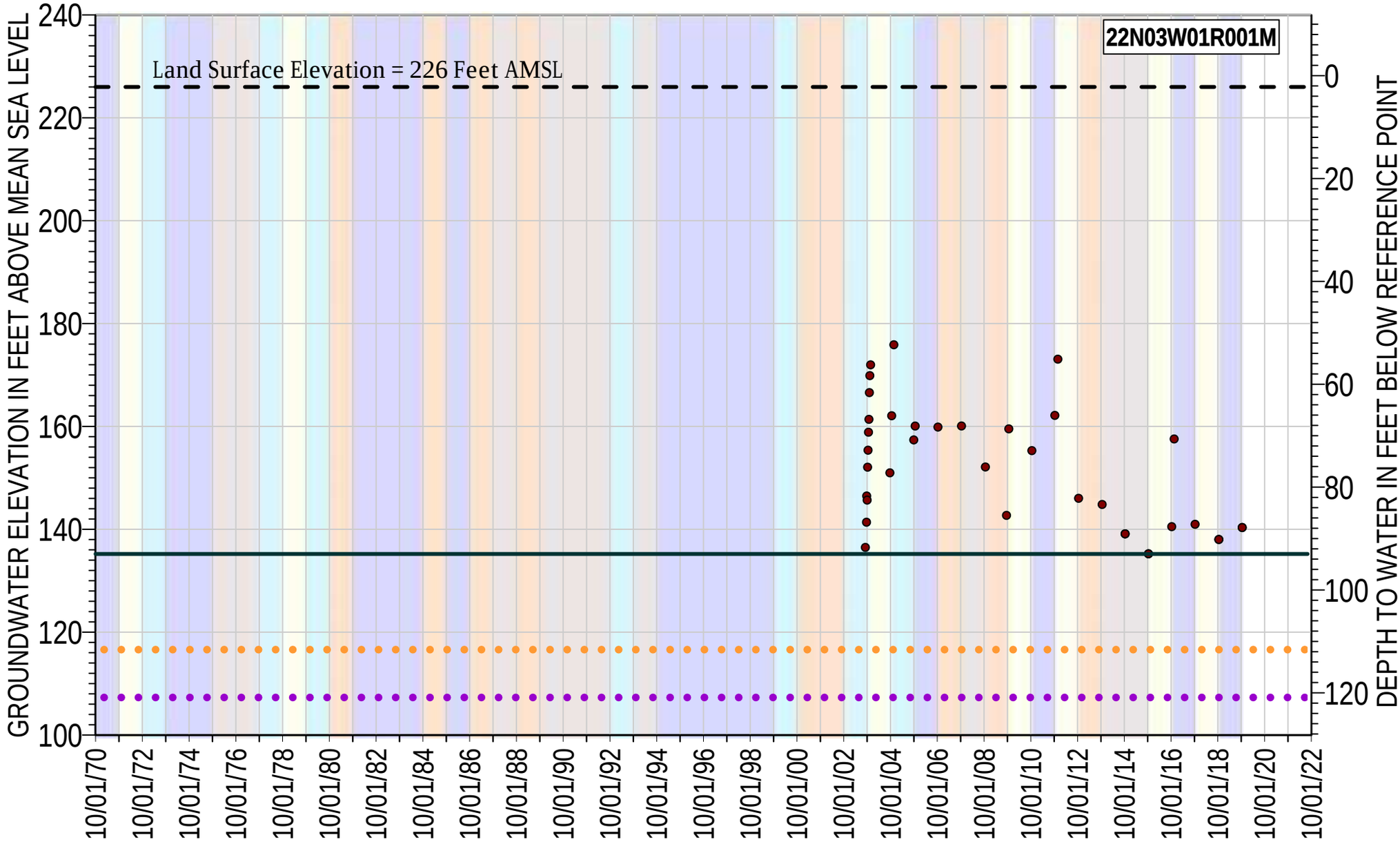


22N02W18C003M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 225.5 ft AMSL
Well Type: Observation
Total Depth: 188 ft bgs
Well Screen Interval= 165 - 175 ft bgs

Water Year Classification

Wet
Above Normal
Below Normal
Dry
Critically Dry

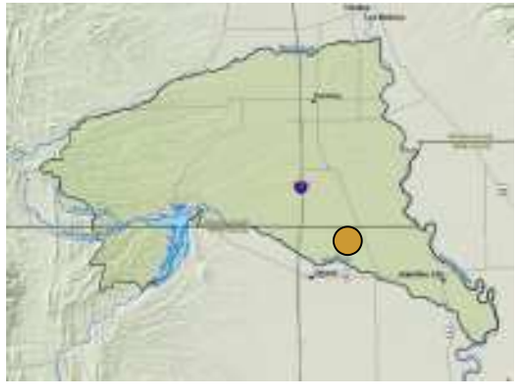


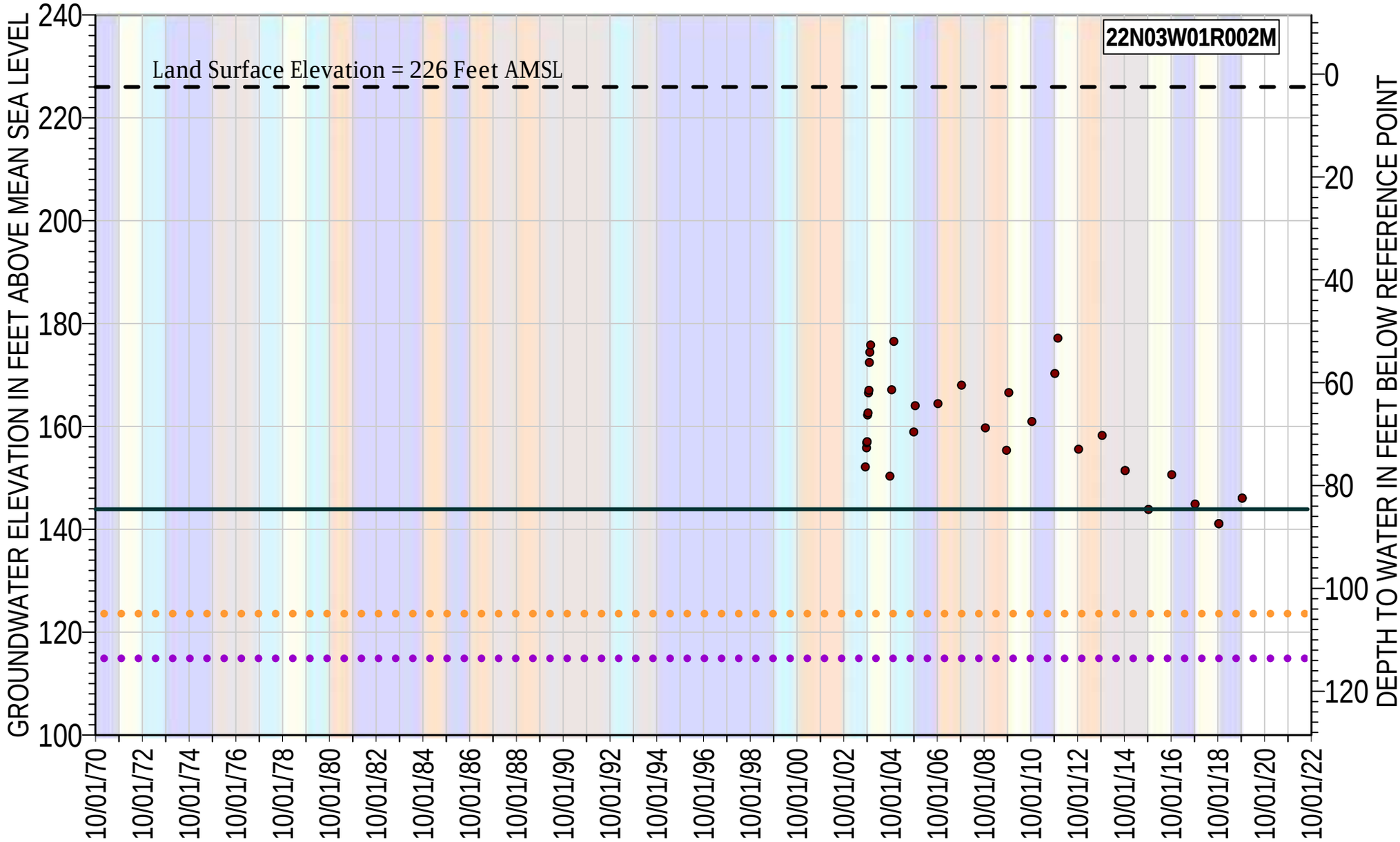
- 22N03W01R001M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 228.2 ft AMSL
Well Type: Observation
Total Depth: 515 ft bgs
Well Screen Interval= 470 - 480 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



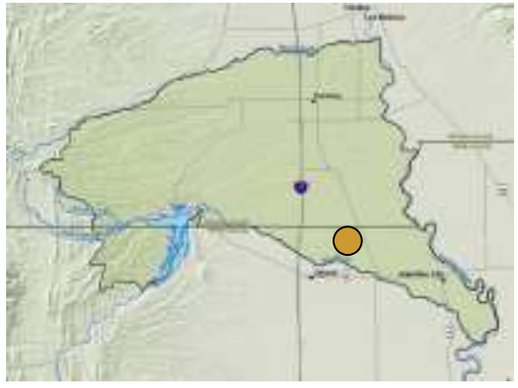


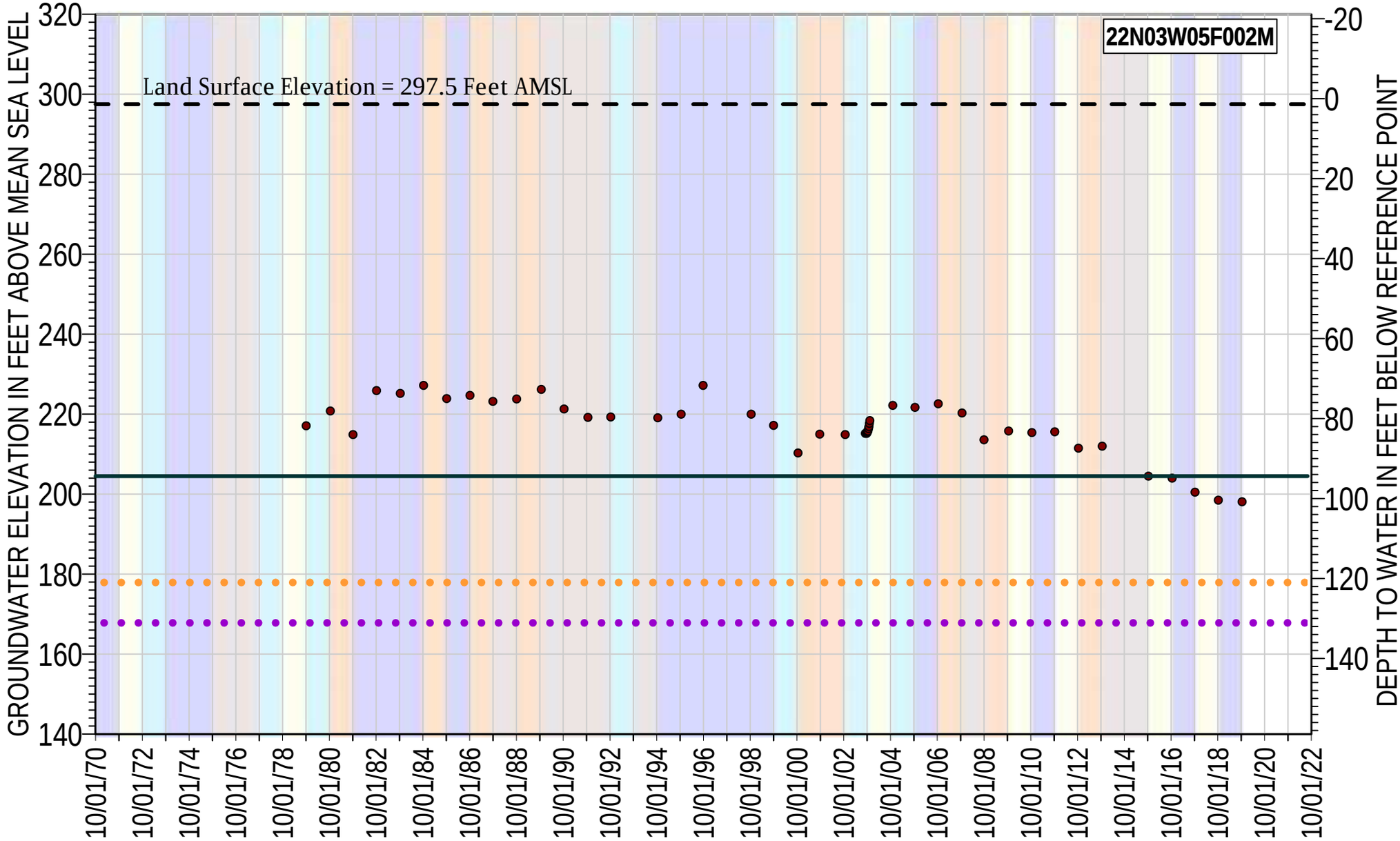
22N03W01R002M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 228.5 ft AMSL
Well Type: Observation
Total Depth: 314 ft bgs
Well Screen Interval= 270 - 280 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



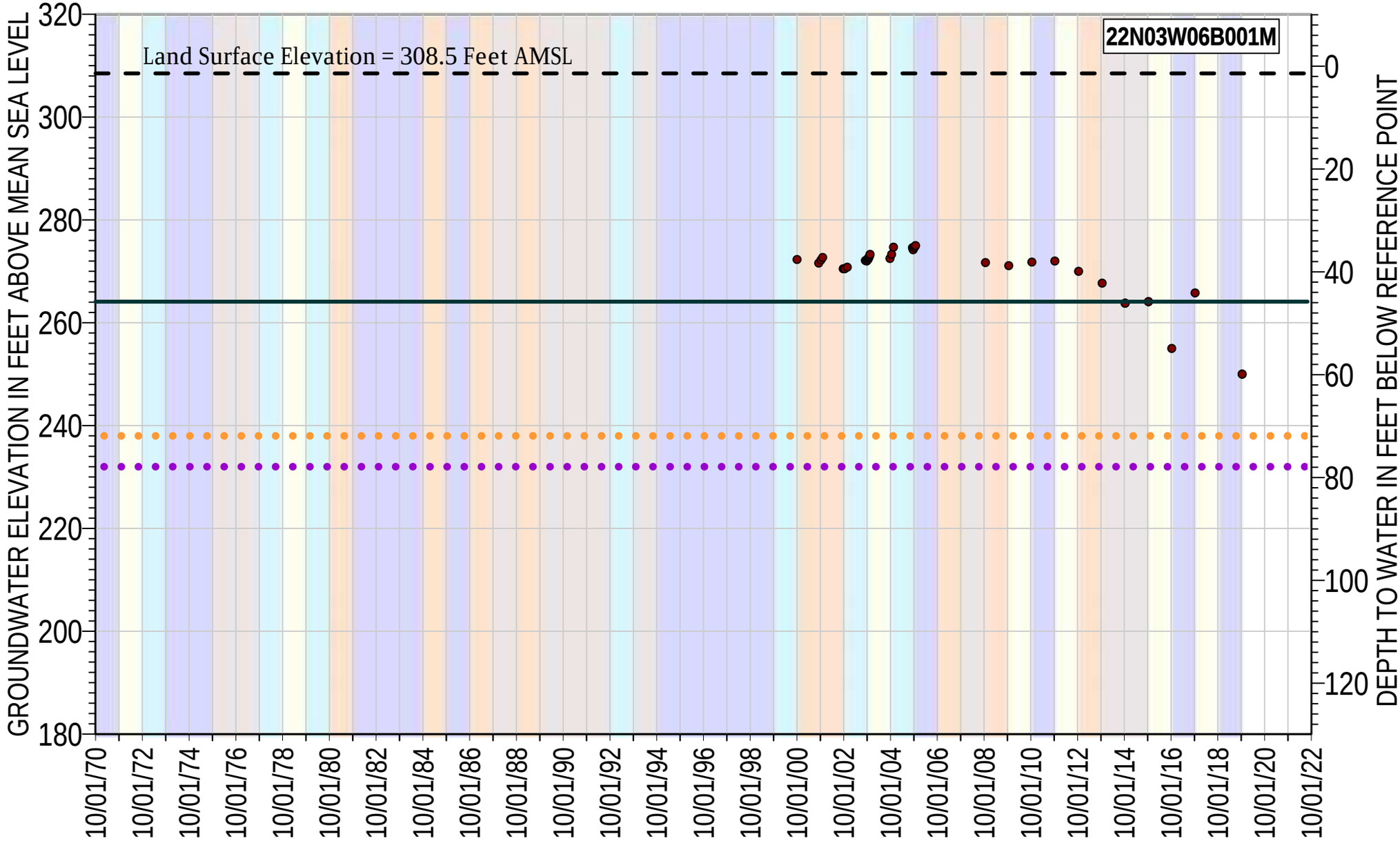


22N03W05F002M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 298.9 ft AMSL
Well Type: Irrigation
Total Depth: 218 ft bgs
Well Screen Interval= 188 - 218 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

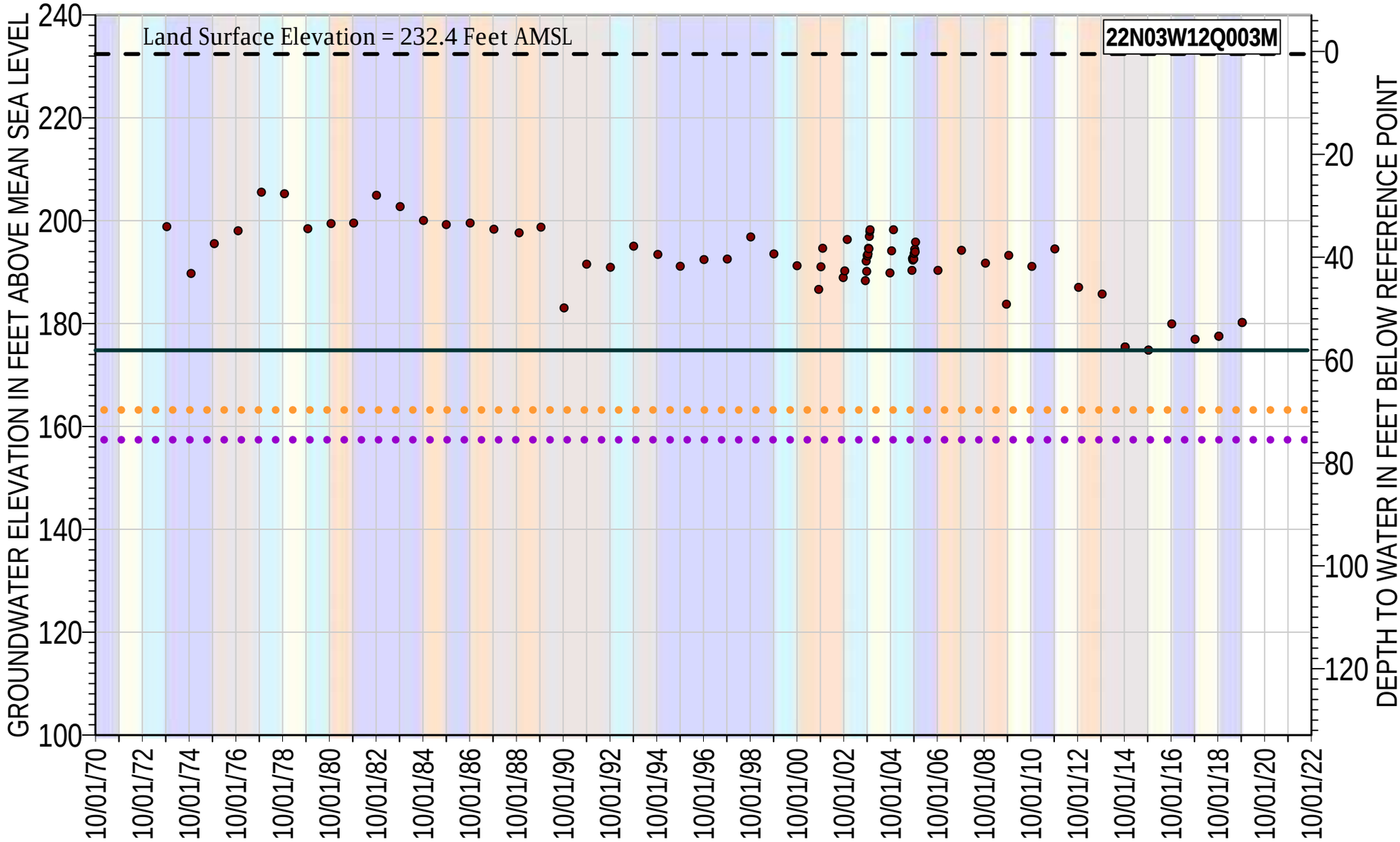


22N03W06B001M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 309.9 ft AMSL
Well Type: Domestic
Total Depth: 210 ft bgs
Well Screen Interval= 195 - 210 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

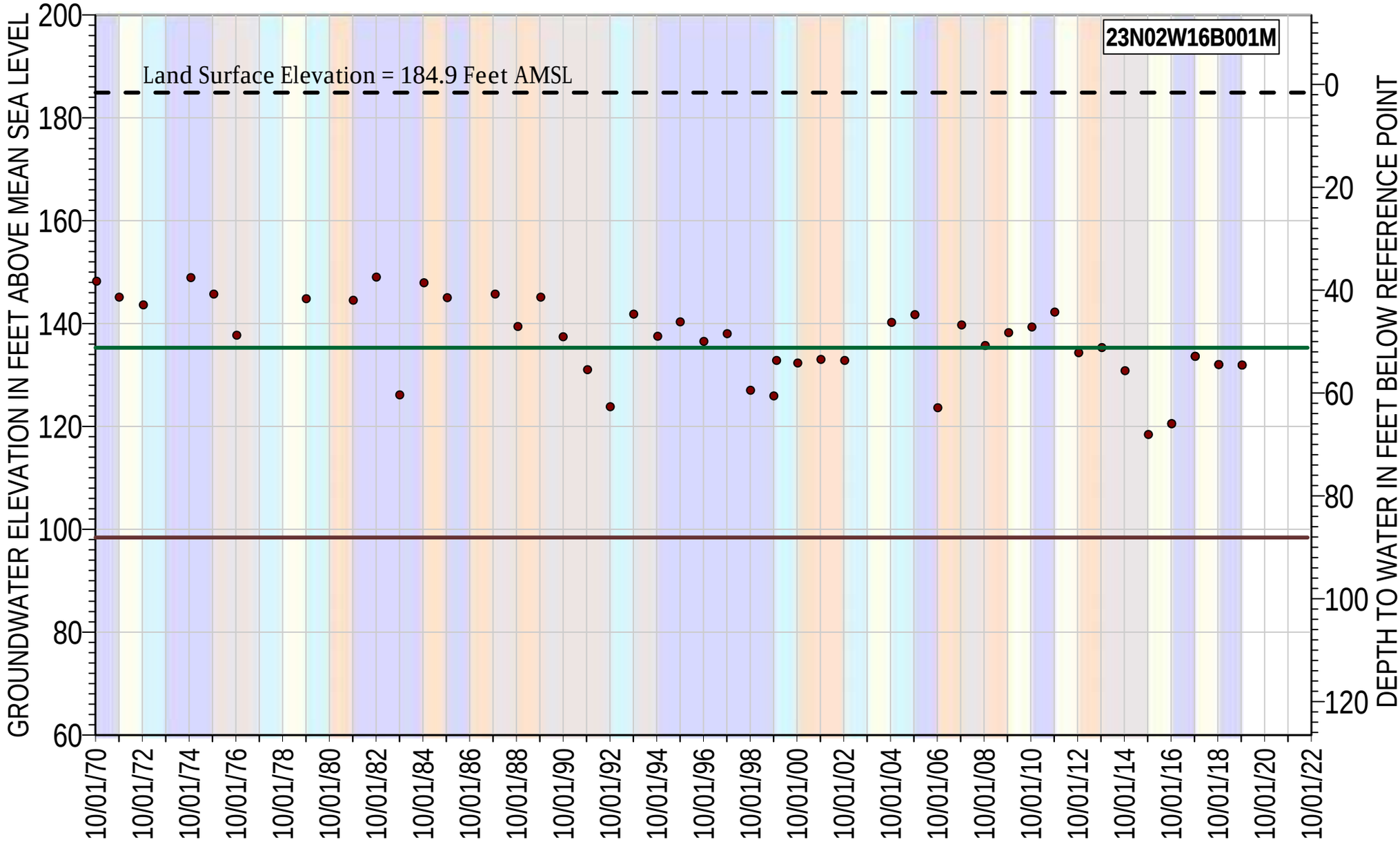


22N03W12Q003M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 232.9 ft AMSL
Well Type: Domestic
Total Depth: 124 ft bgs
Well Screen Interval= 112 - 123 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



23N02W16B001M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 186.5 ft AMSL

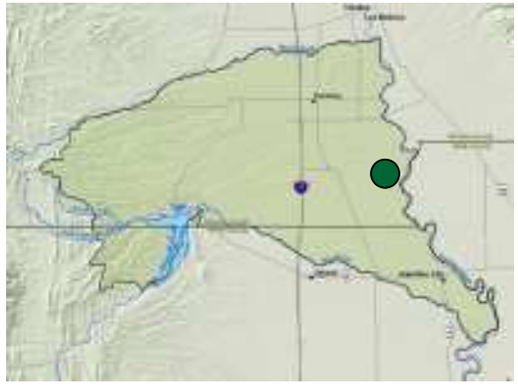
Well Type: Irrigation

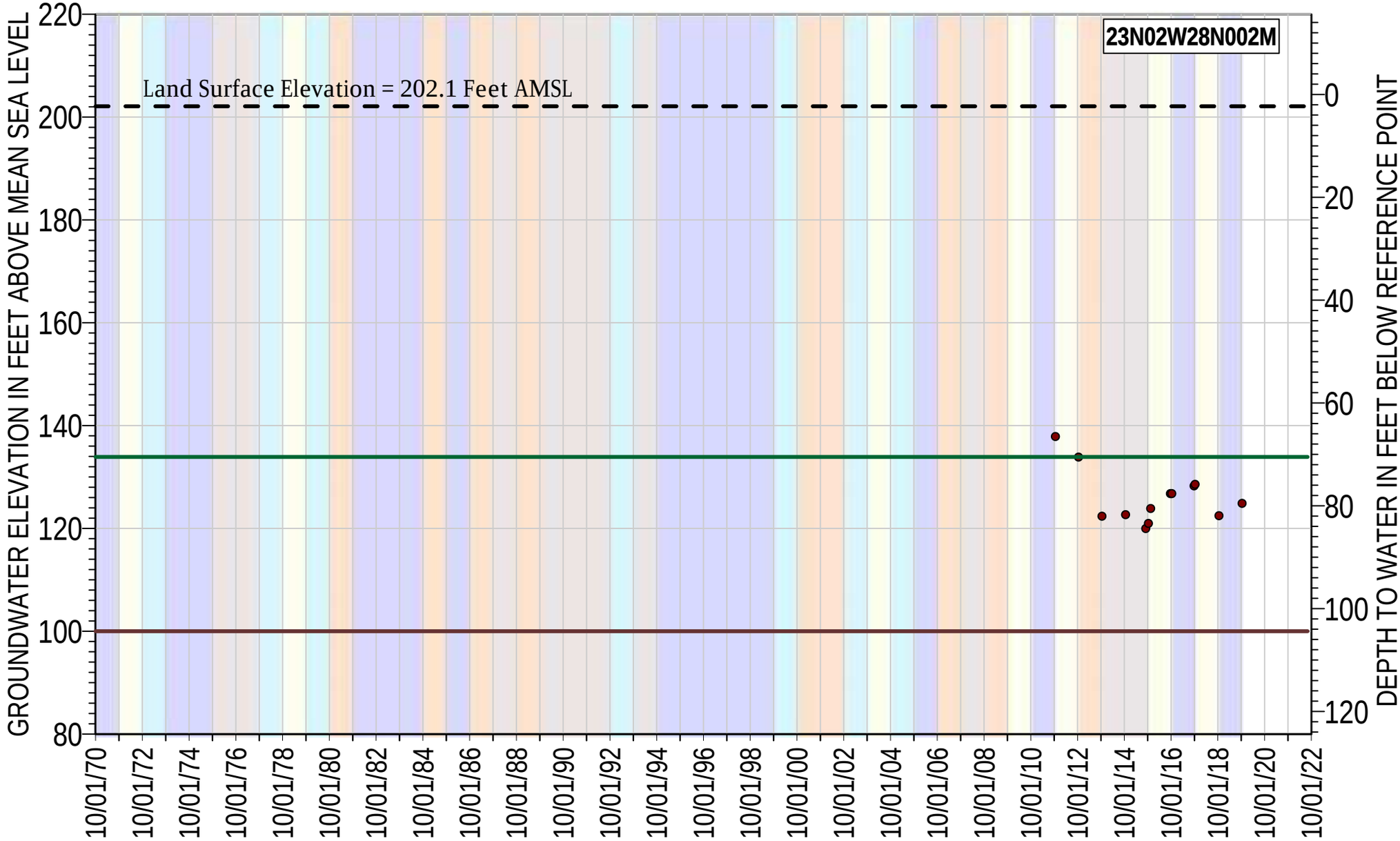
Total Depth: 120 ft bgs

Well Screen Interval= 100 - 120 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



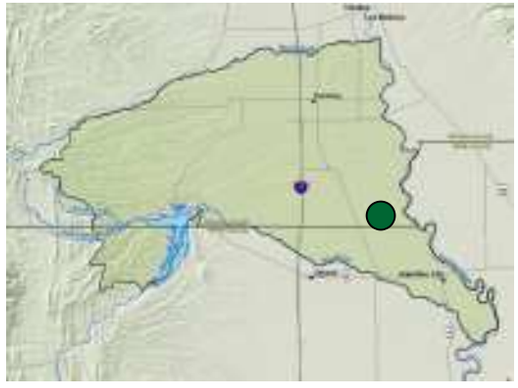


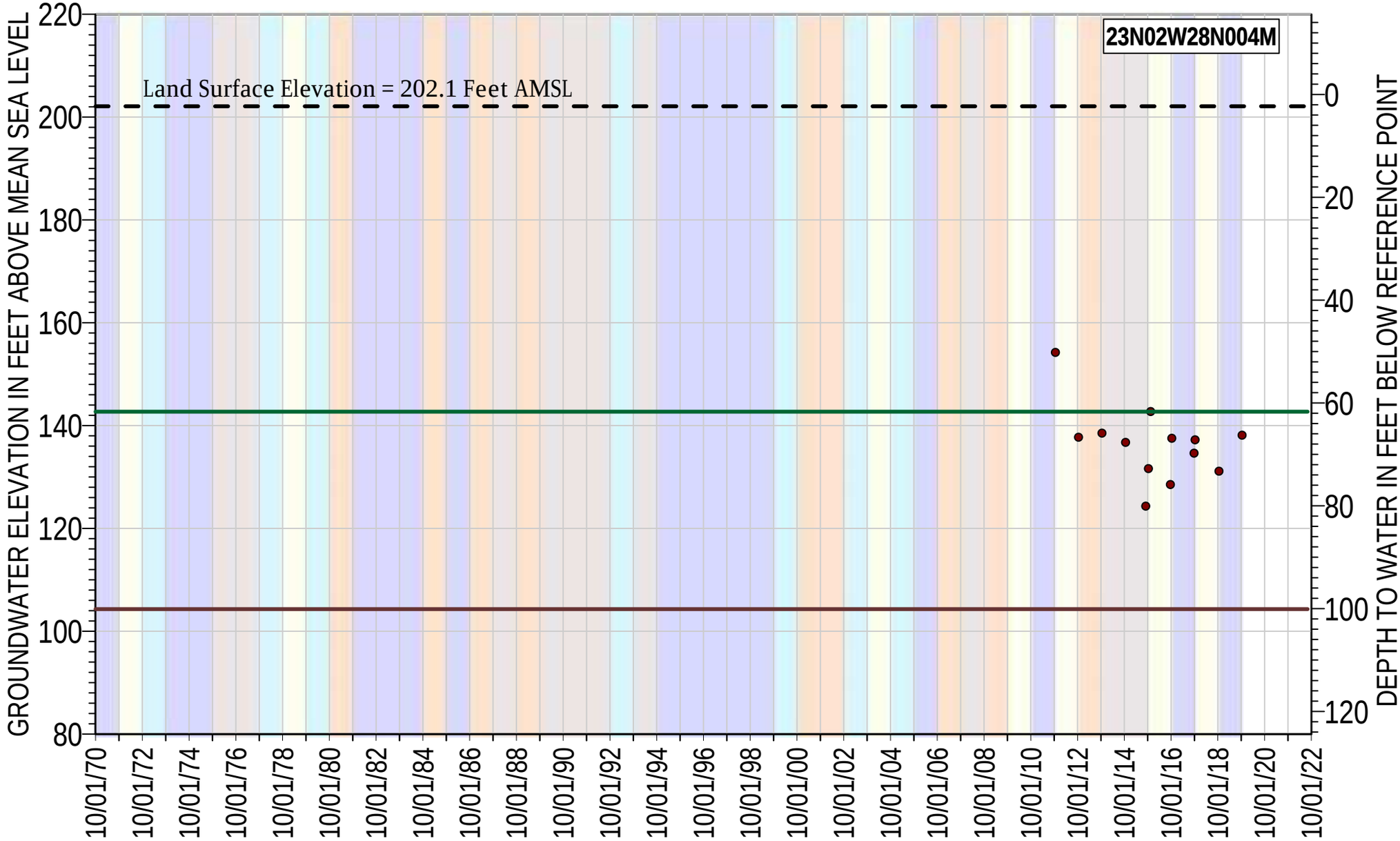
23N02W28N002M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 204.4 ft AMSL
Well Type: Observation
Total Depth: 580 ft bgs
Well Screen Interval= 550 - 570 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



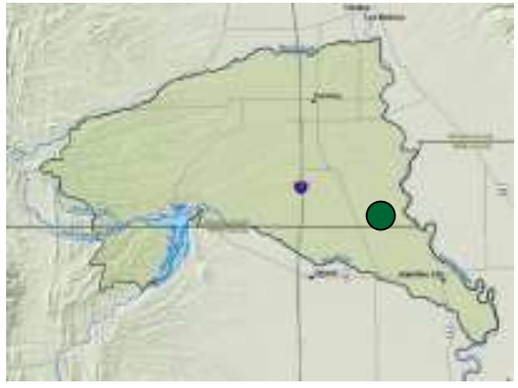


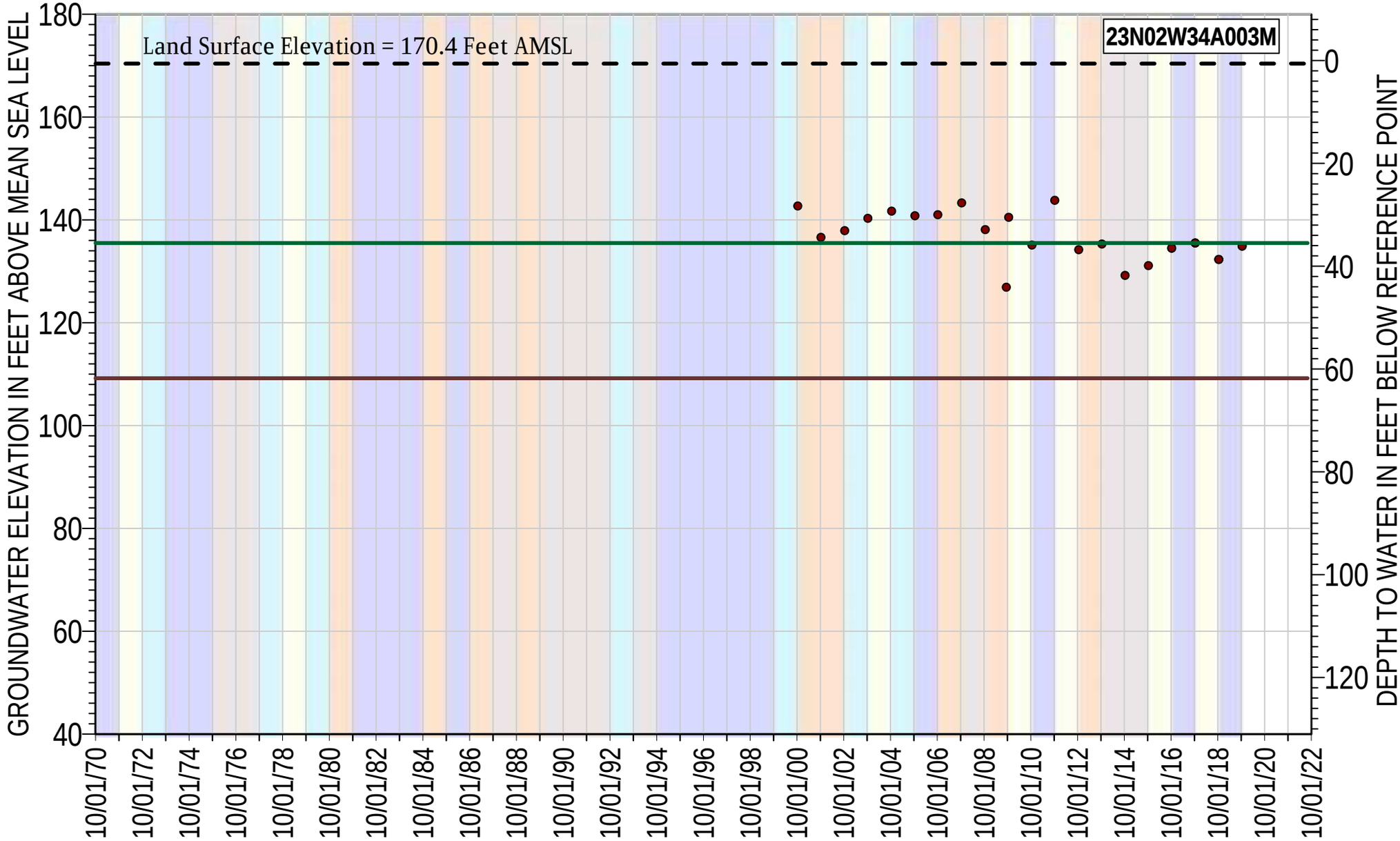
23N02W28N004M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 204.4 ft AMSL
Well Type: Observation
Total Depth: 205 ft bgs
Well Screen Interval= 100 - 170 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	





23N02W34A003M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 171 ft AMSL

Well Type: Irrigation

Total Depth: 125 ft bgs

Well Screen Interval= 104 - 124 ft bgs

Water Year Classification

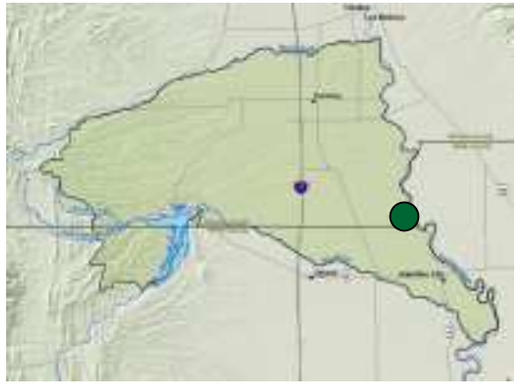
Wet

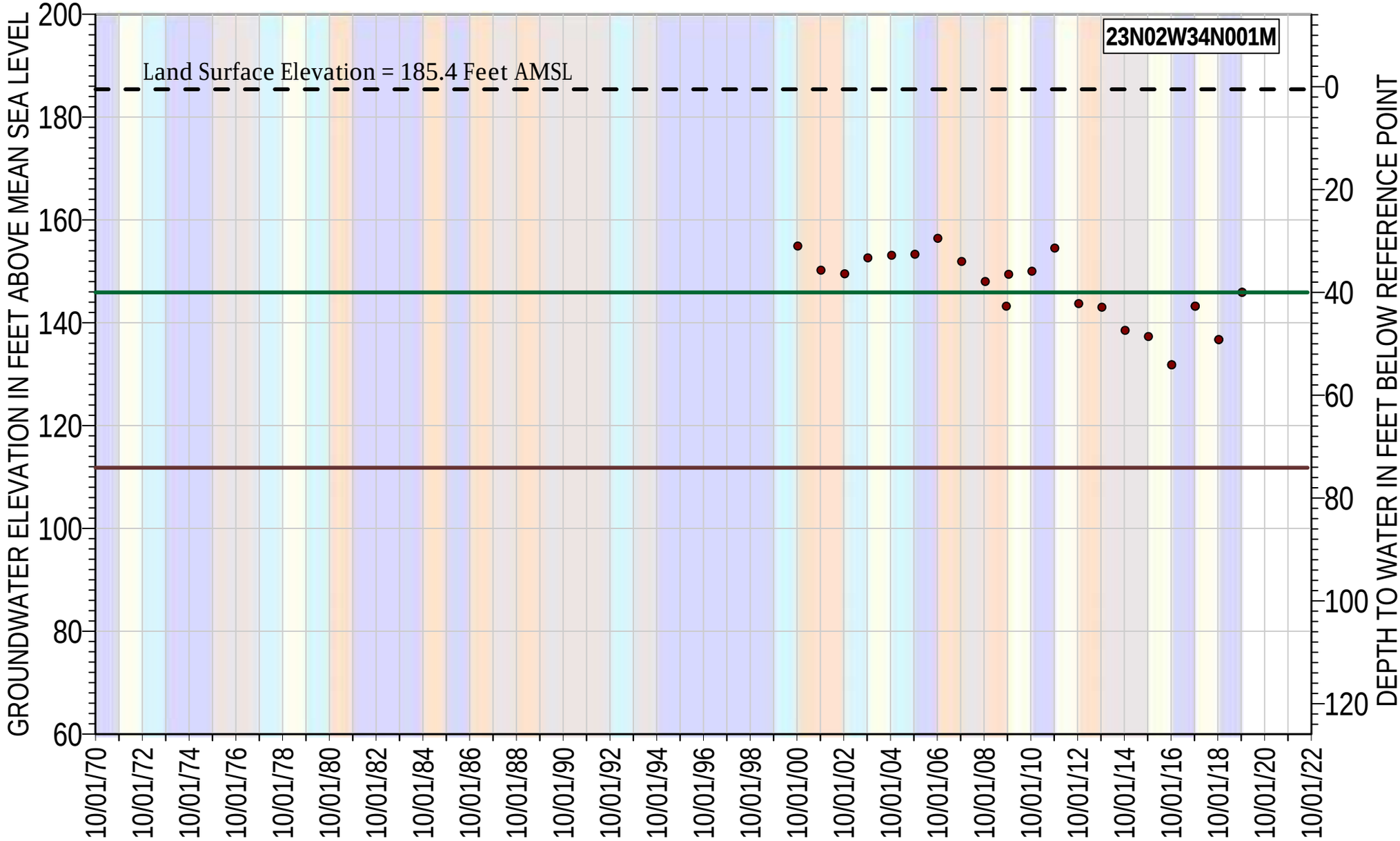
Above Normal

Below Normal

Dry

Critically Dry





23N02W34N001M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 185.9 ft AMSL

Well Type: Industrial

Total Depth: 100 ft bgs

Well Screen Interval= 70 - 100 ft bgs

Water Year Classification

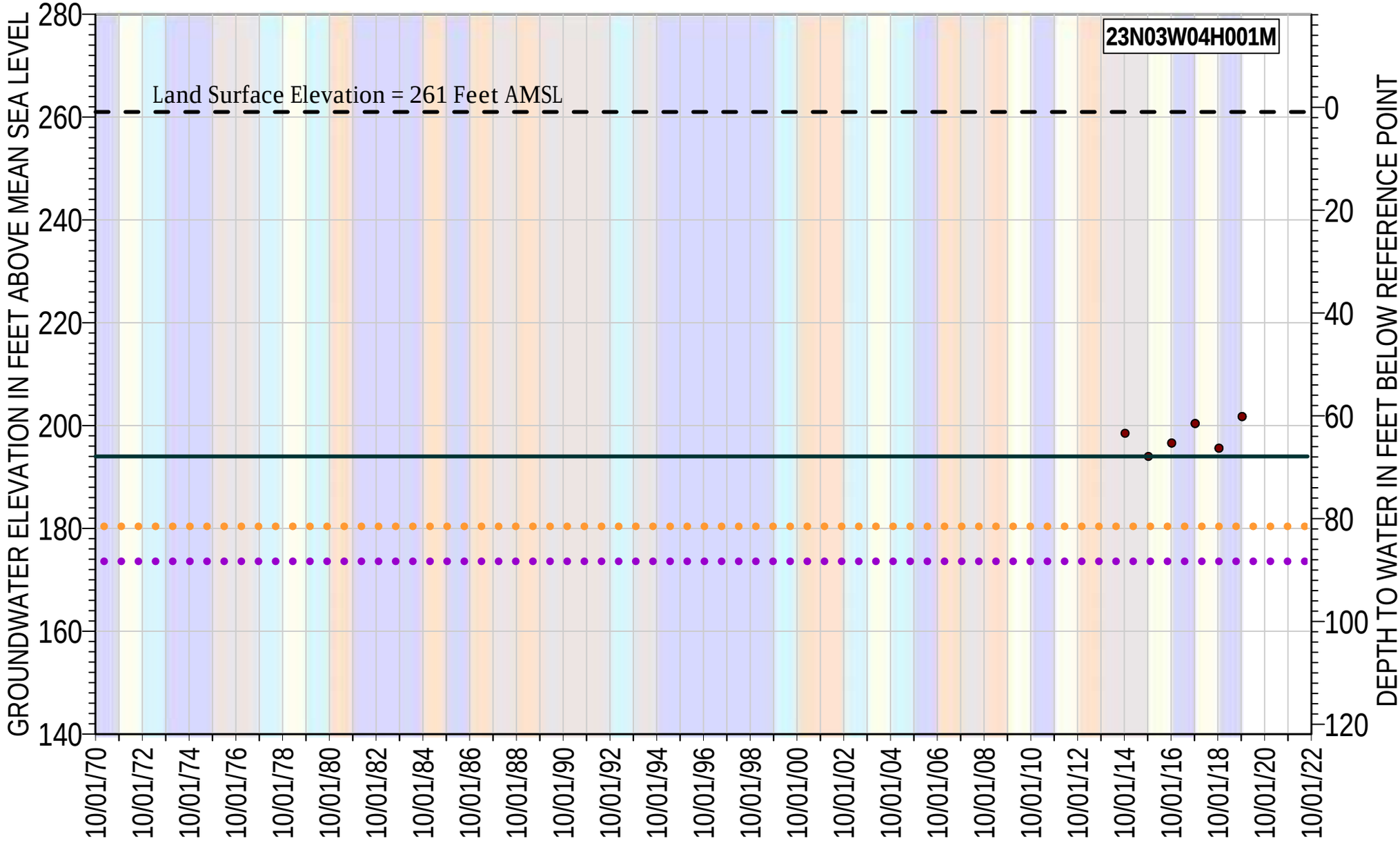
Wet

Dry

Above Normal

Critically Dry

Below Normal

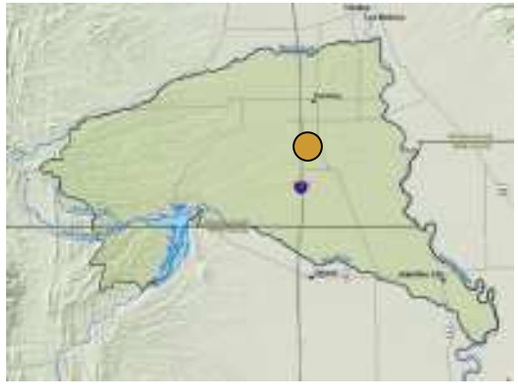


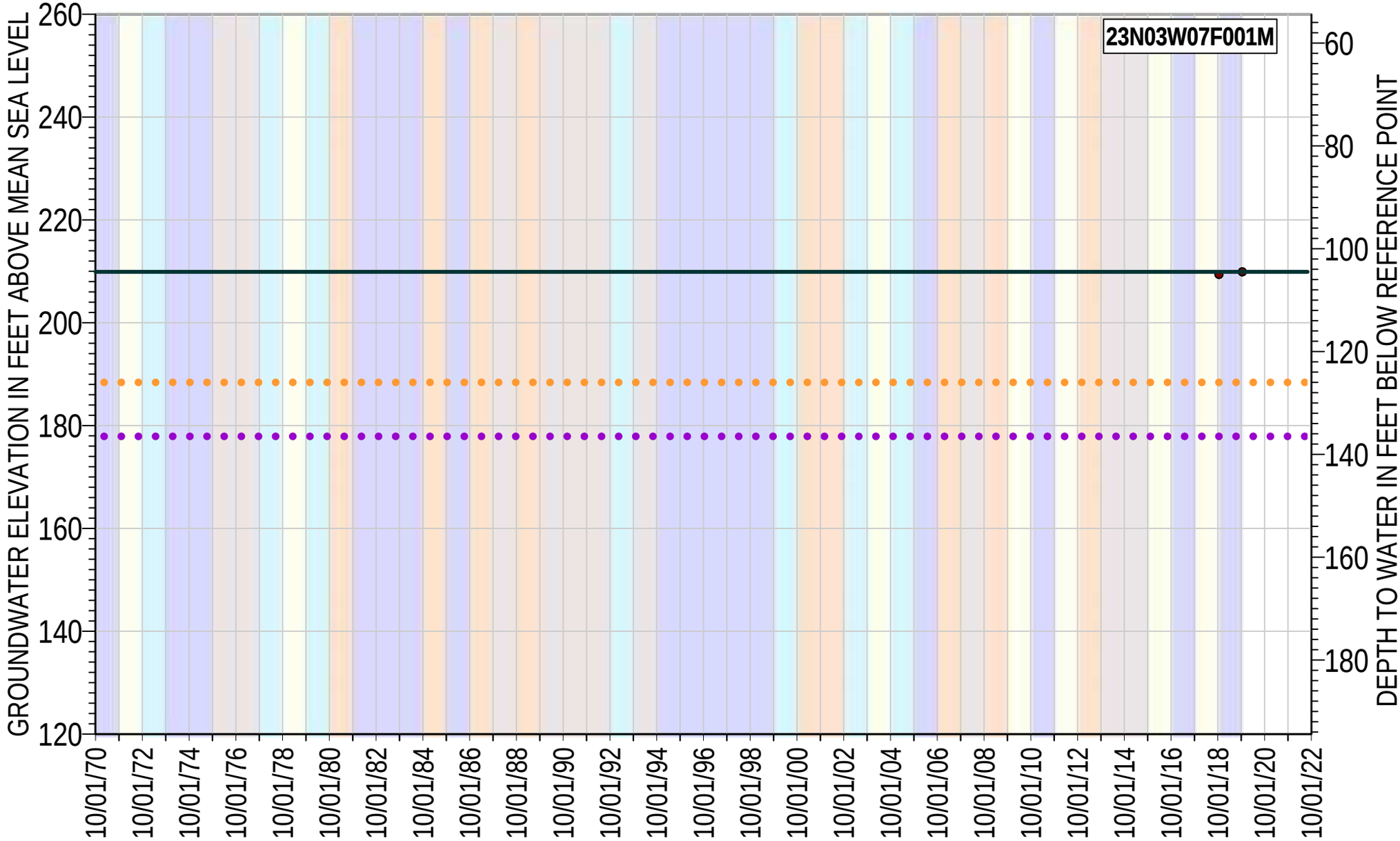
- 23N03W04H001M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 261.9 ft AMSL
Well Type: Irrigation
Total Depth: 270 ft bgs
Well Screen Interval= 200 - 270 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



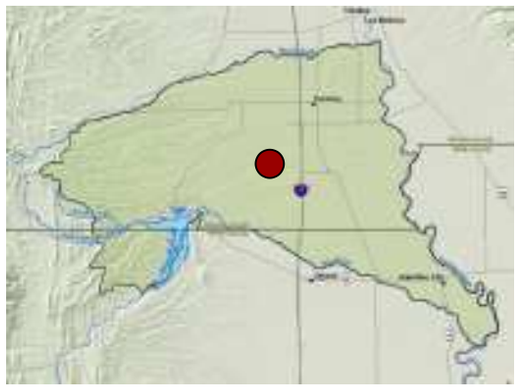


23N03W07F001M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

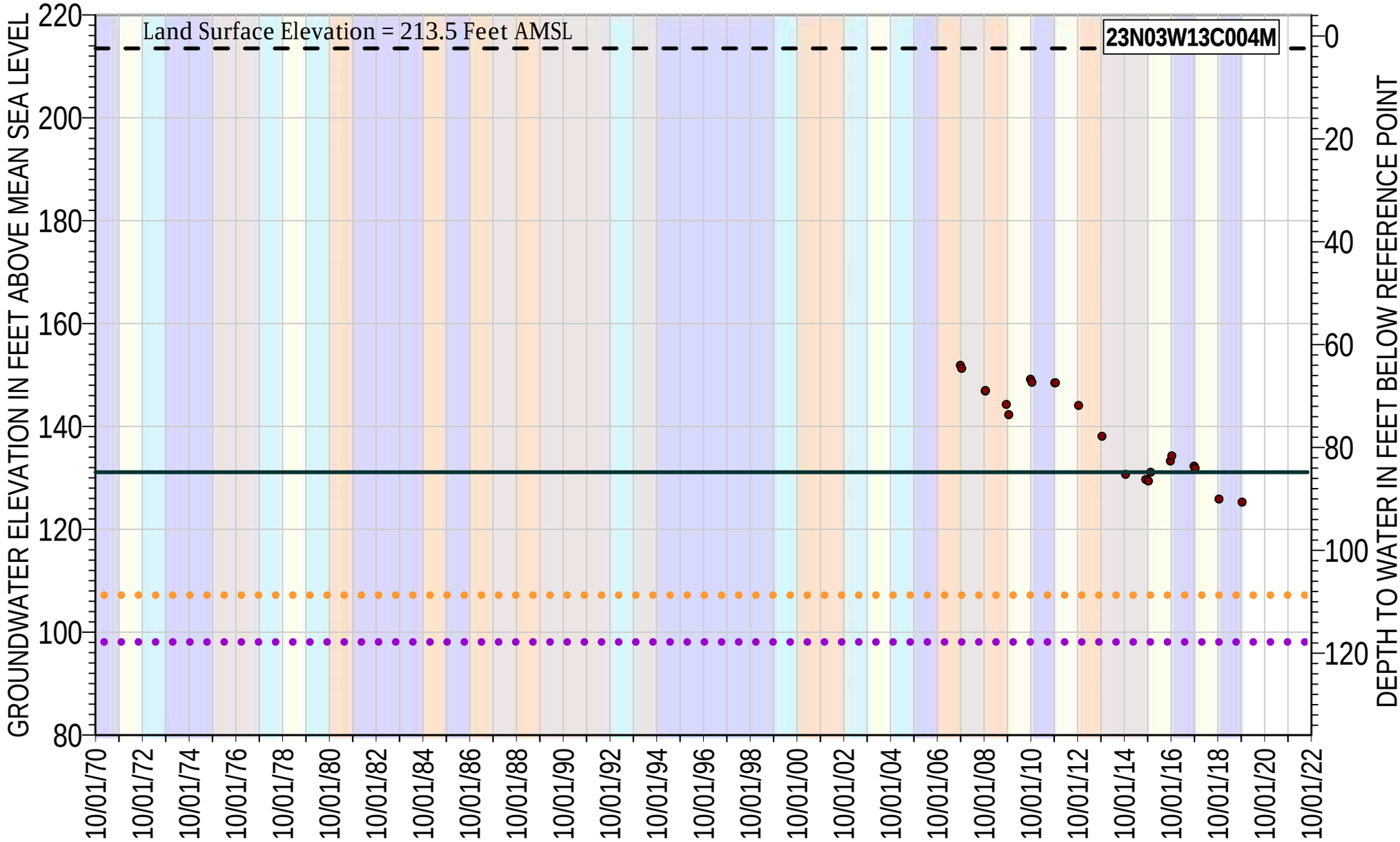
Reference Point Elevation= 314.4 ft AMSL
Well Type: Irrigation
Total Depth: 790 ft bgs
Well Screen Interval= 240 - 790 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



**Note: Insufficient Data - MO defined using 2016-2019 max*

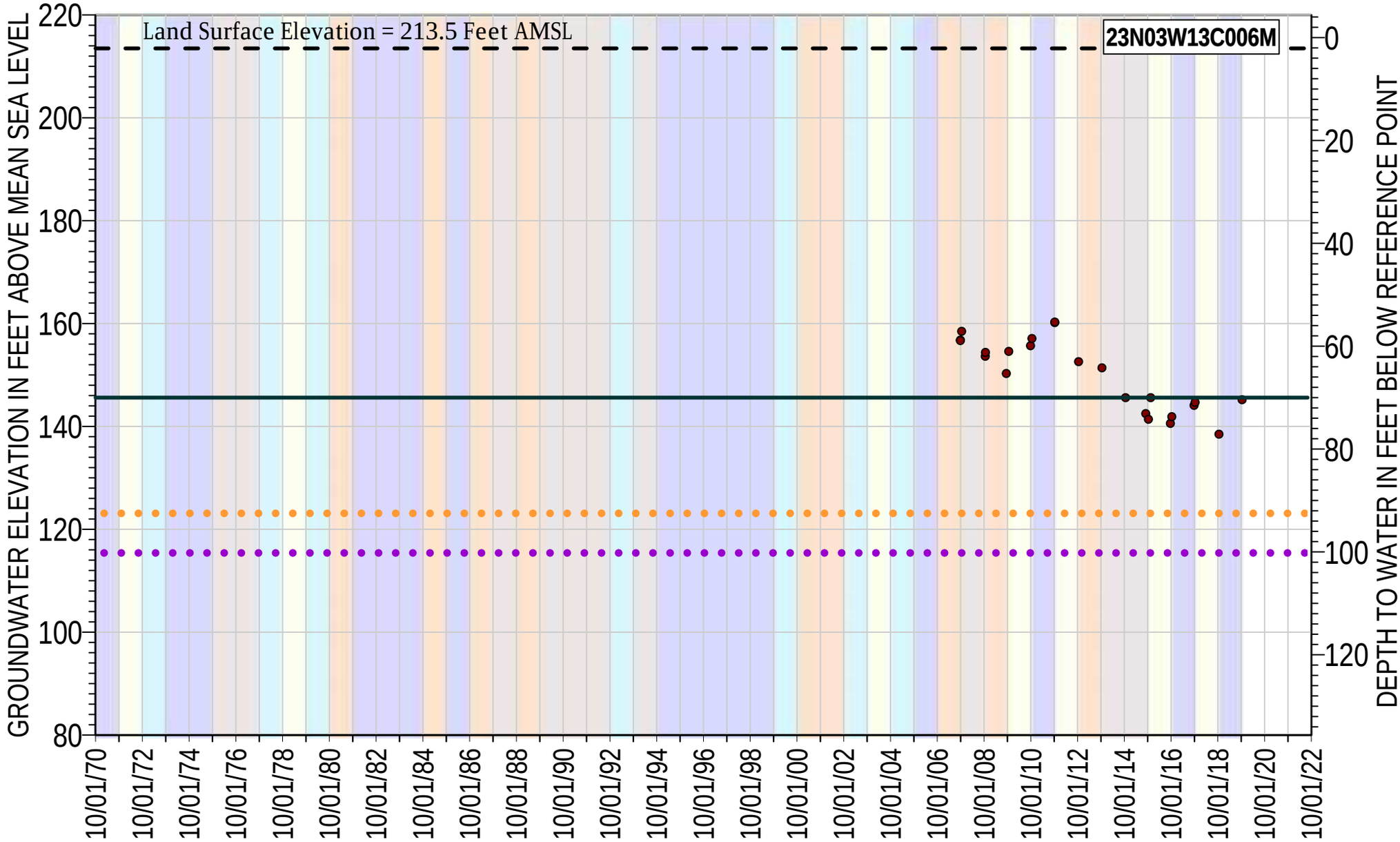


23N03W13C004M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 215.9 ft AMSL
Well Type: Observation
Total Depth: 835 ft bgs
Well Screen Interval= 815 - 825 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

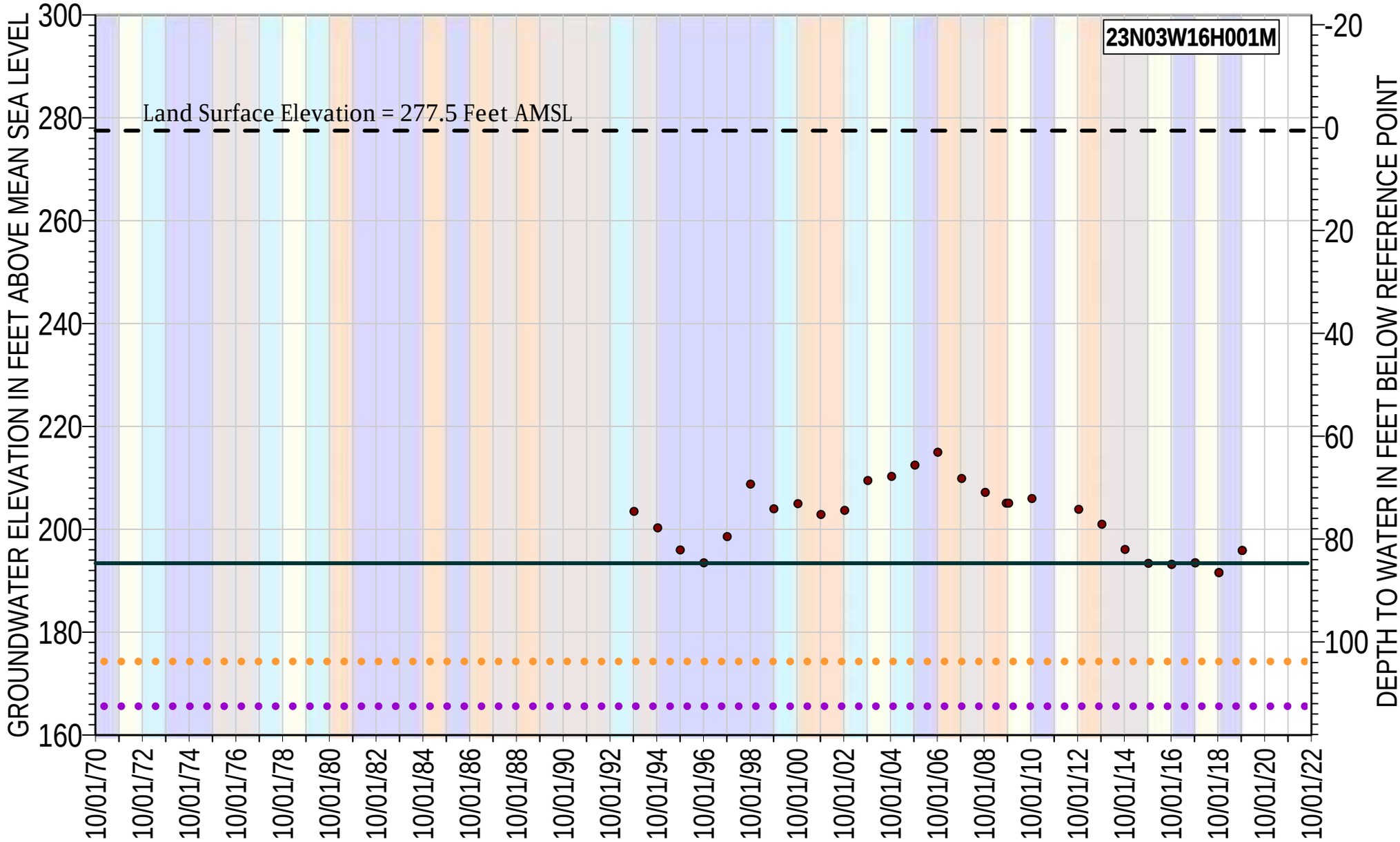


23N03W13C006M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 215.6 ft AMSL
Well Type: Observation
Total Depth: 182 ft bgs
Well Screen Interval= 95 - 135 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

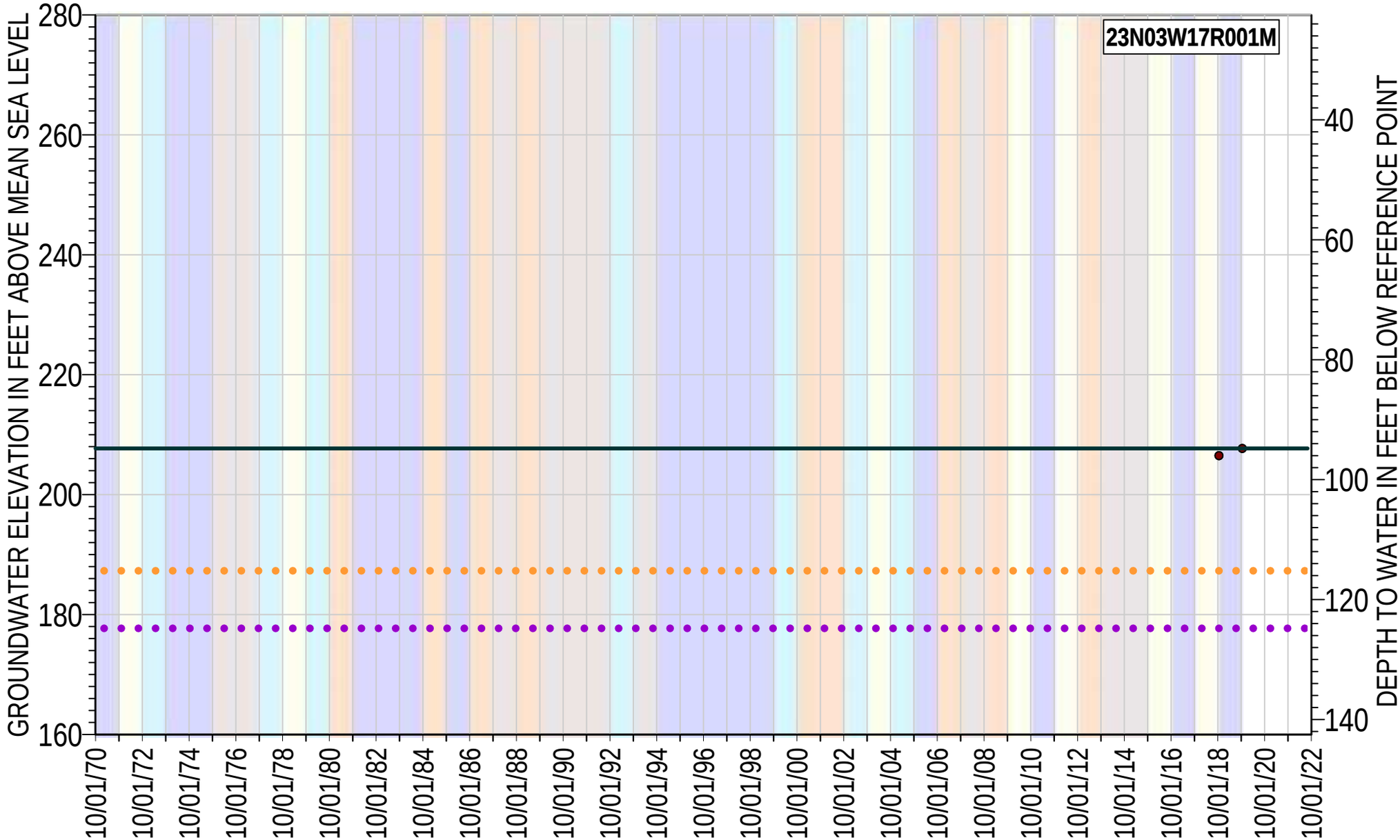


23N03W16H001M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 278.1 ft AMSL
Well Type: Domestic
Total Depth: 150 ft bgs
Well Screen Interval= 144 - 150 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



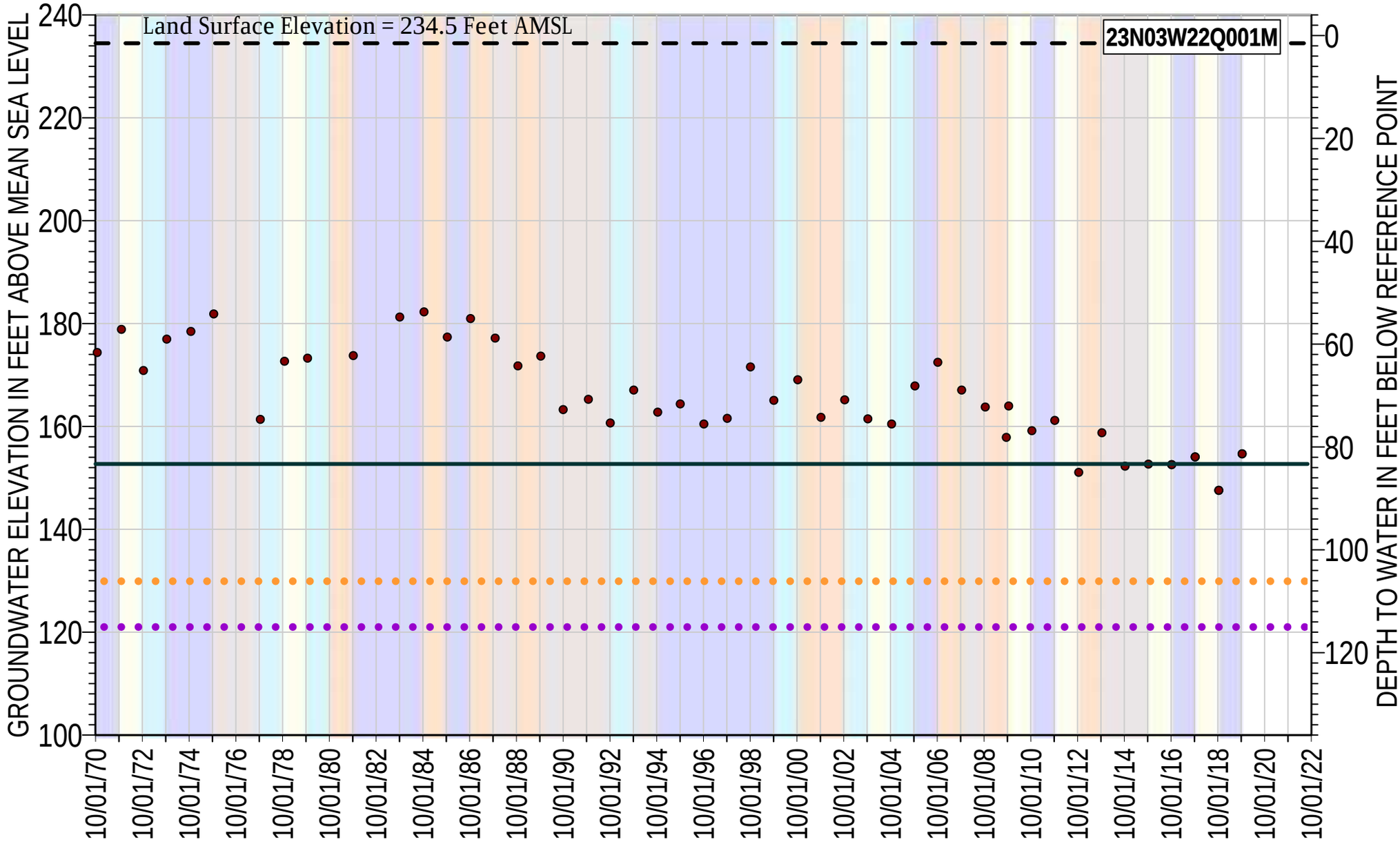
23N03W17R001M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 302.5 ft AMSL
Well Type: Irrigation
Total Depth: 720 ft bgs
Well Screen Interval= 360 - 720 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

**Note: Insufficient Data - MO defined using 2016-2019 max*

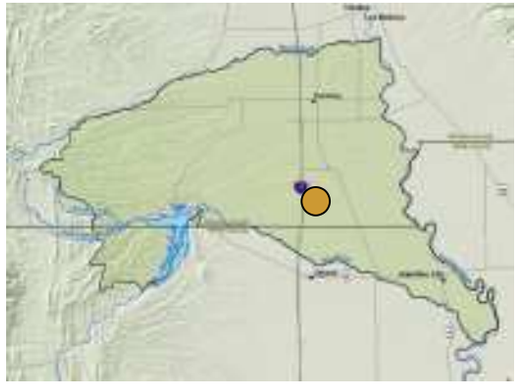


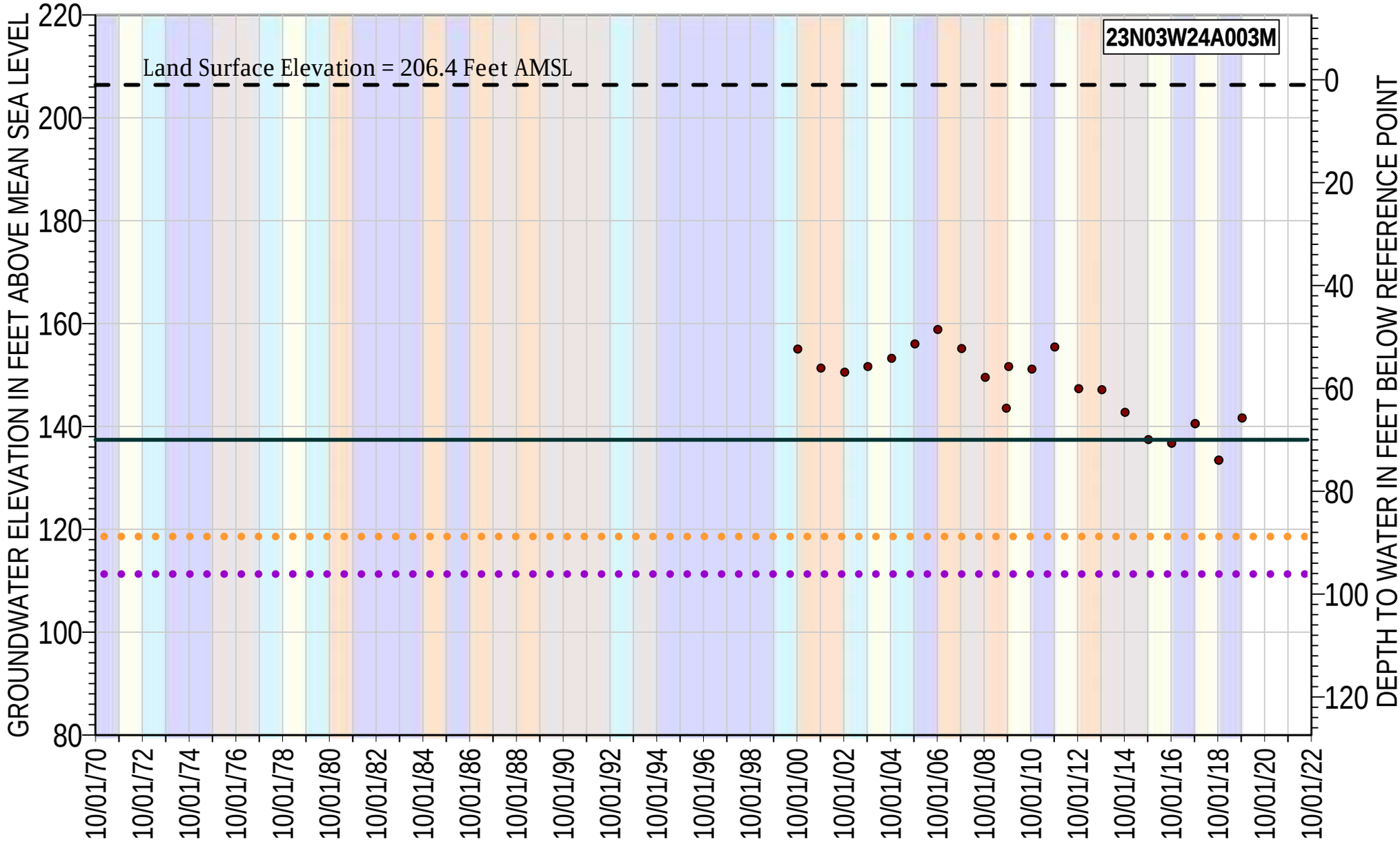
23N03W22Q001M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 236 ft AMSL
Well Type: Irrigation
Total Depth: 380 ft bgs
Well Screen Interval= Unknown ft bgs

Water Year Classification

Wet
Above Normal
Below Normal
Dry
Critically Dry



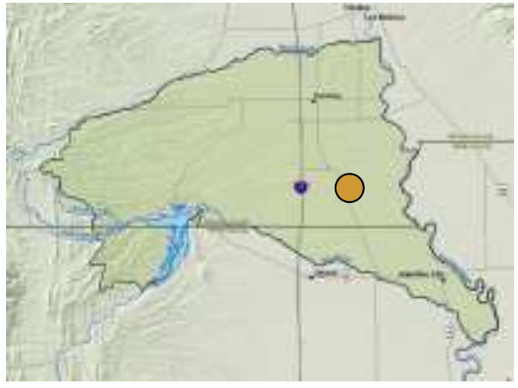


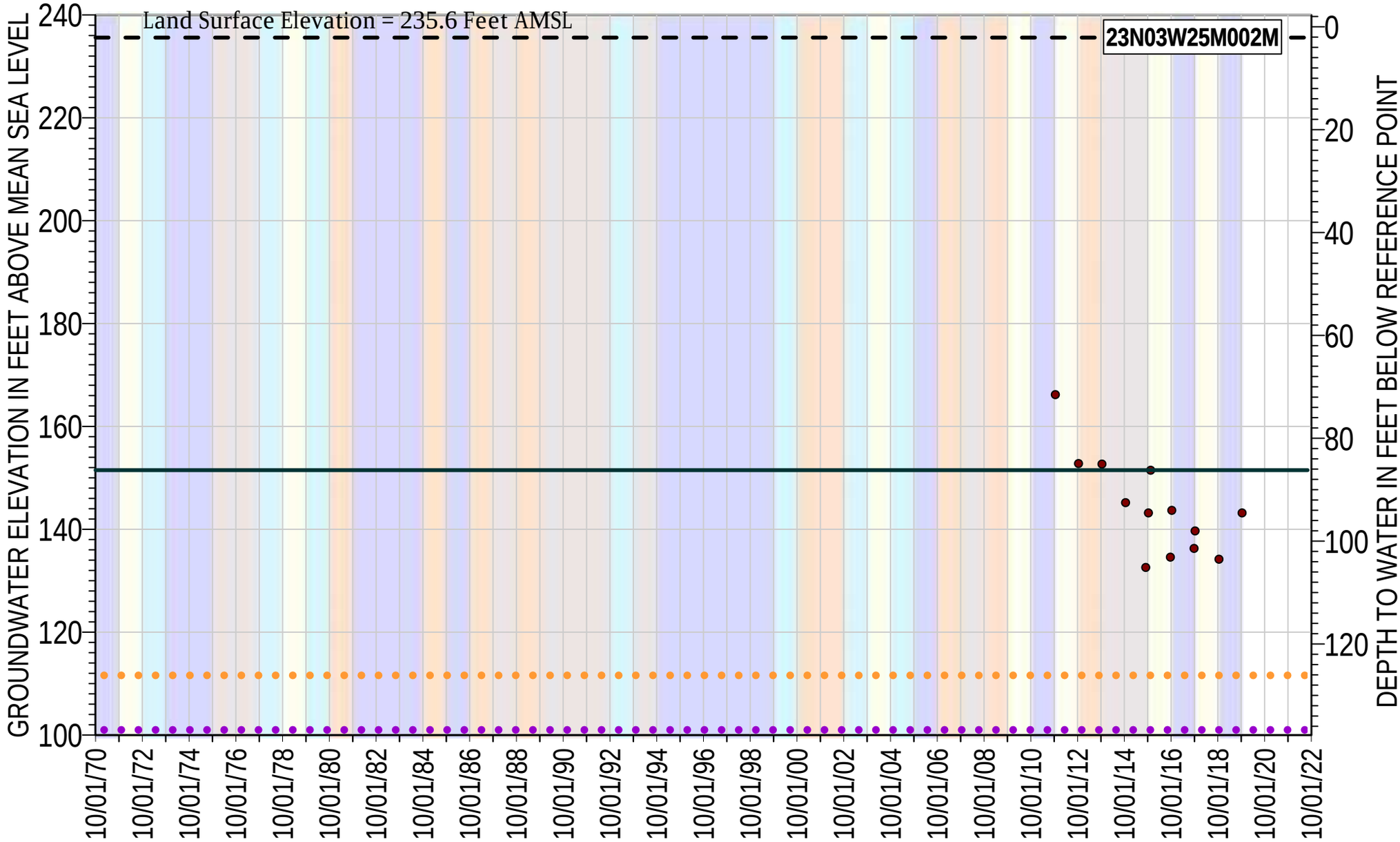
23N03W24A003M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 207.4 ft AMSL
Well Type: Domestic
Total Depth: 199 ft bgs
Well Screen Interval= 180 - 199 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



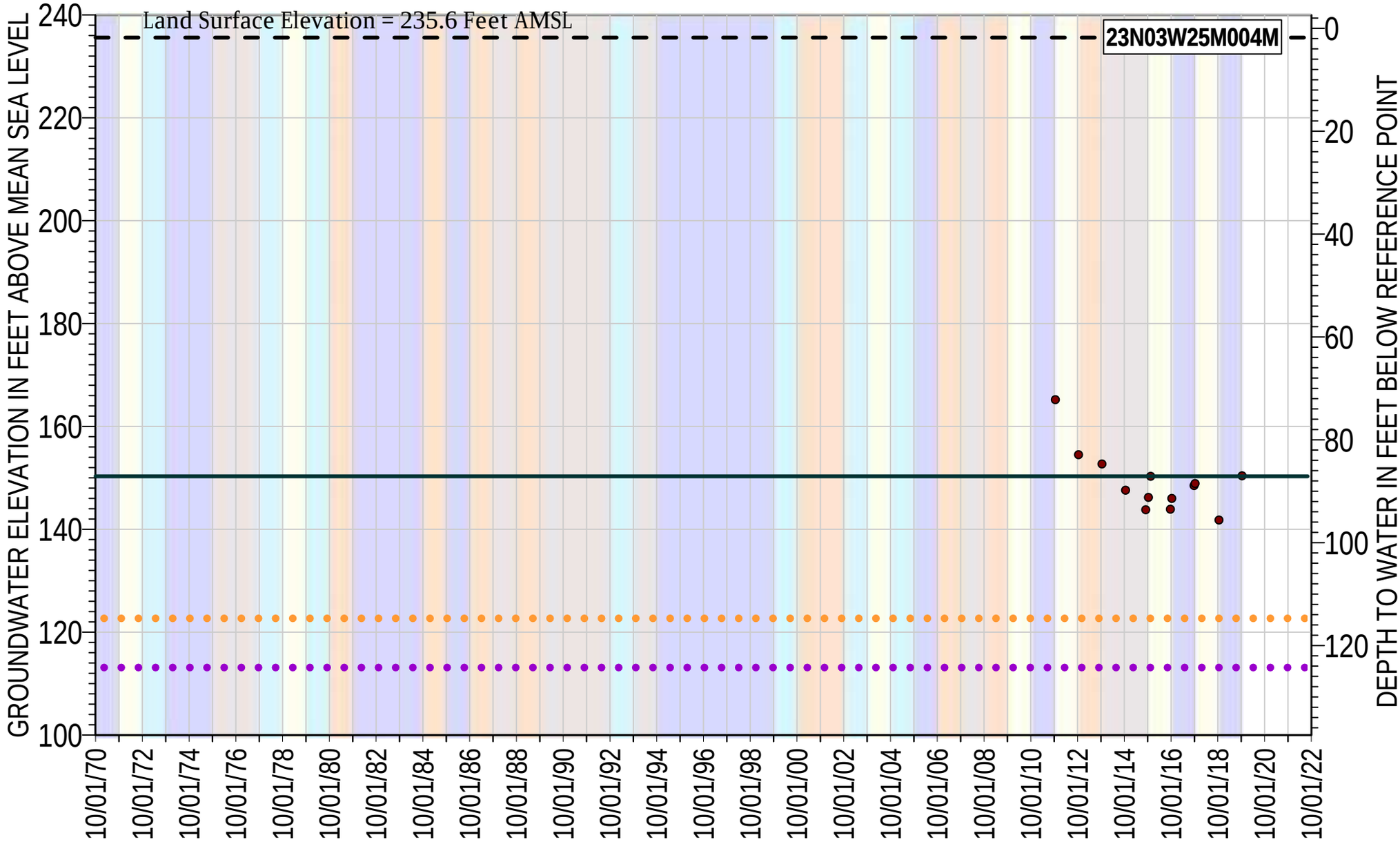


23N03W25M002M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 237.7 ft AMSL
Well Type: Observation
Total Depth: 513 ft bgs
Well Screen Interval= 470 - 500 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

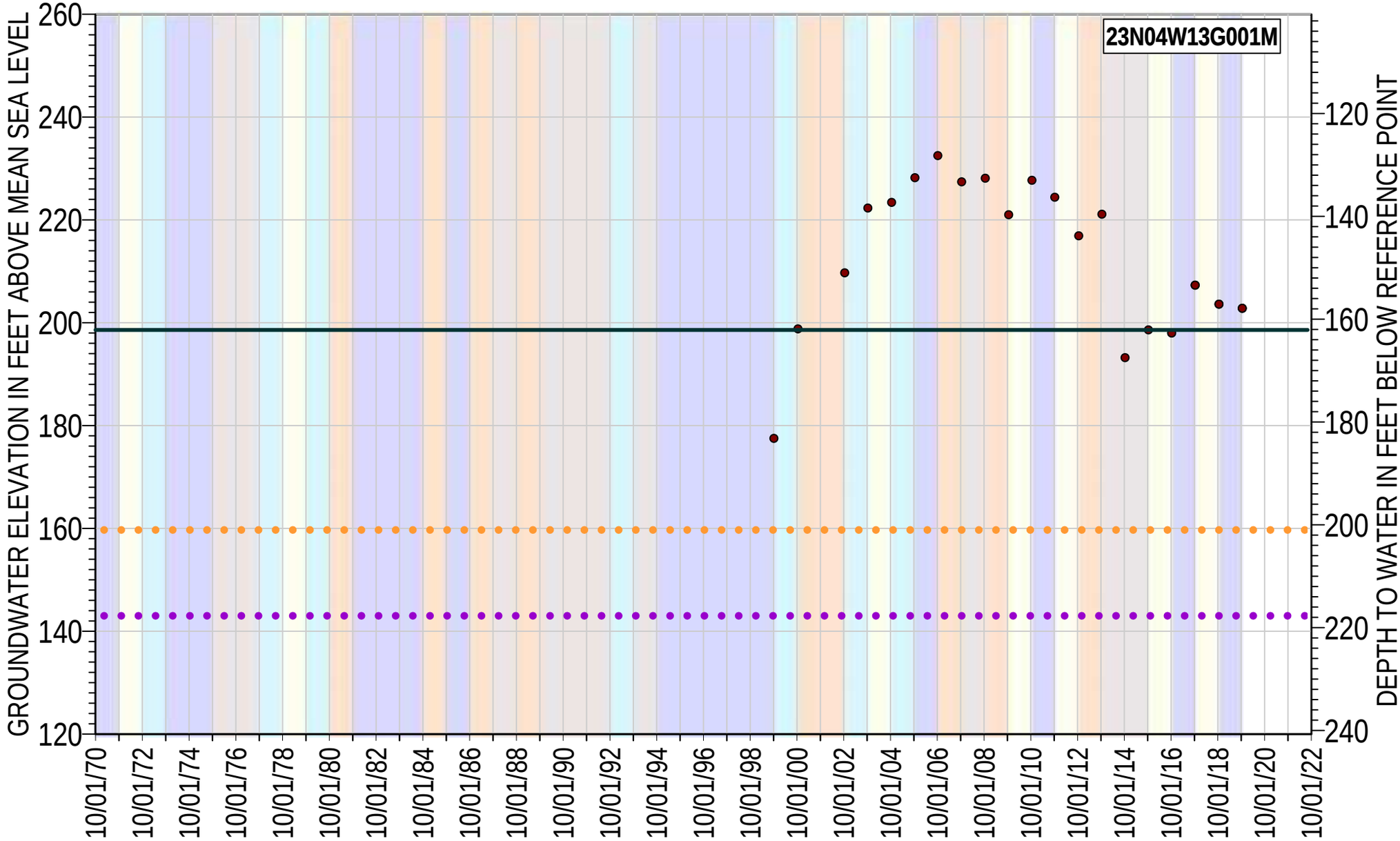


23N03W25M004M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 237.4 ft AMSL
Well Type: Observation
Total Depth: 155 ft bgs
Well Screen Interval= 120 - 130 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

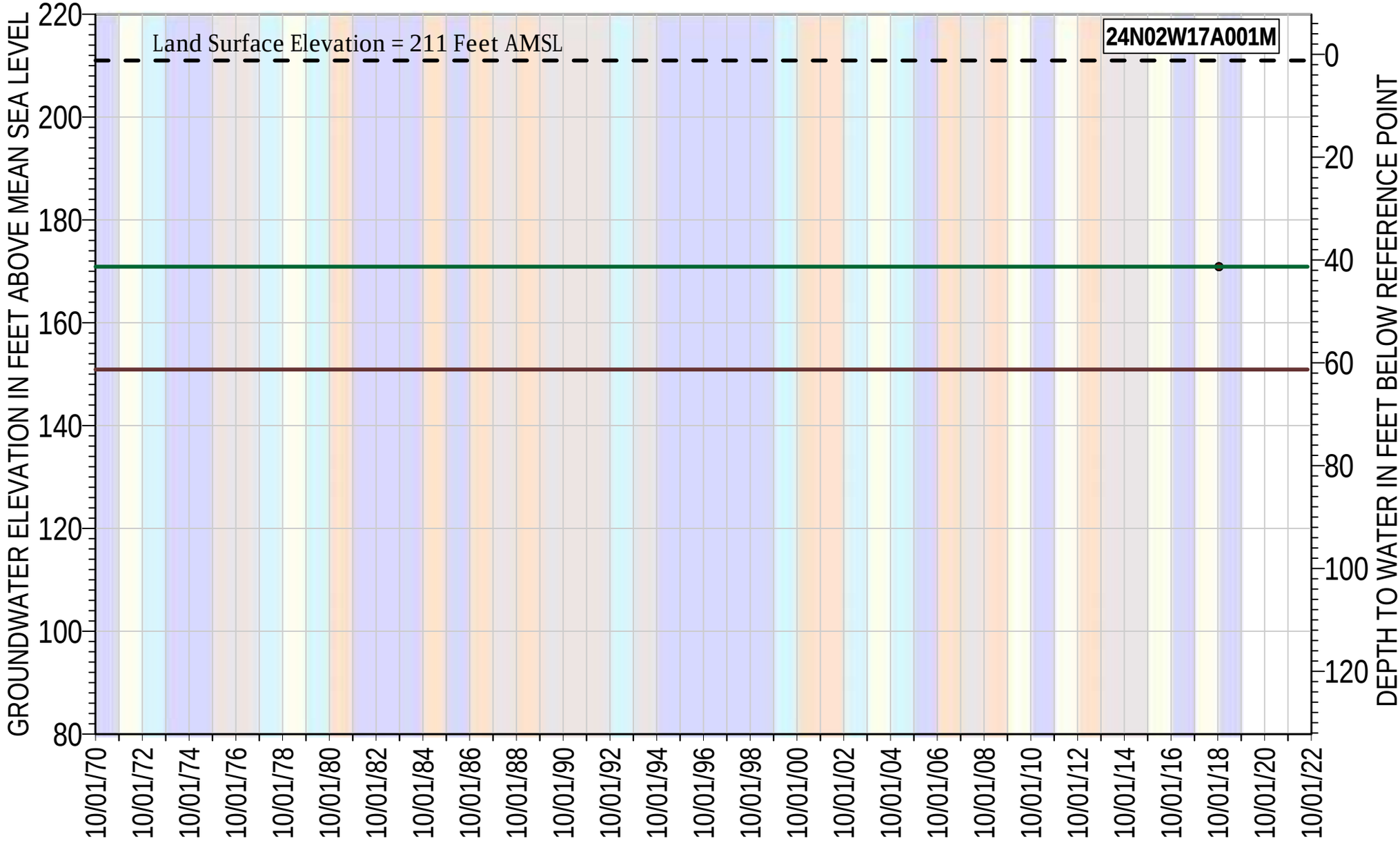


23N04W13G001M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 360.7 ft AMSL
Well Type: Irrigation
Total Depth: 560 ft bgs
Well Screen Interval= Unknown ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



24N02W17A001M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 212.2 ft AMSL

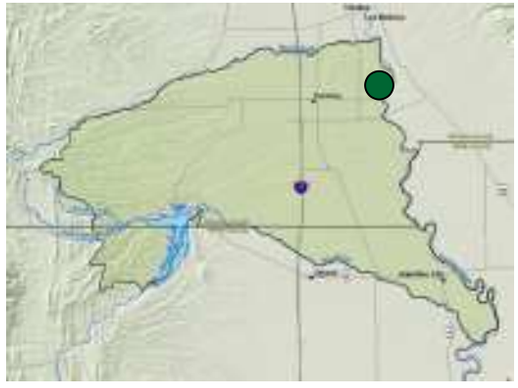
Well Type: Domestic

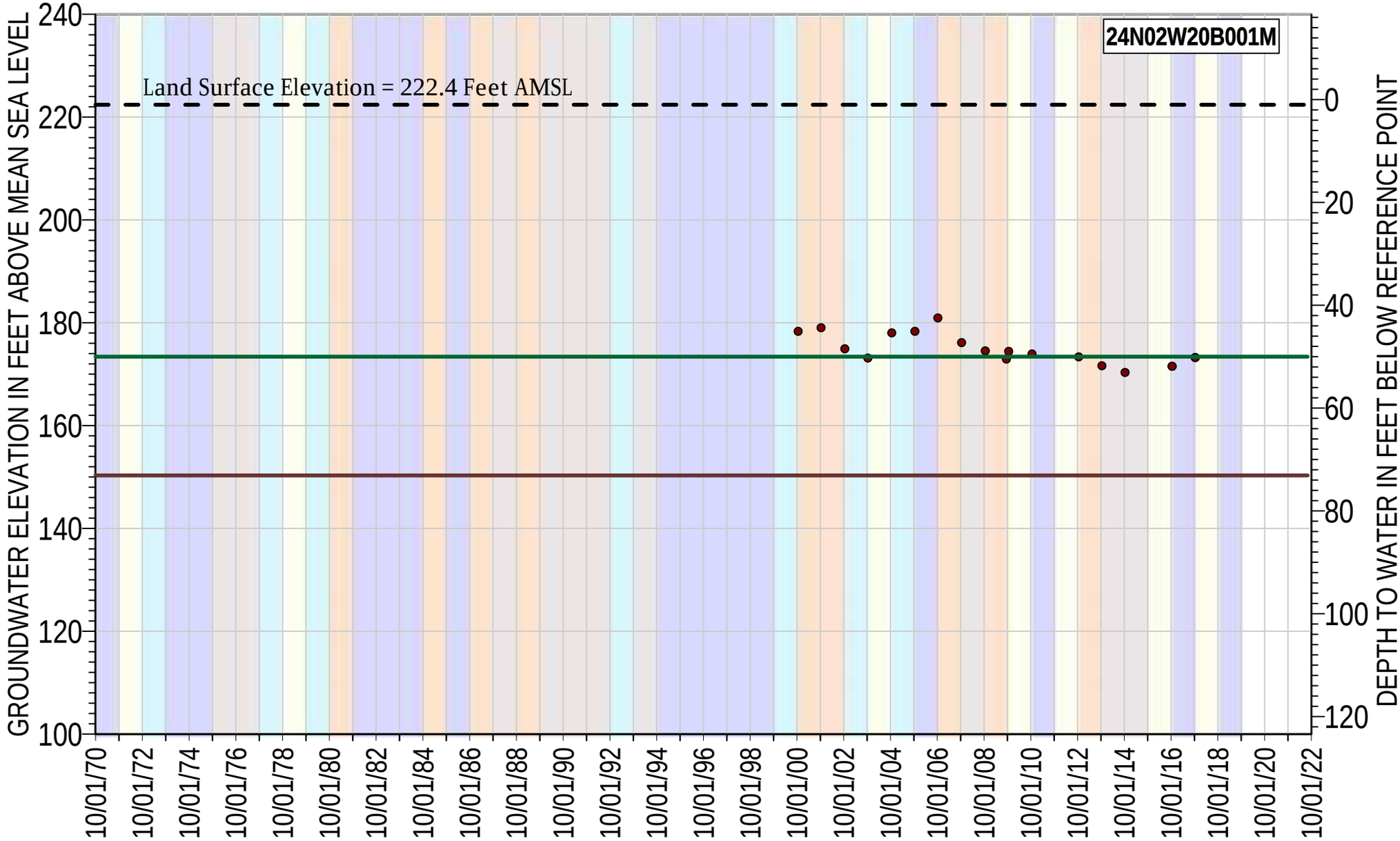
Total Depth: 140 ft bgs

Well Screen Interval= 120 - 140 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	





24N02W20B001M Fall Groundwater Elevation

Land Surface Elevation

Proposed MO: Fall Max Since 2012

Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 223.4 ft AMSL

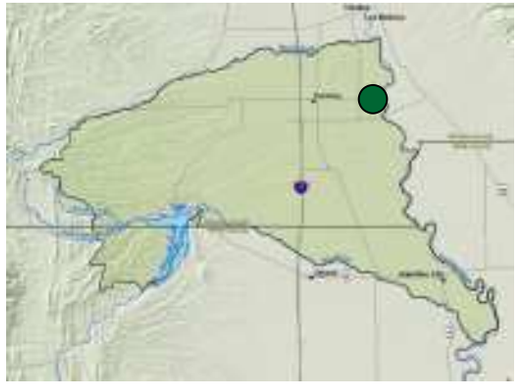
Well Type: Domestic

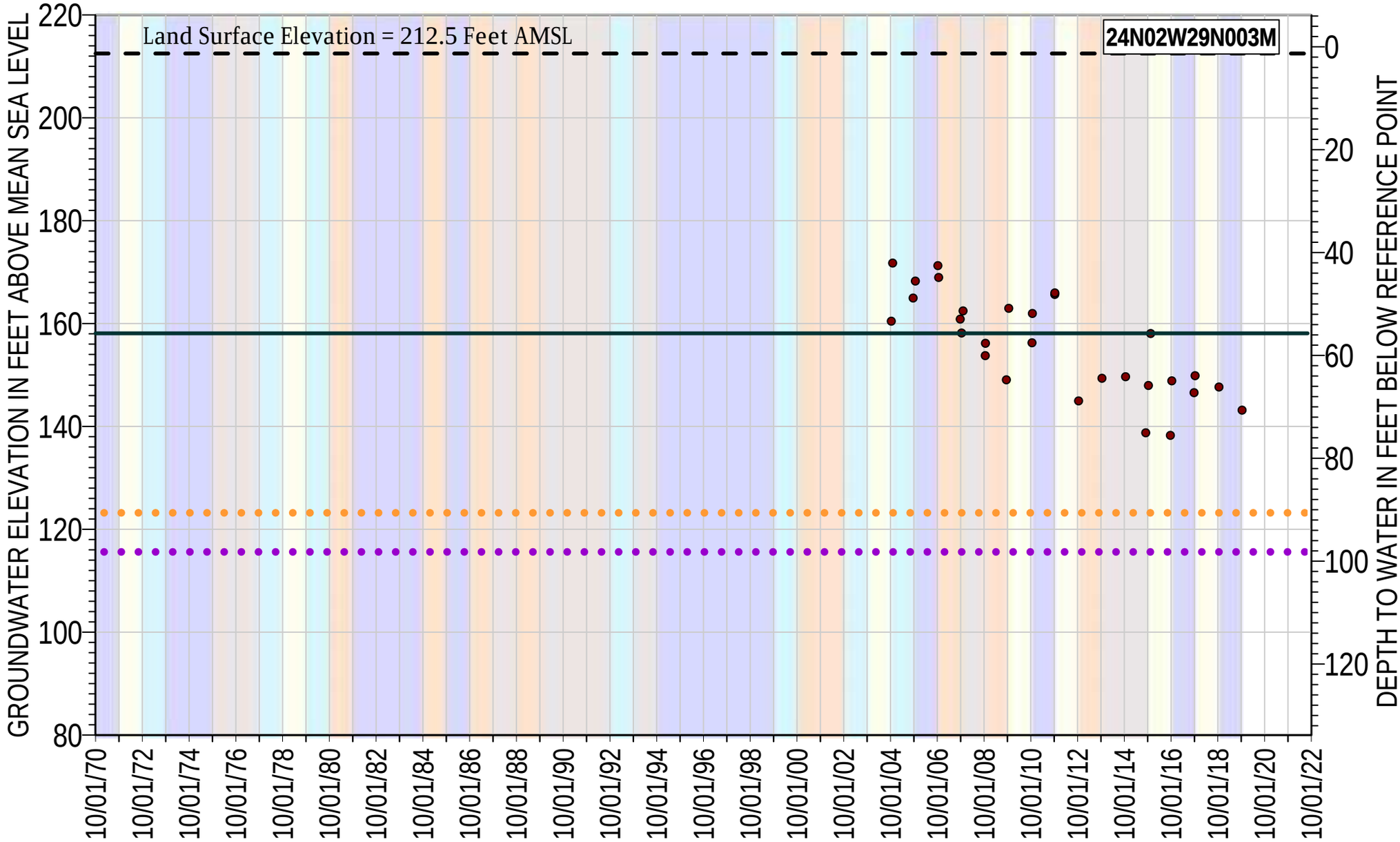
Total Depth: 120 ft bgs

Well Screen Interval= 100 - 120 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



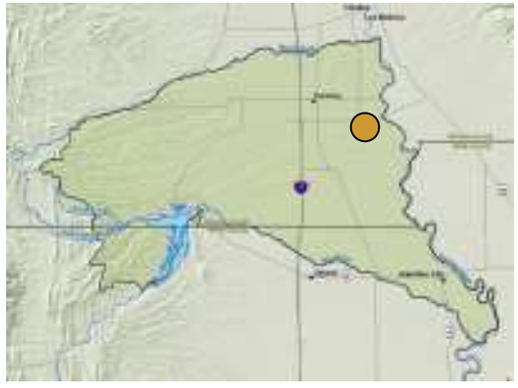


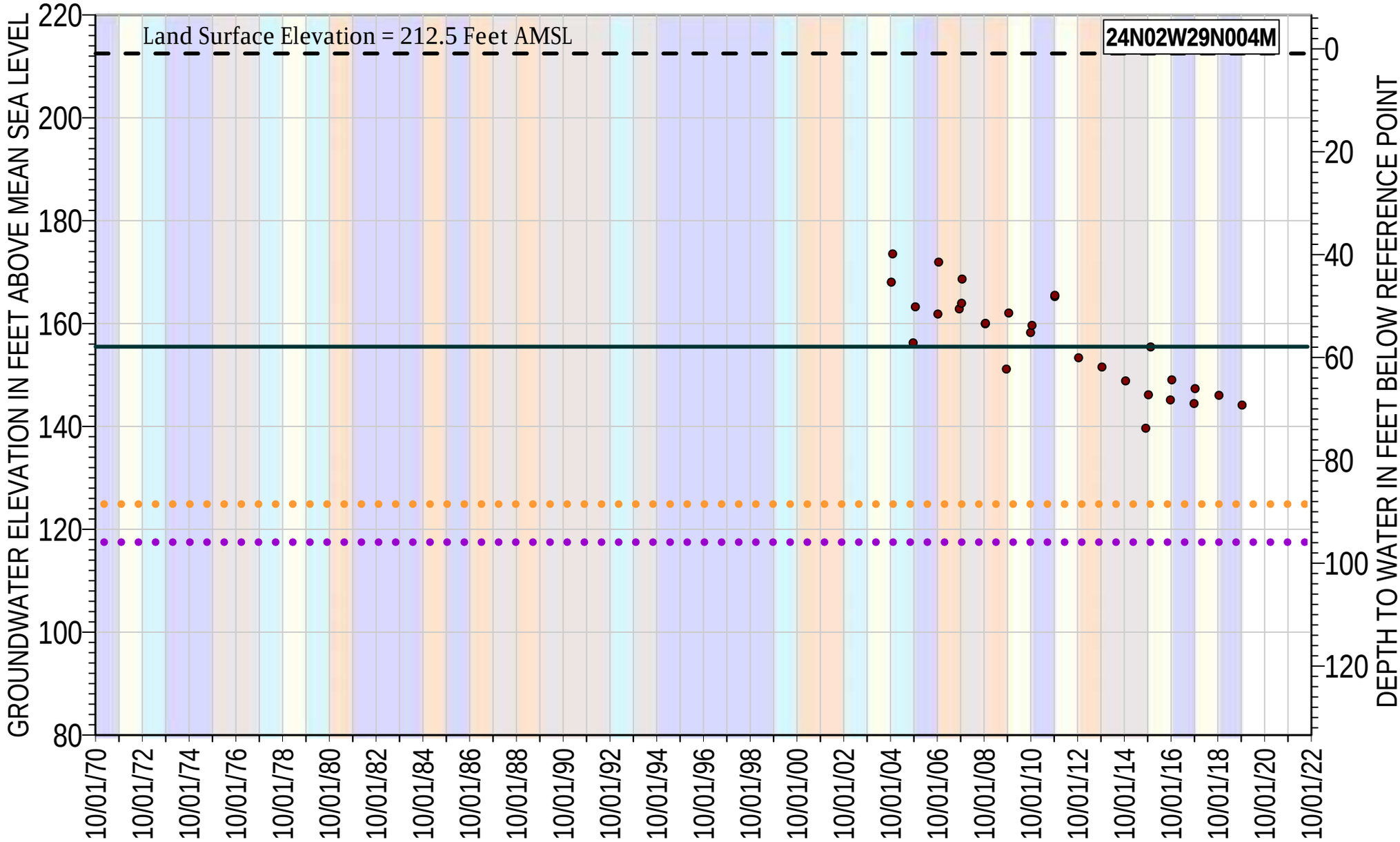
24N02W29N003M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 213.8 ft AMSL
Well Type: Observation
Total Depth: 388 ft bgs
Well Screen Interval= 200 - 290 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



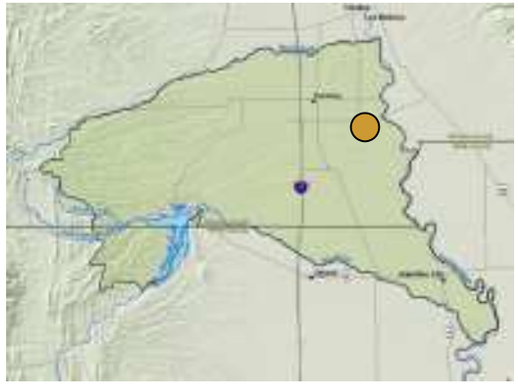


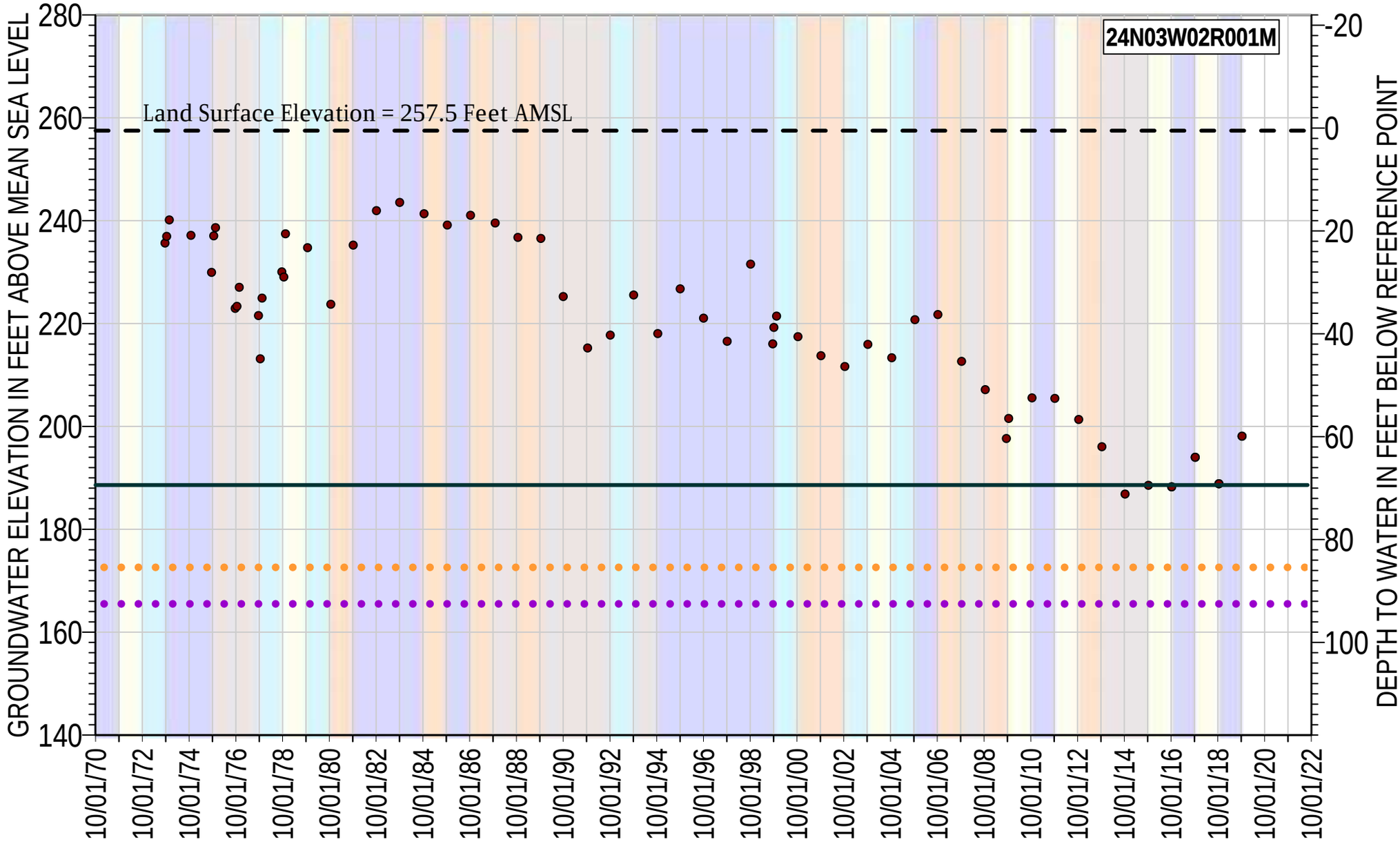
24N02W29N004M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 213.4 ft AMSL
Well Type: Observation
Total Depth: 741 ft bgs
Well Screen Interval= 590 - 710 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



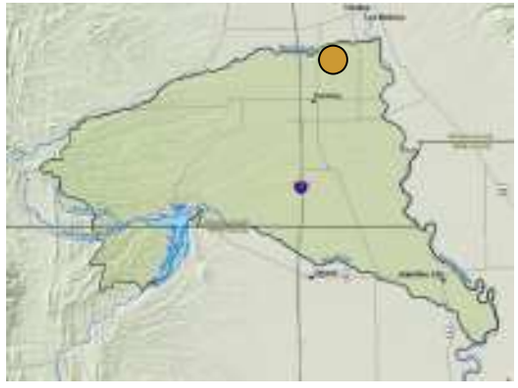


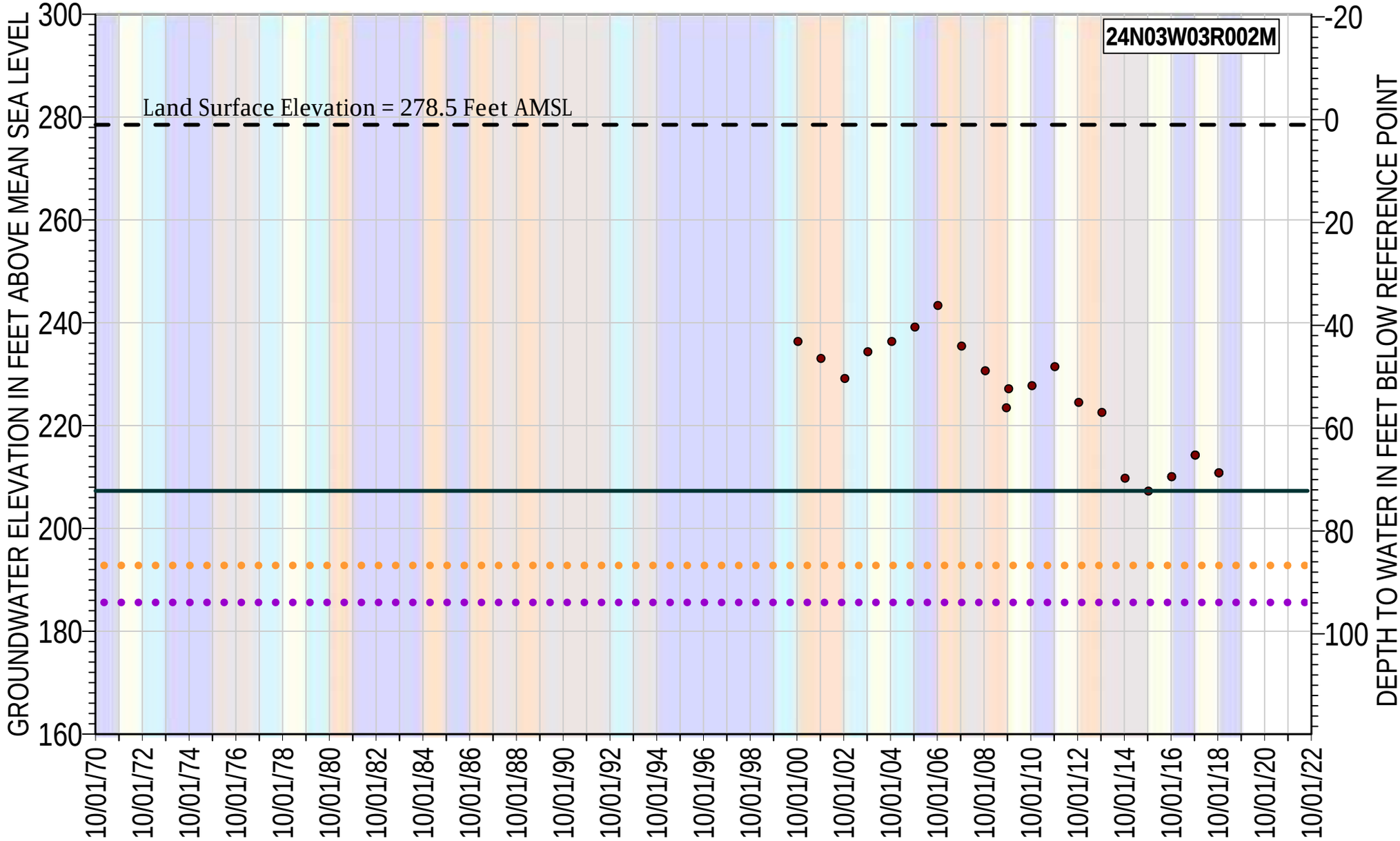
- 24N03W02R001M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 258 ft AMSL
Well Type: Domestic
Total Depth: 270 ft bgs
Well Screen Interval= Unknown ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



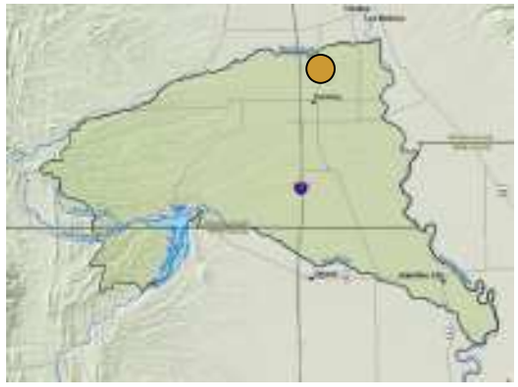


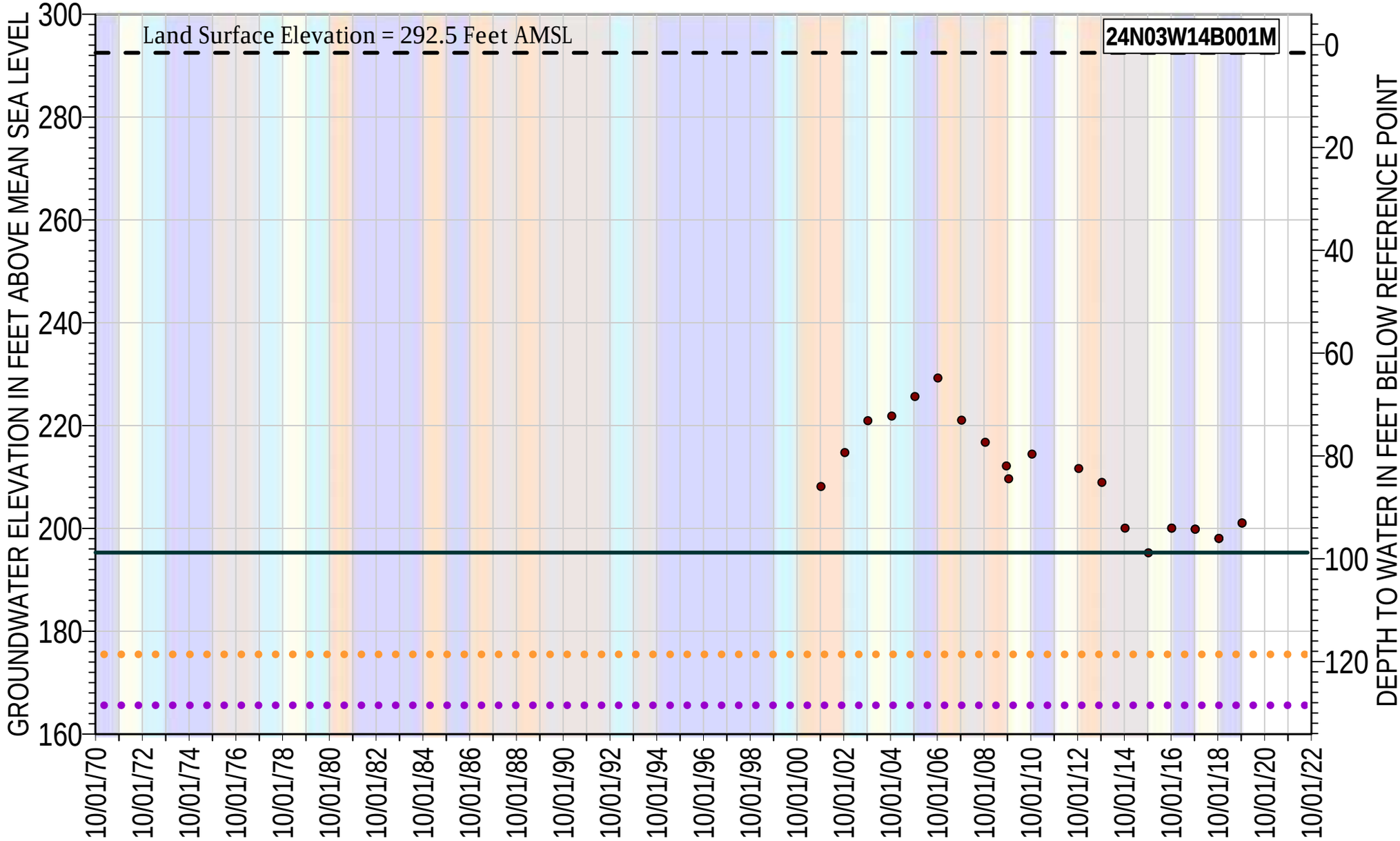
- 24N03W03R002M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 279.5 ft AMSL
Well Type: Domestic
Total Depth: 132 ft bgs
Well Screen Interval= 112 - 132 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



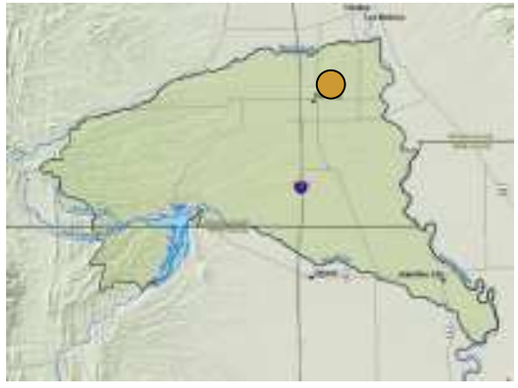


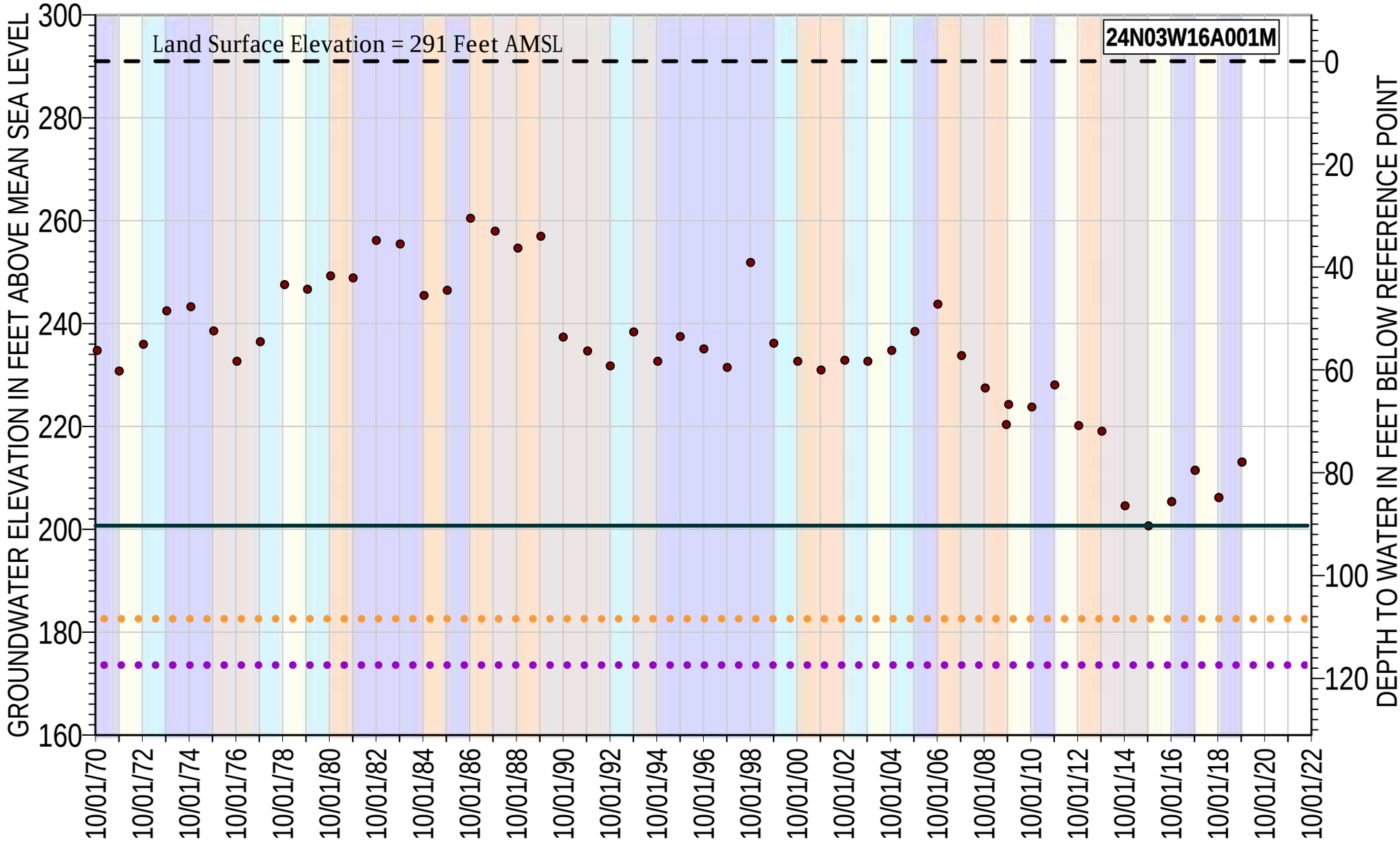
- 24N03W14B001M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 294.1 ft AMSL
Well Type: Industrial
Total Depth: 140 ft bgs
Well Screen Interval= 130 - 140 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



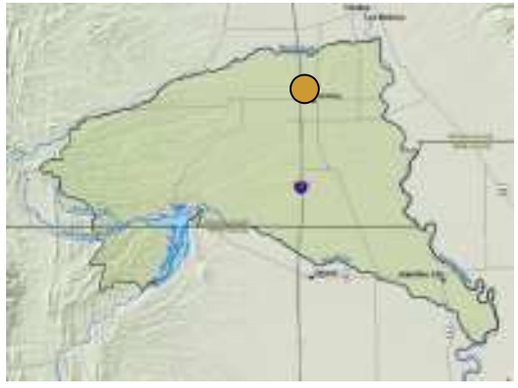


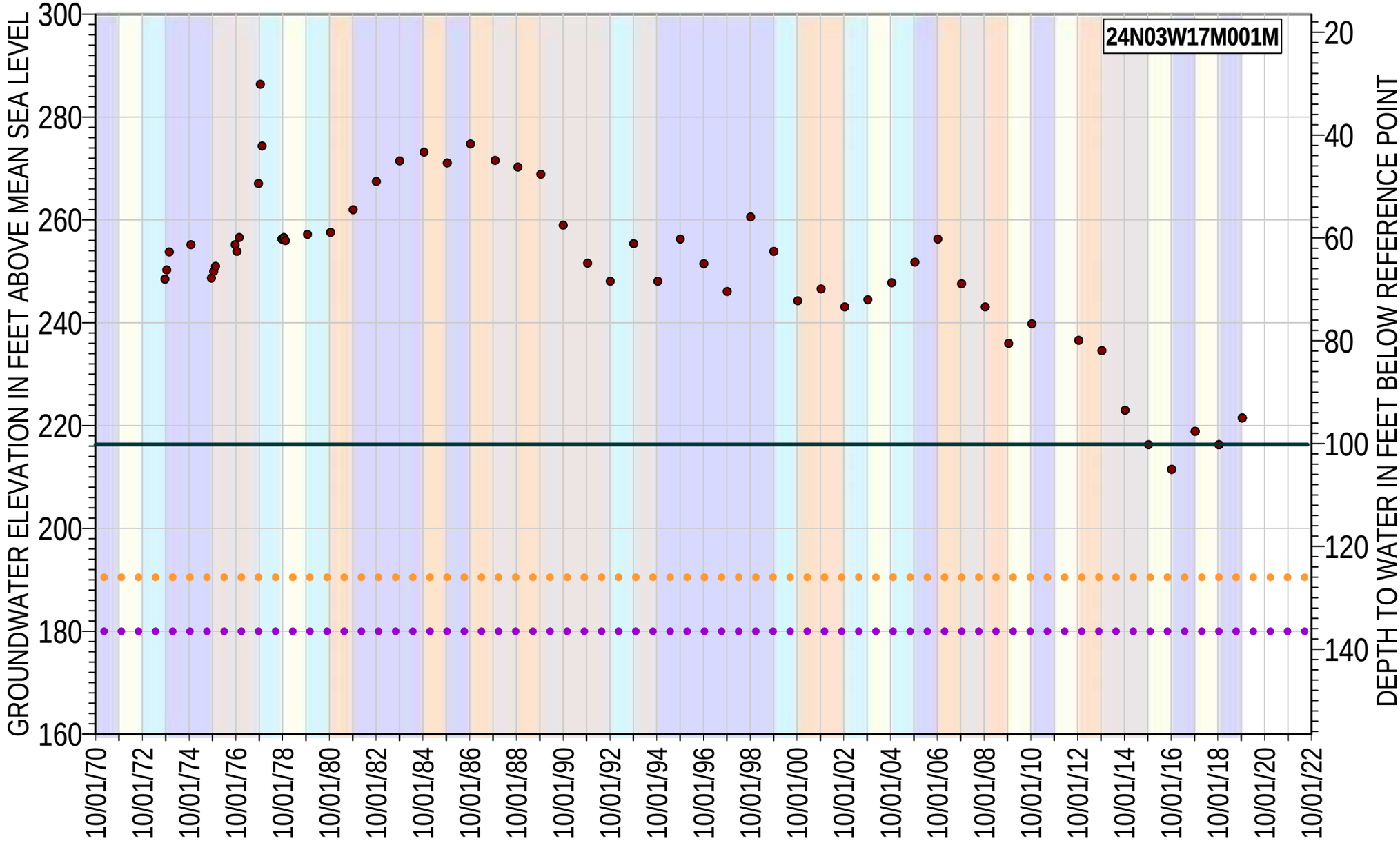
- 24N03W16A001M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 291 ft AMSL
Well Type: Irrigation
Total Depth: 195 ft bgs
Well Screen Interval= 85 - 195 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



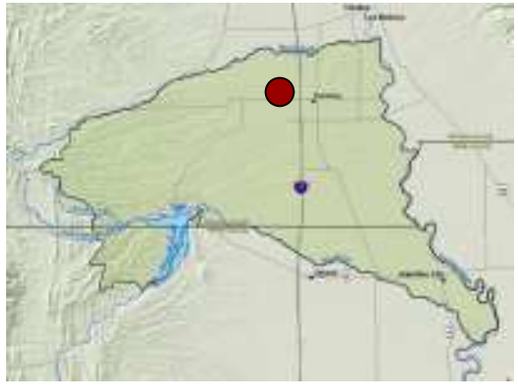


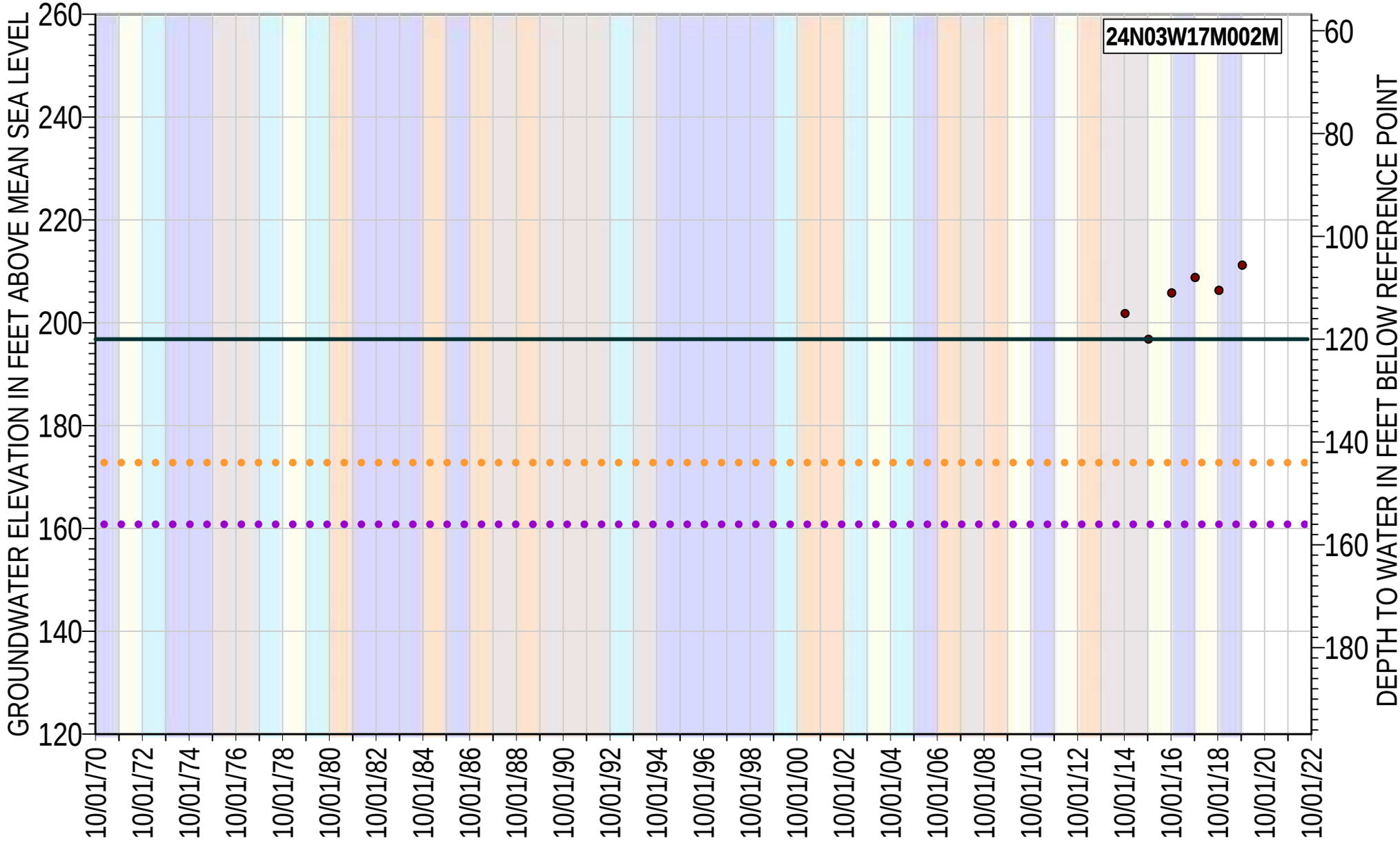
24N03W17M001M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 316.5 ft AMSL
Well Type: Domestic
Total Depth: 108 ft bgs
Well Screen Interval= 100 - 108 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



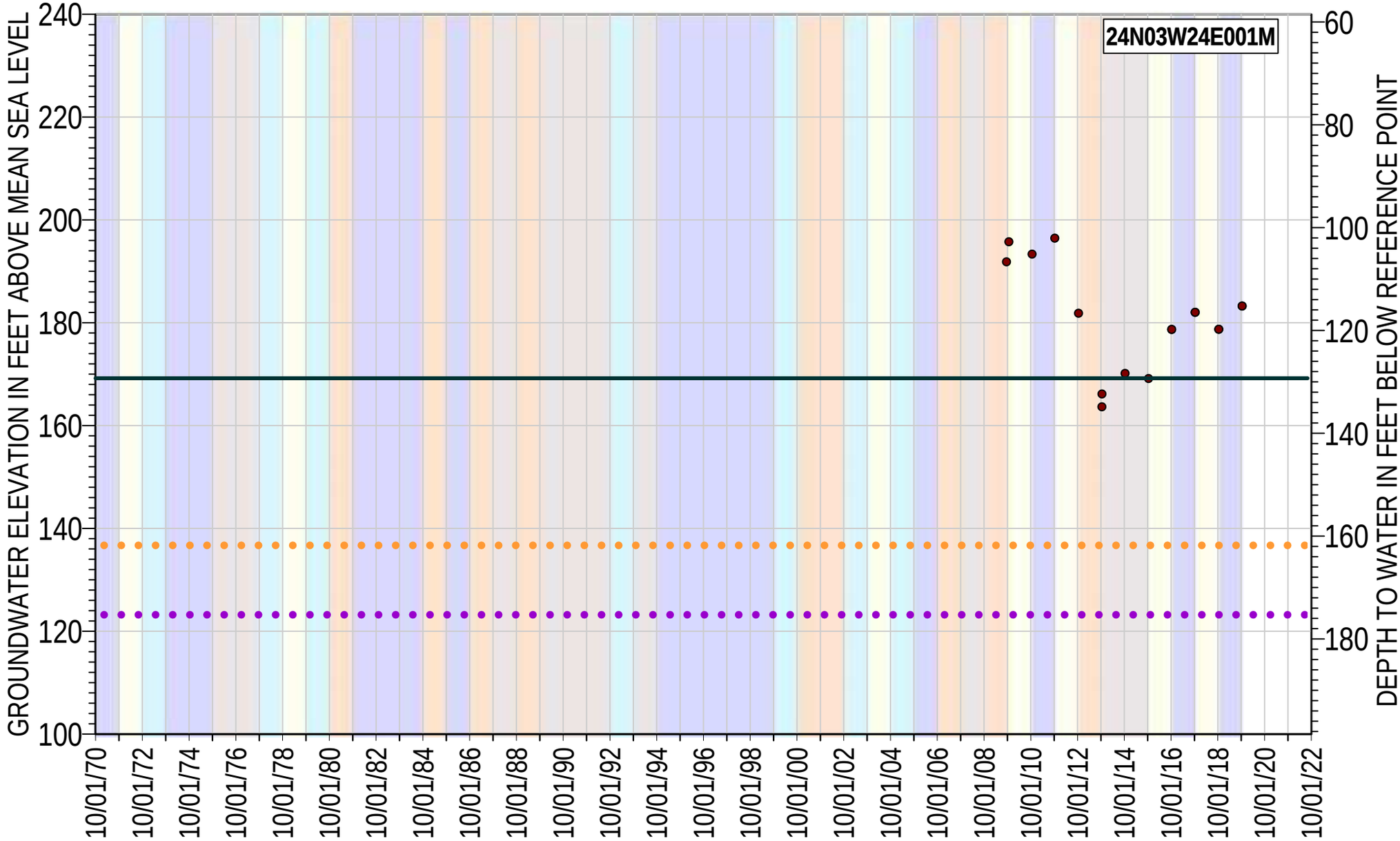


- 24N03W17M002M Fall Groundwater Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 316.8 ft AMSL
Well Type: Irrigation
Total Depth: 505 ft bgs
Well Screen Interval= 315 - 495 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

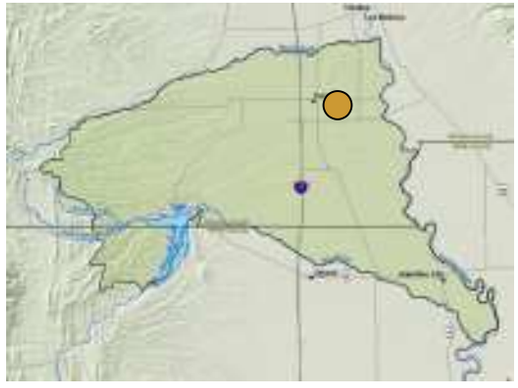


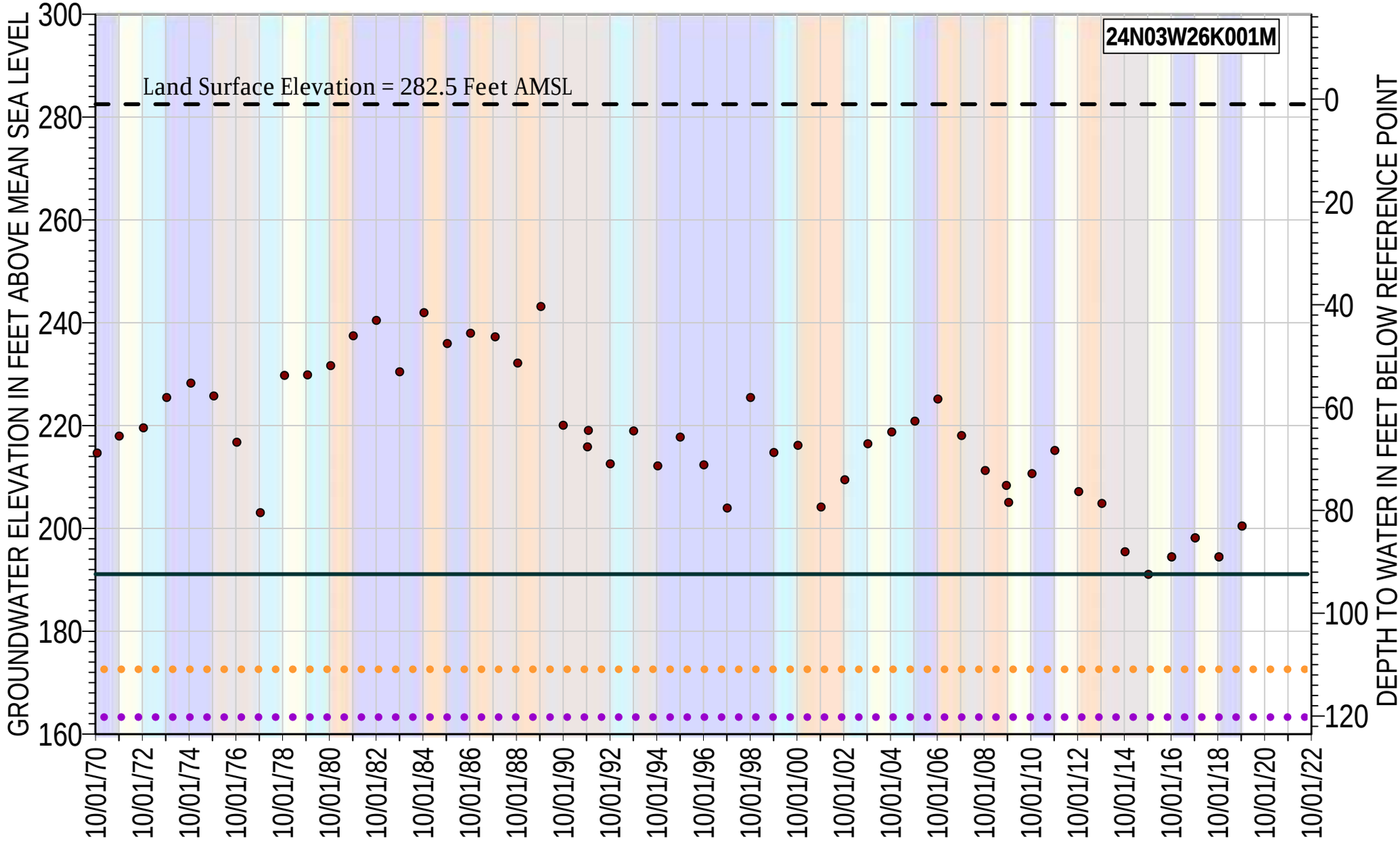
24N03W24E001M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 298.5 ft AMSL
Well Type: Domestic
Total Depth: 224 ft bgs
Well Screen Interval= 212 - 220 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



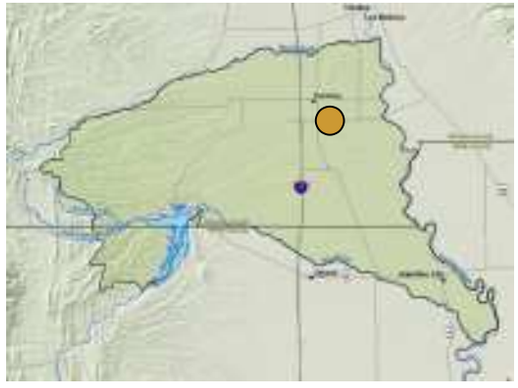


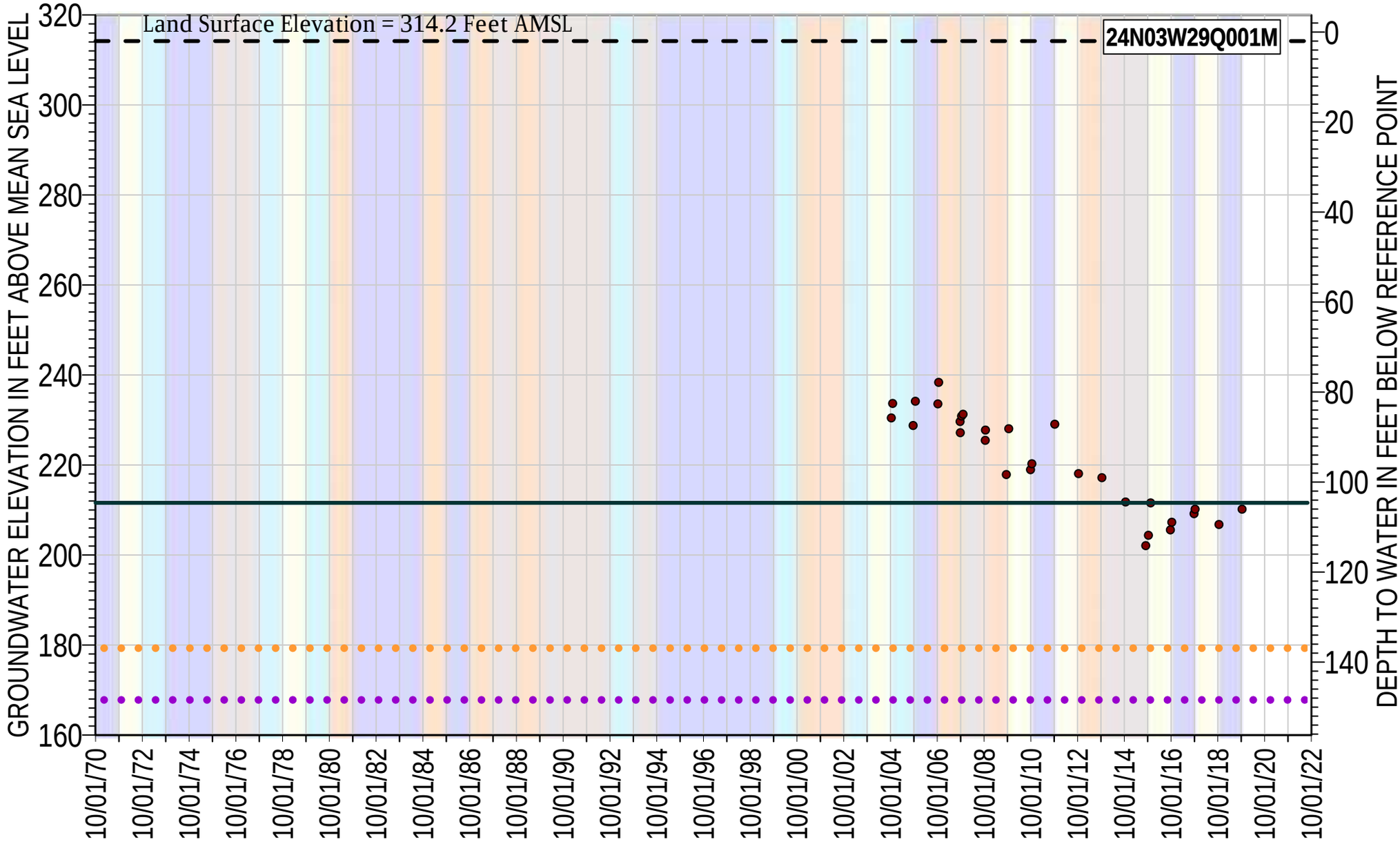
- 24N03W26K001M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 283.5 ft AMSL
Well Type: Irrigation
Total Depth: 245 ft bgs
Well Screen Interval= 103 - 175 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



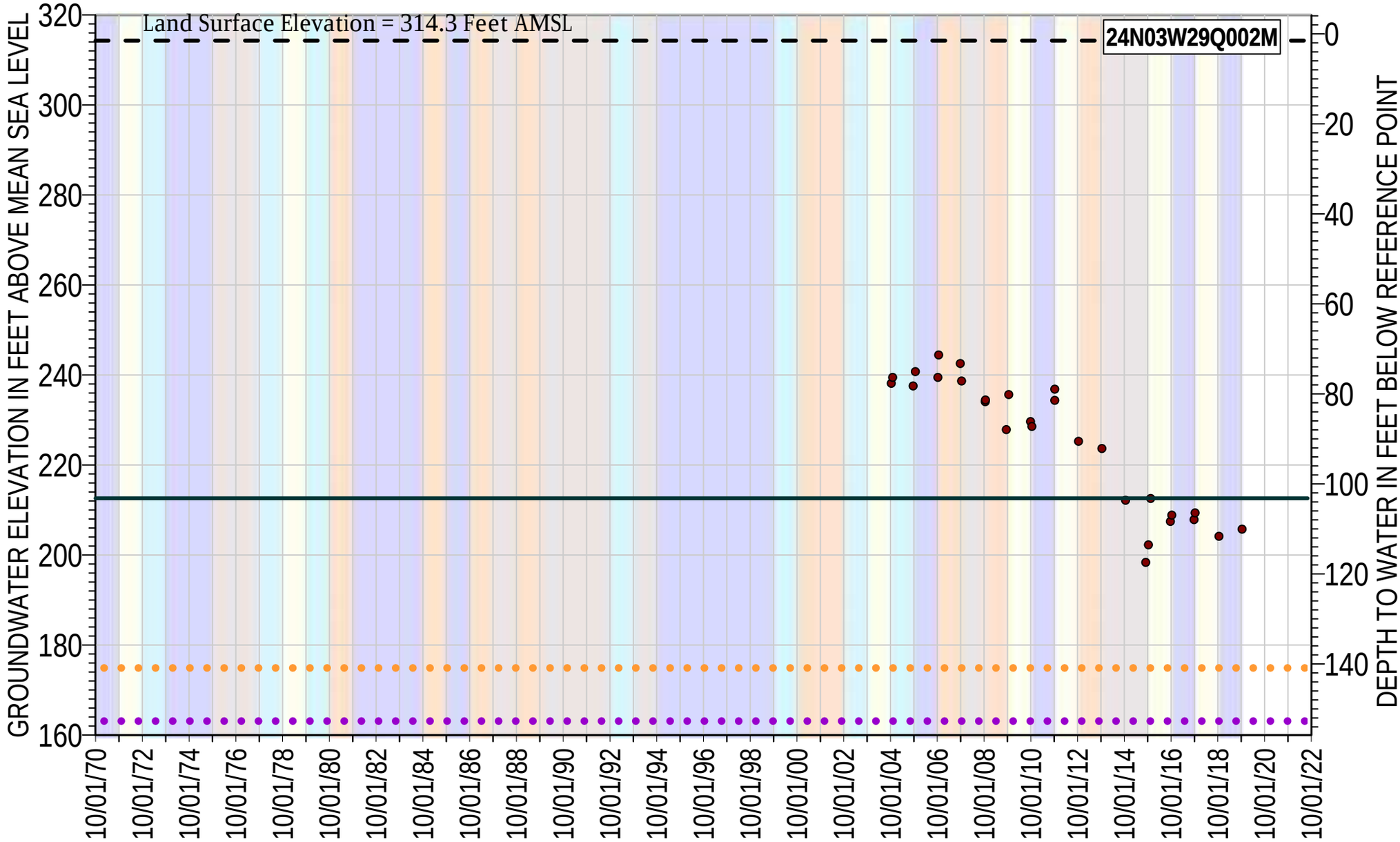


- 24N03W29Q001M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 316.2 ft AMSL
Well Type: Observation
Total Depth: 372 ft bgs
Well Screen Interval= 130 - 360 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

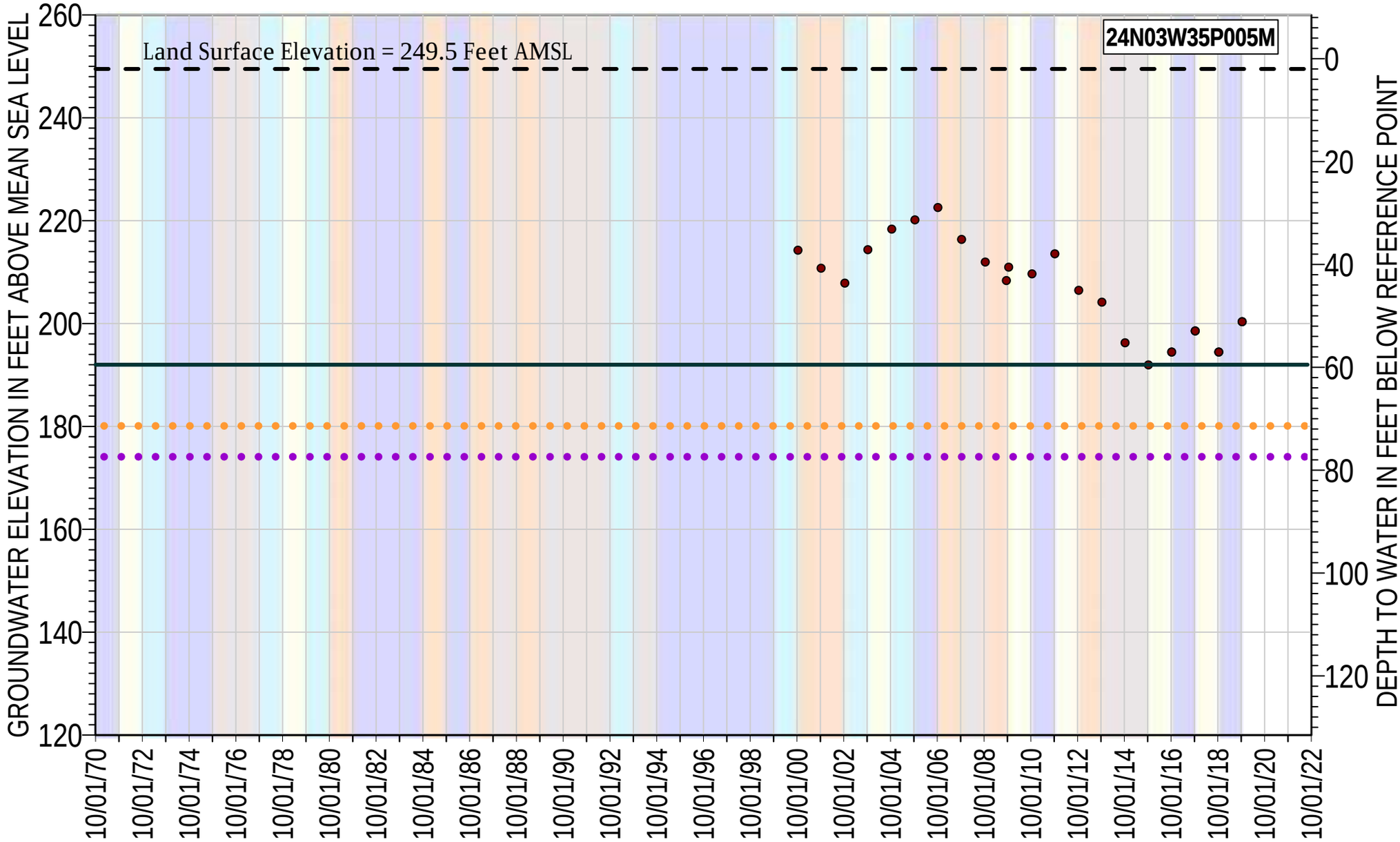


- 24N03W29Q002M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 315.8 ft AMSL
Well Type: Observation
Total Depth: 575 ft bgs
Well Screen Interval= 490 - 550 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

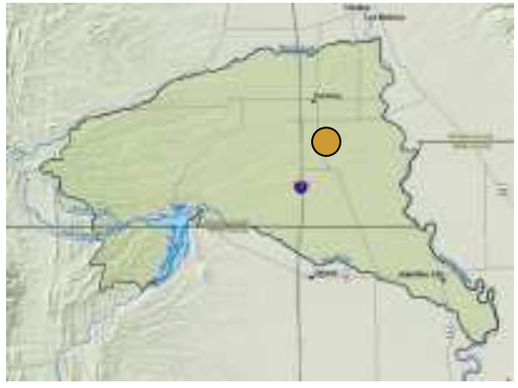


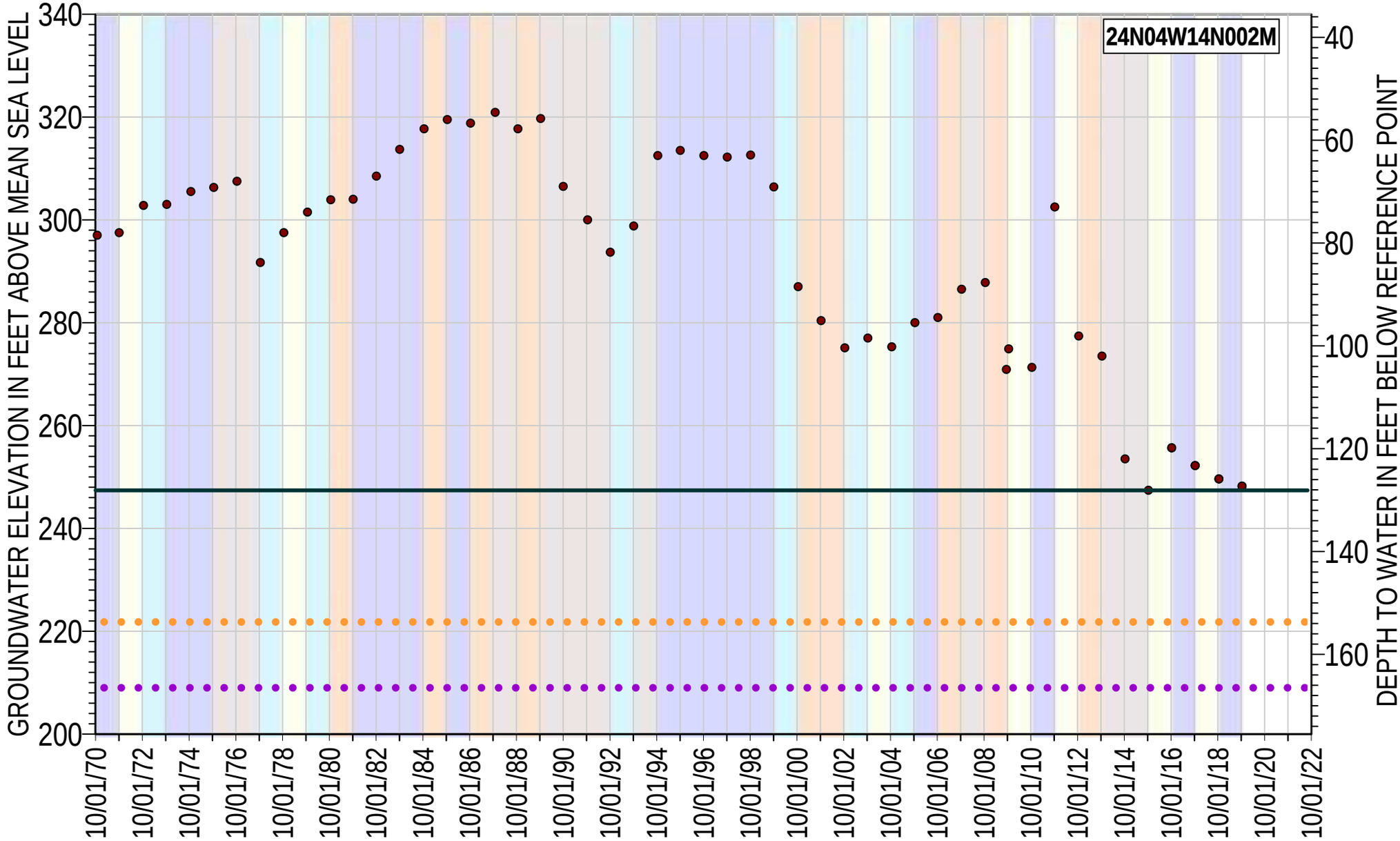
- 24N03W35P005M Fall Groundwater Elevation
- Land Surface Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 251.5 ft AMSL
Well Type: Domestic
Total Depth: 120 ft bgs
Well Screen Interval= 100 - 120 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



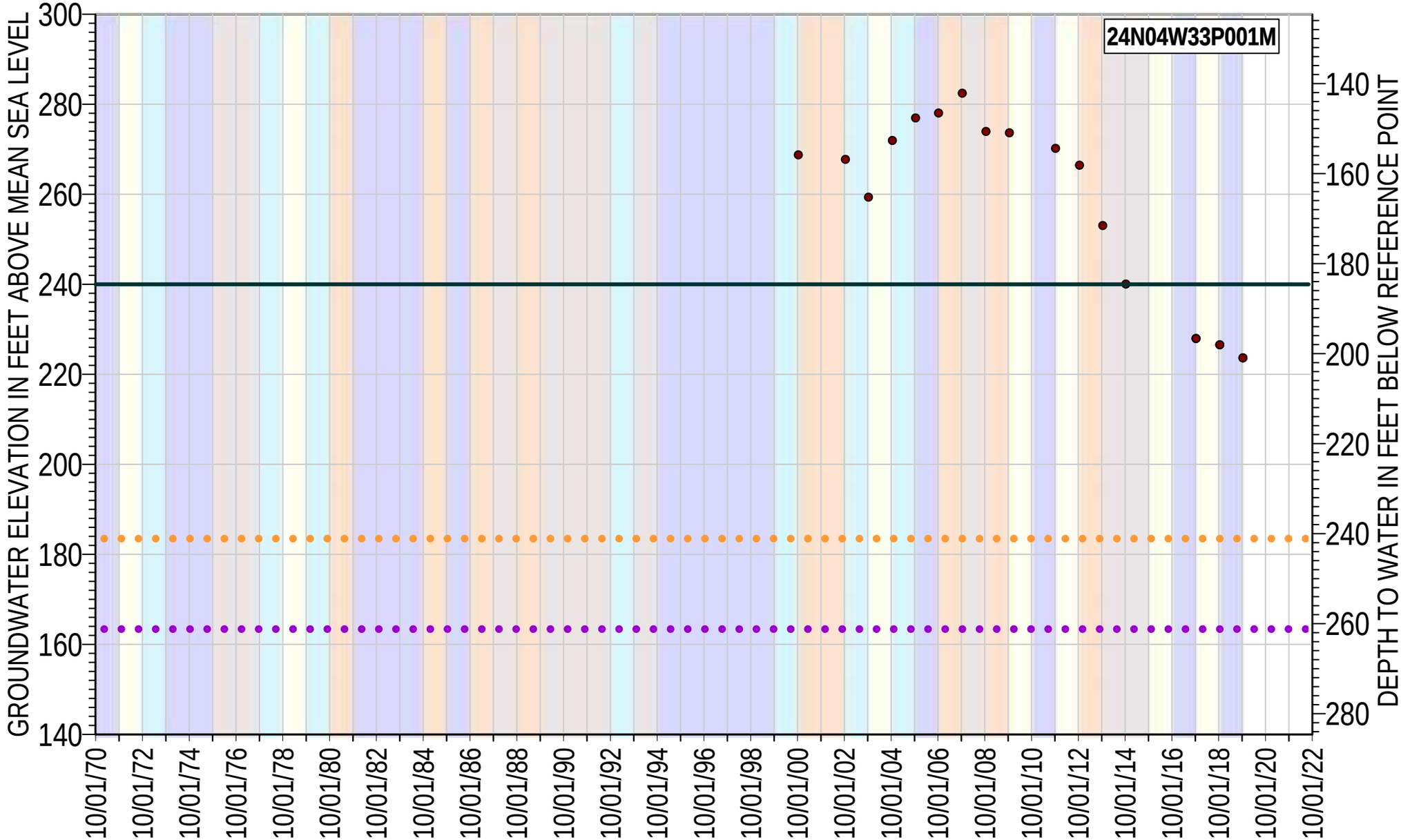


24N04W14N002M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 375.5 ft AMSL
Well Type: Domestic
Total Depth: 180 ft bgs
Well Screen Interval= Unknown ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



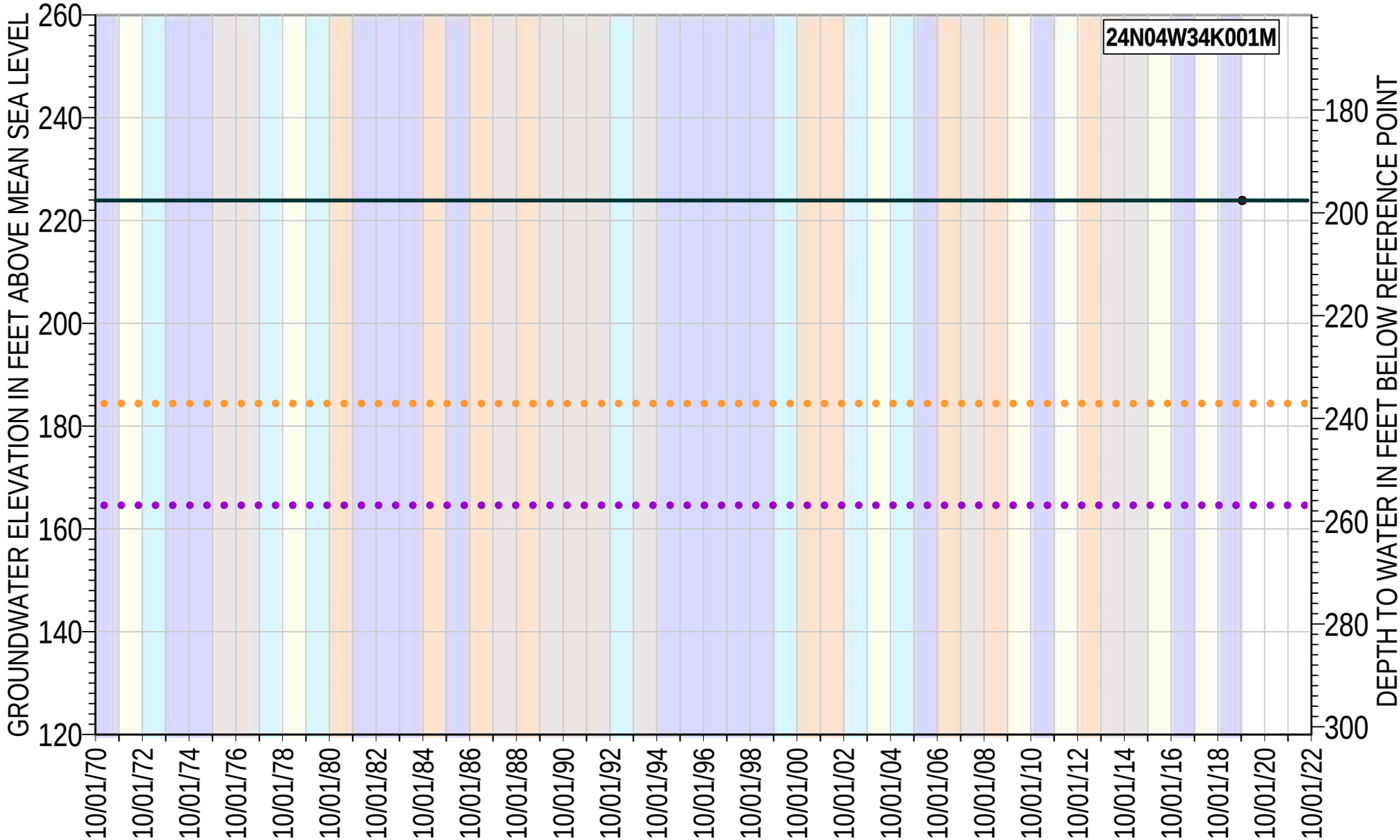
- 24N04W33P001M Fall Groundwater Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 424.6 ft AMSL
Well Type: Irrigation
Total Depth: 780 ft bgs
Well Screen Interval= 250 - 780 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

**Note: Insufficient Data - MO defined using 2014 max*



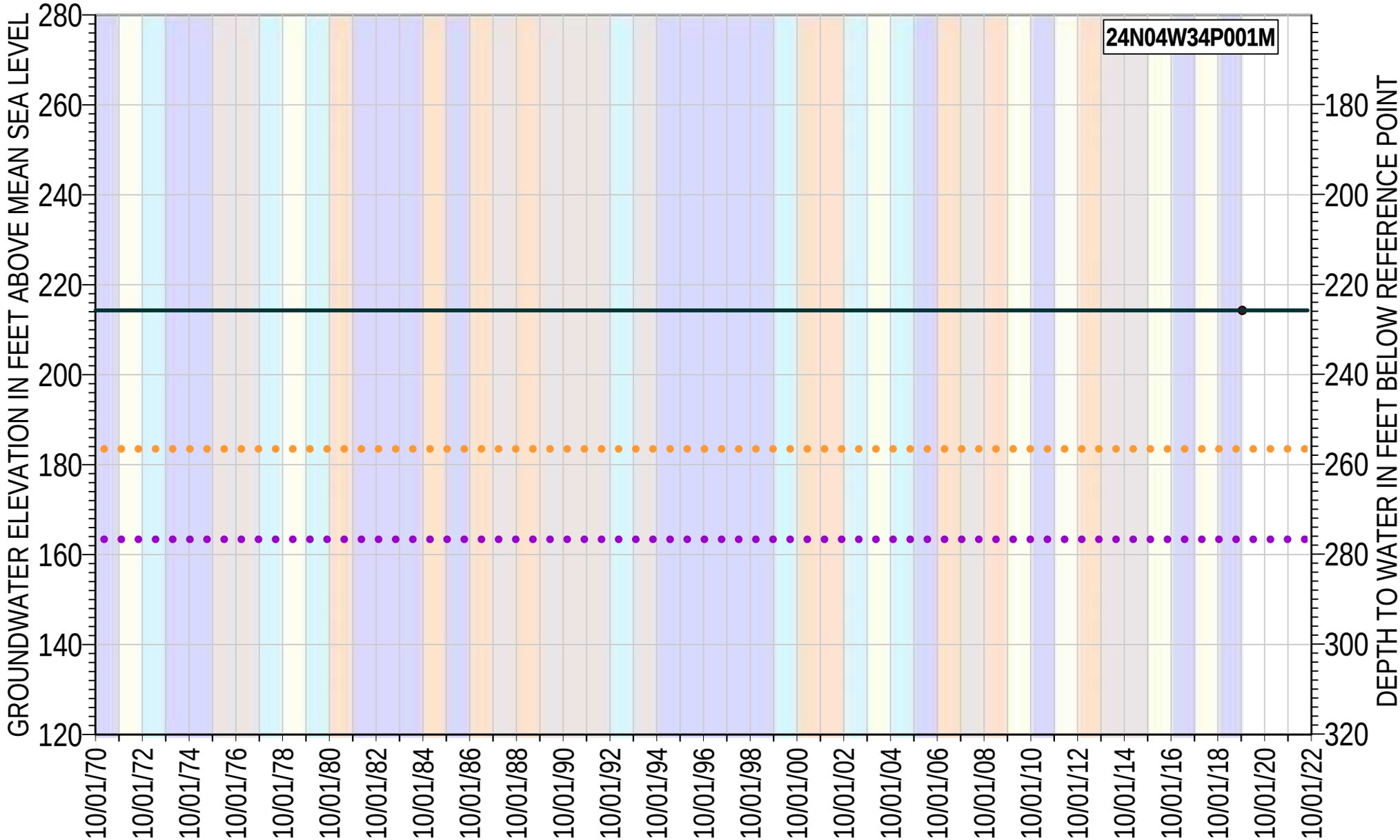
24N04W34K001M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 421.5 ft AMSL
Well Type: Irrigation
Total Depth: 750 ft bgs
Well Screen Interval= 310 - 750 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

**Note: Insufficient Data - MO defined using 2016-2019 max*



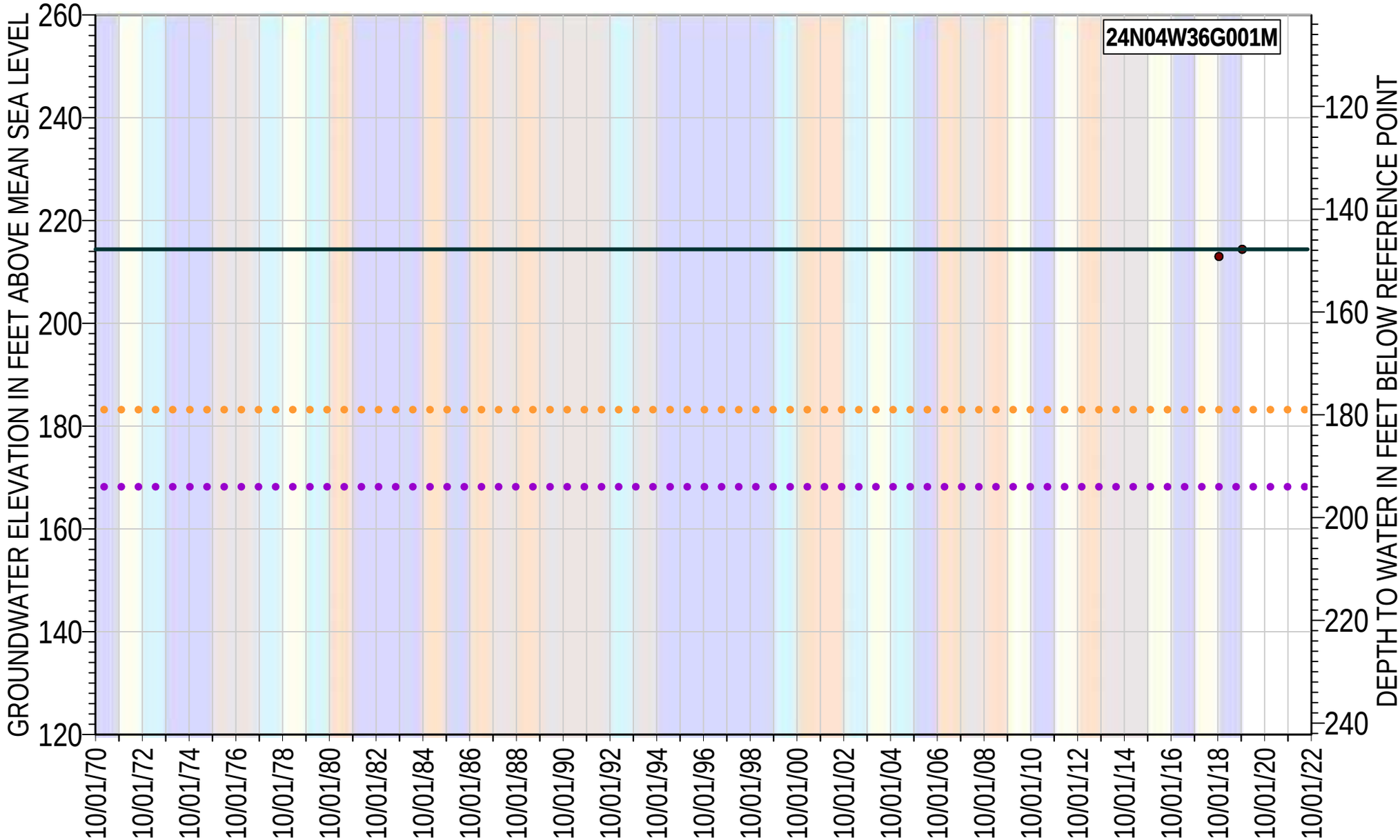
- 24N04W34P001M Fall Groundwater Elevation
- Proposed MO: Fall 2015 Max
- Proposed MT: Fall Min Since 2012 -20% min depth
- Proposed MT: Fall Min Since 2012 -30% min depth

Reference Point Elevation= 440.1 ft AMSL
Well Type: Irrigation
Total Depth: 535 ft bgs
Well Screen Interval= 290 - 475 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	

**Note: Insufficient Data - MO defined using 2016-2019 max*

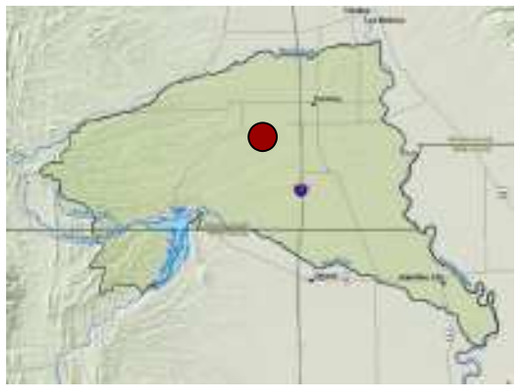


24N04W36G001M Fall Groundwater Elevation
Proposed MO: Fall 2015 Max
Proposed MT: Fall Min Since 2012 -20% min depth
Proposed MT: Fall Min Since 2012 -30% min depth

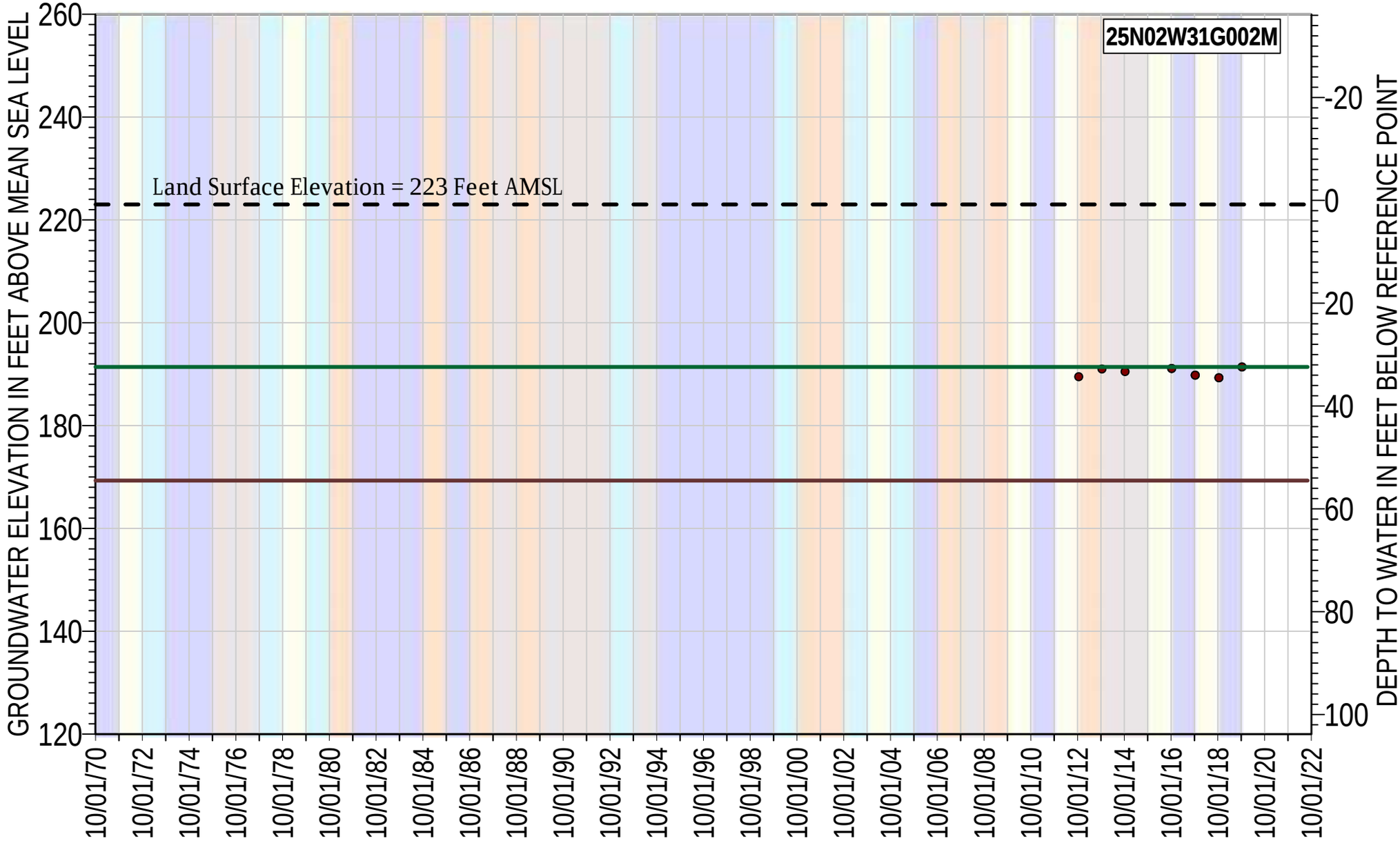
Reference Point Elevation= 362.2 ft AMSL
Well Type: Irrigation
Total Depth: 750 ft bgs
Well Screen Interval= 320 - 750 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



**Note: Insufficient Data - MO defined using 2016-2019 max*

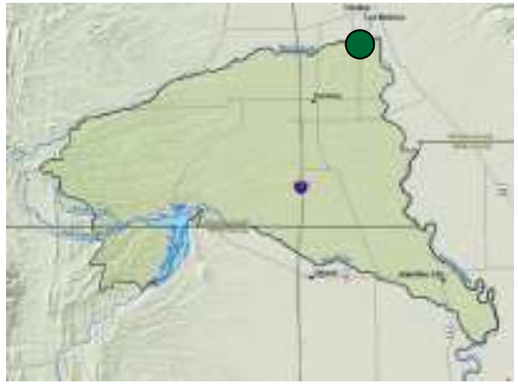


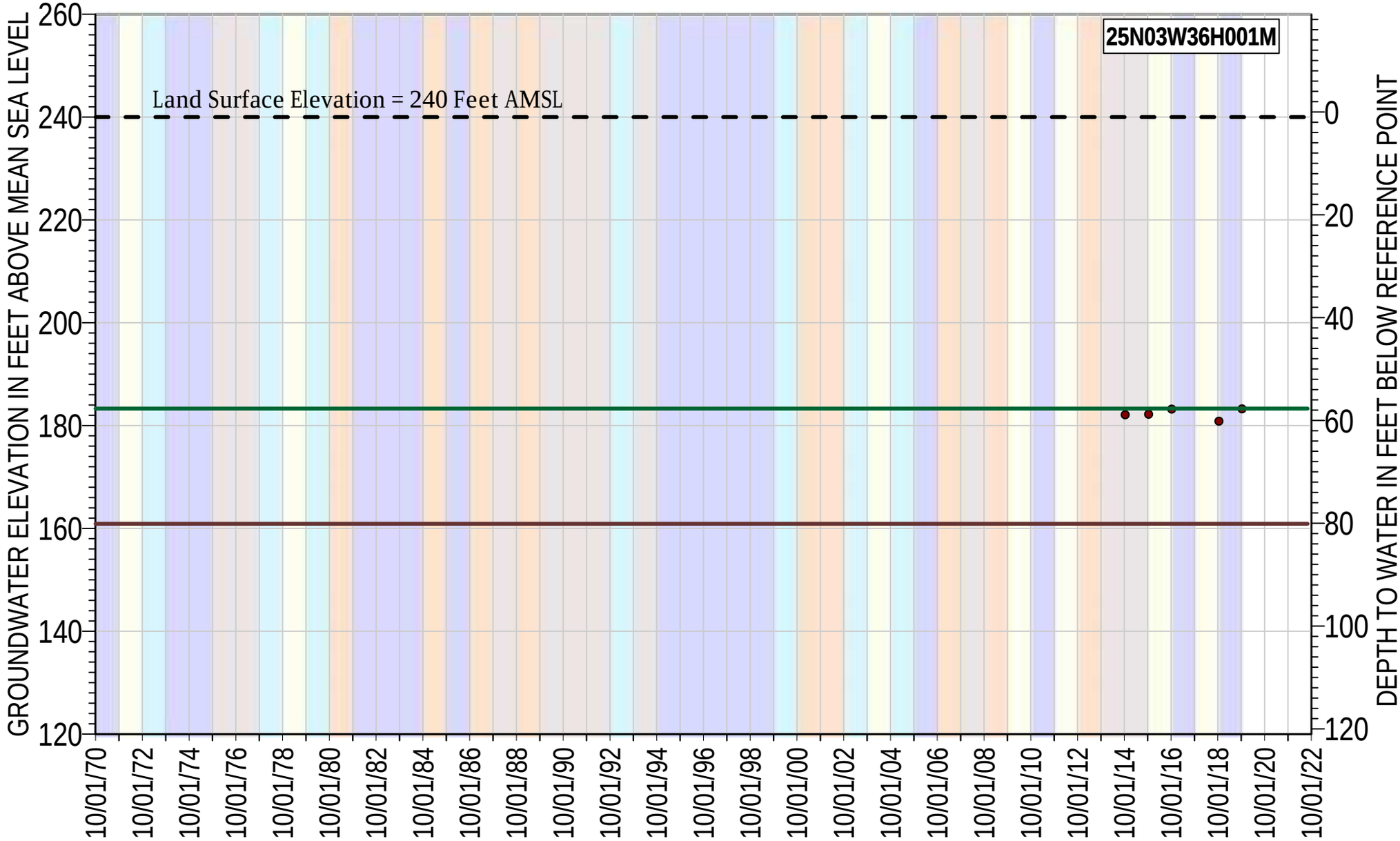
25N02W31G002M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 223.8 ft AMSL
Well Type: Irrigation
Total Depth: 115 ft bgs
Well Screen Interval= 93 - 113 ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



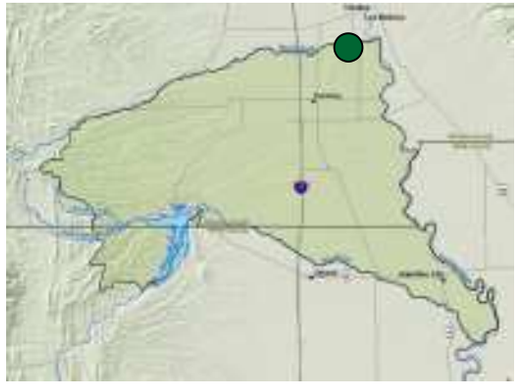


25N03W36H001M Fall Groundwater Elevation
Land Surface Elevation
Proposed MO: Fall Max Since 2012
Proposed MT: Fall Min Since 2012 -20 ft

Reference Point Elevation= 241 ft AMSL
Well Type: Irrigation
Total Depth: 524 ft bgs
Well Screen Interval= Unknown ft bgs

Water Year Classification

Wet	Dry
Above Normal	Critically Dry
Below Normal	



Groundwater Elevation Contours for Proposed Minimum Threshold Options

Groundwater elevation contour maps were developed for shallow and deep RMPs based on the revised MT options. Stable groundwater level MTs shown on all contour maps were the fall minimum groundwater elevation in RMPs since 2012 minus a 20-foot buffer. Two options for calculating MTs in RMPs with declining groundwater level trends were used and maps were generated for comparison between the two methods:

- Option 1 - The minimum fall groundwater elevation since 2012 minus 20% of minimum groundwater level depth; and
- Option 2 - The minimum fall groundwater elevation since 2012 minus 30% of minimum groundwater level depth

Groundwater elevation maps show the spatial distribution of groundwater level MTs. The maps showing MT Option 1 for declining trend wells are shown in Figure 3 for shallow RMPs and Figure 4 for deep RMPs. The maps showing MT Option 2 for declining trend wells are shown in Figure 5 for shallow RMPs and Figure 6 for deep RMPs.

Generally, the shallow groundwater elevation contours show a relatively stable west to east flow path, while the deeper contours show some additional drawdown in the western area that may affect nearby shallower wells. The maps for Option 1 show less drawdown than Option 2 in the portions of the Subbasin with declining groundwater elevations. This is especially apparent in the wells to the west of I-5 with deeper groundwater levels, where the MT shows an approximate additional 10 to 20 ft decline for Option 2 compared to Option 1.

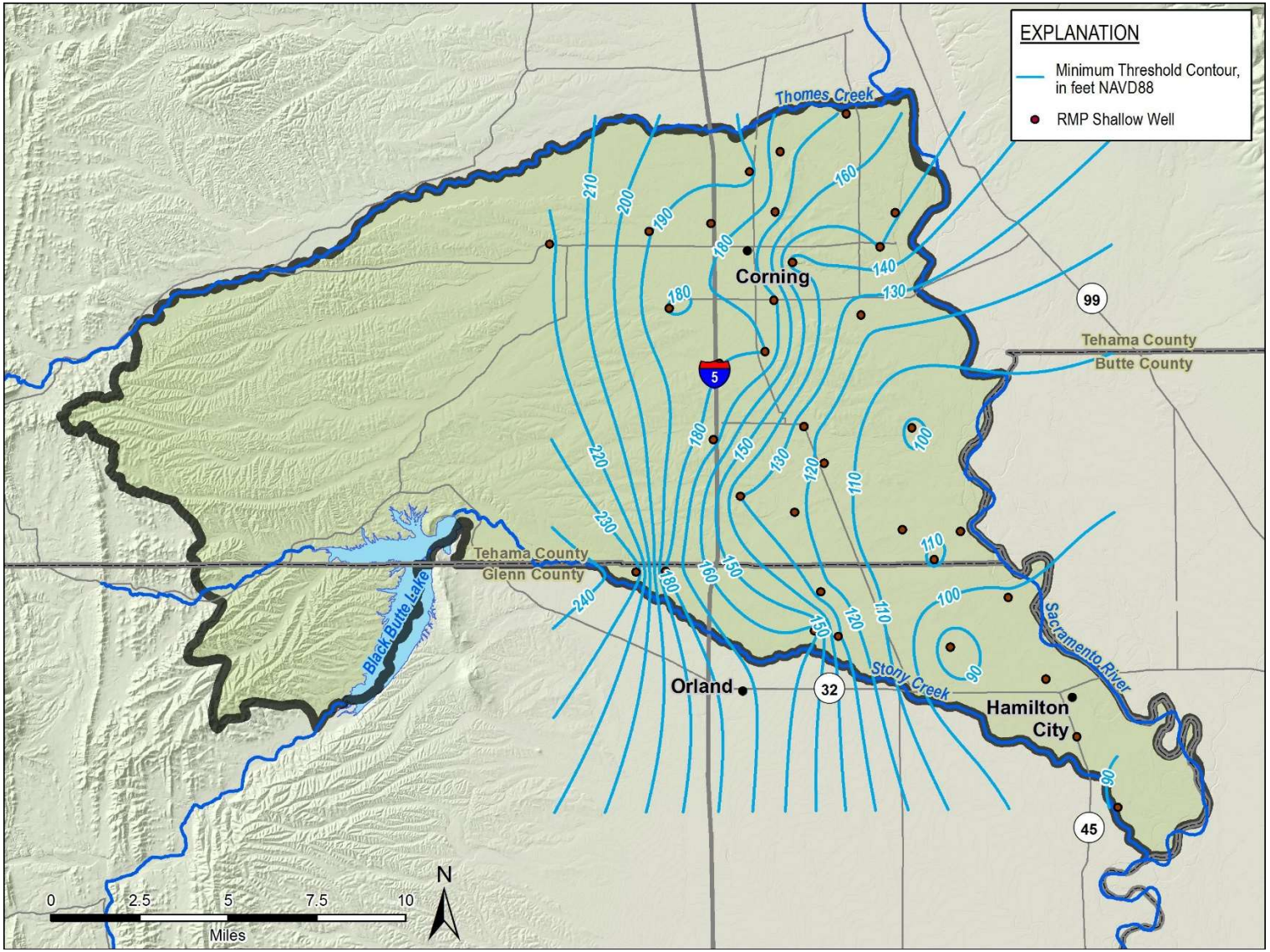


Figure 3. Groundwater elevation contours for shallow RMP well MTs calculated using Option 1.

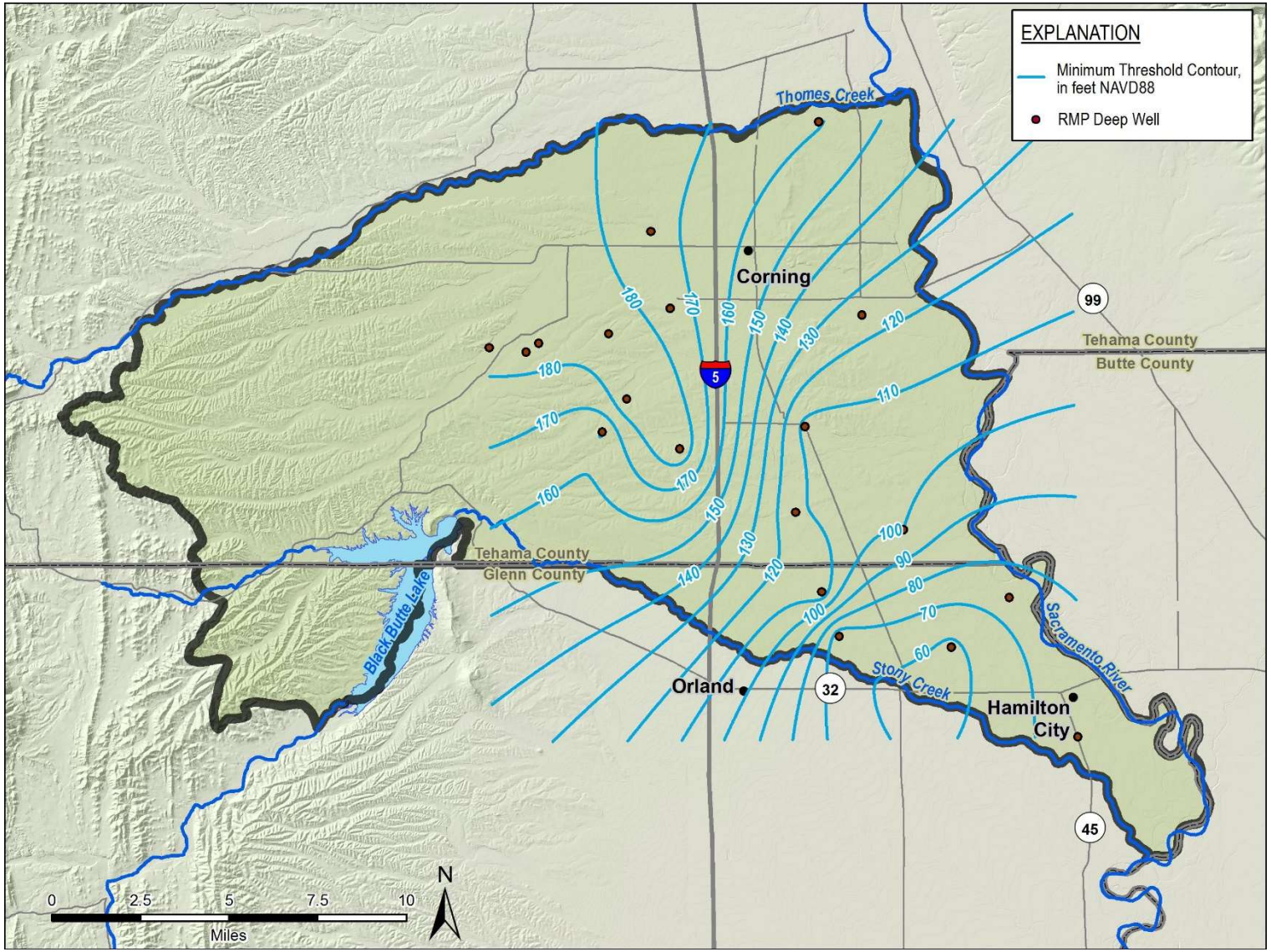


Figure 4. Groundwater elevation contours for deep RMP well MTs calculated using Option 1.

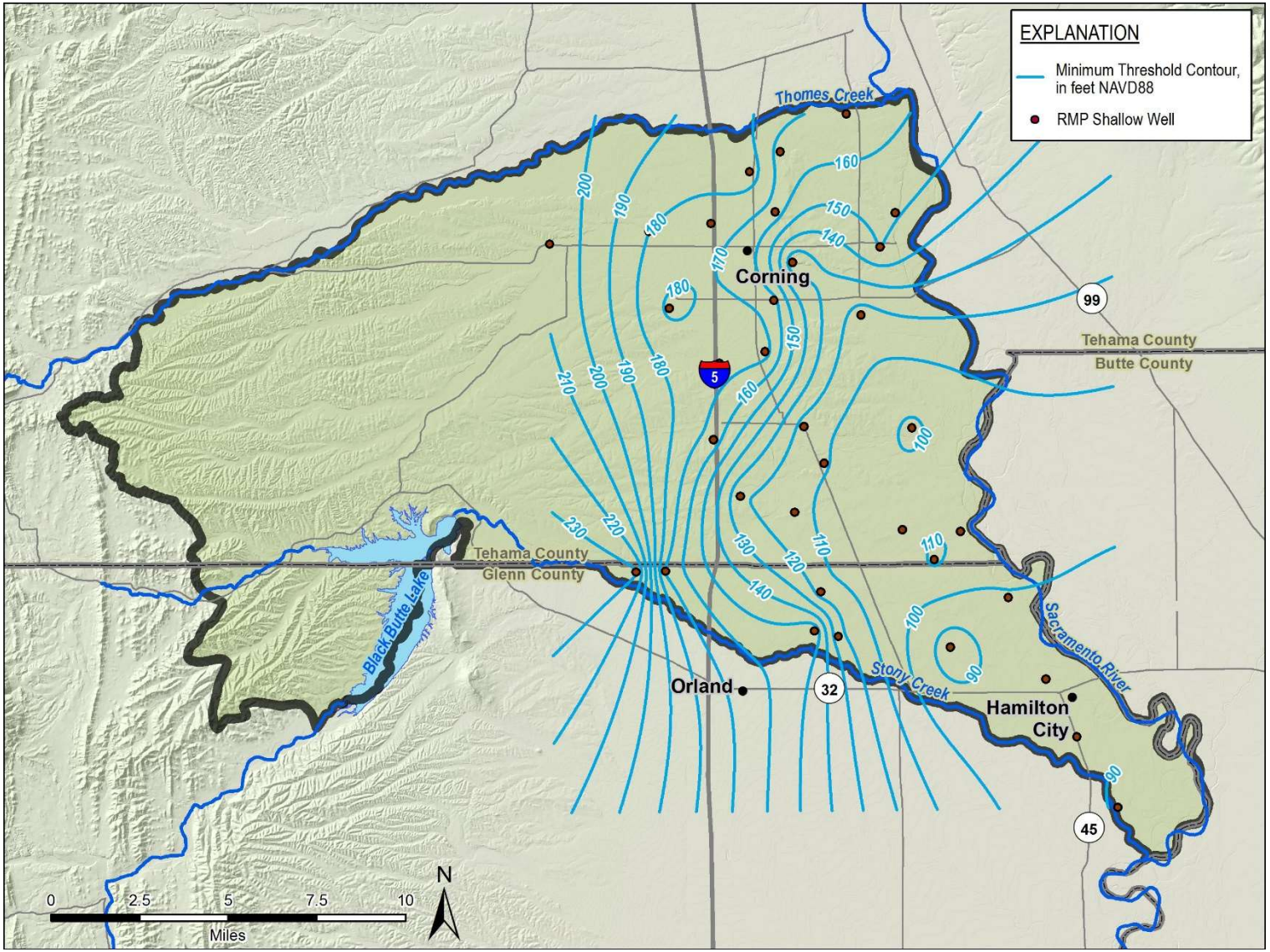


Figure 5. Groundwater elevation contours for shallow RMP well MTs calculated using Option 2.

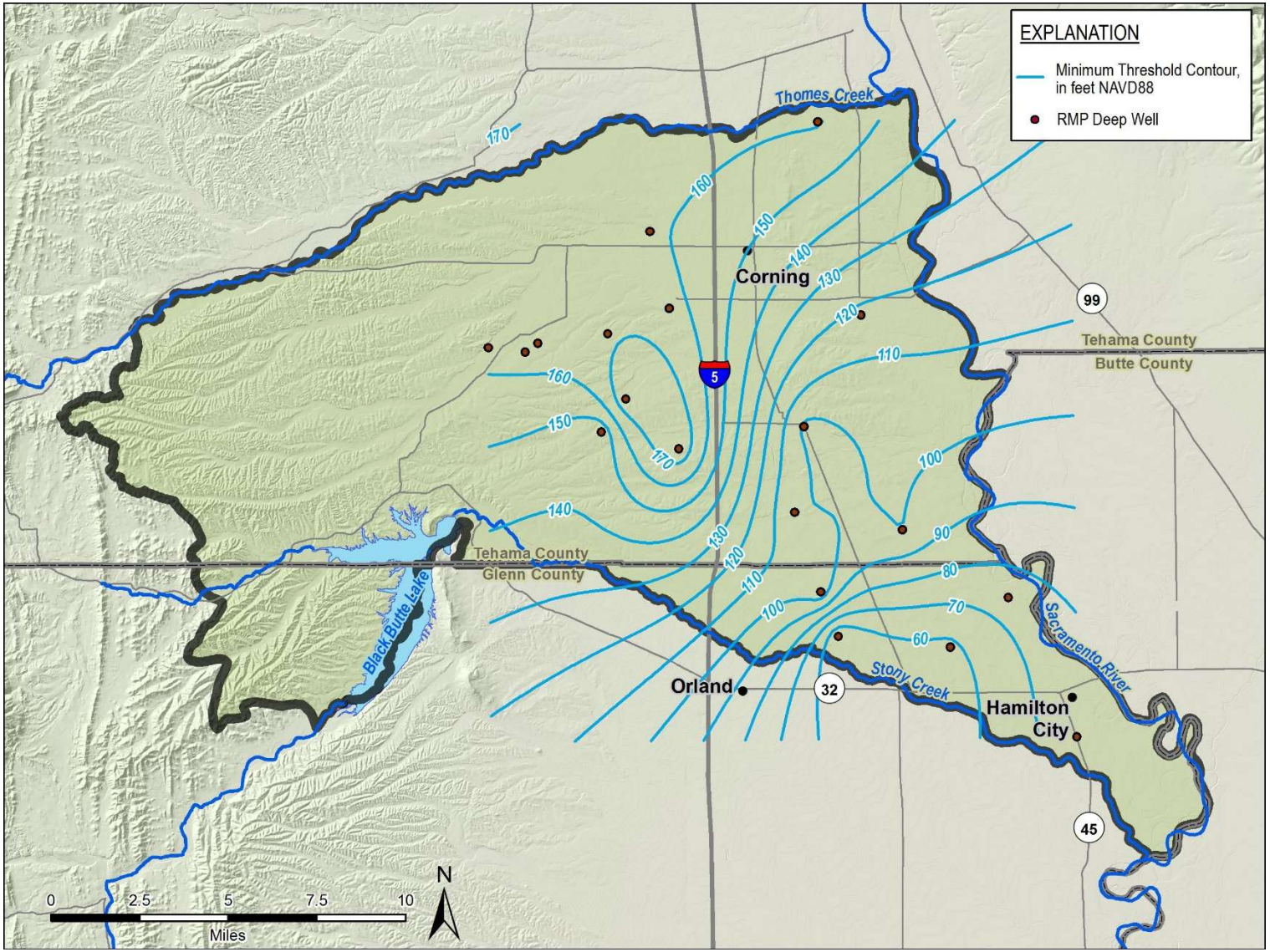


Figure 6. Groundwater elevation contours for deep RMP well MTs calculated using Option 2.