DRAFT CHAPTER 7

MODESTO SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP)

STANISLAUS AND TUOLUMNE RIVERS GROUNDWATER BASIN ASSOCIATION (STRGBA) GROUNDWATER SUSTAINABILITY AGENCY

TUOLUMNE COUNTY GROUNDWATER SUSTAINABILITY AGENCY

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Acronyms

bgs	below ground surface
BMP	Best Management Practices
CASGEM	California Statewide Groundwater Elevation Monitoring
COC	Constituent of Concern
DBCP	1,2-Dibromo-3-chloropropane
DMS	Data Management System
DWR	California Department of Water Resources
GAMA	Groundwater Ambient Monitoring and Assessment
GPS	Global Positioning System
GSP	Groundwater Sustainability Plan
IM	Interim Milestone
InSAR	Interferometric Synthetic Aperture Radar
MCL	Maximum Contaminant Level
MID	Modesto Irrigation District
MO	Measurable Objective
MT	Minimum Threshold
OID	Oakdale Irrigation District
PCE	Tetrachloroethene
STRGBA GSA	Stanislaus and Tuolumne Rivers Groundwater Basin Authority Groundwater Sustainability Agency
SWRCB	State Water Resources Control Board
1,2,3-TCP	1,2,3-trichloropropane
TDS	Total Dissolved Solids
WY	Water Year

7. MONITORING NETWORK

The overall objective of the monitoring network for this Groundwater Sustainability Plan (GSP) is to yield representative information about groundwater conditions to guide and evaluate GSP implementation. Specifically, the GSP monitoring network is designed to:

- Evaluate groundwater conditions relative to sustainability indicators.
- Monitor for minimum thresholds to avoid undesirable results.
- Track interim milestones and measurable objectives to demonstrate progress on reaching sustainability goals for the Subbasin.
- Expand the existing monitoring network to better represent the entire Subbasin and address data gaps.
- Reduce uncertainty and provide better data to guide management actions, document the water budget, and improve understanding of the interconnection of surface water and groundwater.
- Identify and track potential impacts on beneficial uses and users of groundwater.

This GSP builds on existing monitoring programs with the intent to provide sufficient data for demonstrating short-term, seasonal, and long-term trends in groundwater levels. Existing monitoring programs include the CASGEM monitoring program, public water supplier groundwater monitoring programs in the municipalities, agricultural water supplier groundwater monitoring programs in Modesto Irrigation District (MID) and Oakdale Irrigation District (OID), and the Irrigated Lands Regulatory Program. These existing monitoring programs are described in **Section 2.4**.

The following summarizes the monitoring network. **Section 7.1** describes the monitoring network for each sustainability indicator. **Section 7.2** provides protocols for data collection and monitoring. **Section 7.3** describes how the monitoring network will be assessed and improved. **Section 7.4** summarizes the data management system (DMS) for data collected from the monitoring network. Figures and tables for **Chapter 7** are provided at the end of the text to minimize interruption and facilitate multiple references to each table and figure.

7.1. DESCRIPTION OF MONITORING NETWORK

Groundwater level monitoring networks were developed to observe and document the chronic lowering of groundwater levels, reduction of groundwater in storage, land subsidence, and depletions of interconnected surface water. The applicability and rationale for using groundwater elevations to monitor each of these four sustainability indicators is discussed in **Chapter 6**, Sustainable Management Criteria. The monitoring networks are composed of representative monitoring wells that will be used to monitor sustainable management criteria for these sustainability indicators during the GSP implementation and planning horizon. Accordingly, groundwater elevations have been selected for a minimum threshold (MT) and measurable objective (MO) for each well in the monitoring network.

The monitoring networks consist of CASGEM wells, City of Modesto monitoring wells, USGS monitoring wells and monitoring wells constructed in 2021 with Proposition 68 grant funding from DWR. The monitoring networks are illustrated on **Figures 7-1** through **7-5.** The figures show locations of the wells in each monitoring network and the MT and MO for each well. Note that the current CASGEM program is being phased out and transitioned to the GSP monitoring network.

As described in **Chapter 6**, the monitoring network for degradation of water quality will be based on wells monitored by others and available at the State Water Resources Control Board (SWRCB) GeoTracker website. This network consists of drinking water supply wells, regulated facilities, and regional water quality programs such as the Groundwater Ambient Monitoring and Assessment (GAMA) Program. When combined with additional data from regulated water quality coalitions, this collective dataset represents a comprehensive network for tracking and evaluation of water quality with respect to the sustainable management criteria. Additional information on this monitoring network is provided in **Section 7.1.4** below.

A monitoring network was not developed for the seawater intrusion sustainability indicator. As discussed in **Chapter 6**, the GSAs found that seawater intrusion, as defined by GSP regulations, is not applicable to the inland Modesto Subbasin. Specifically, GSAs determined that seawater intrusion is not present in the Subbasin and is not likely to occur in the future (see **Section 6.5**). In accordance with GSP regulations, no sustainable management criteria have been assigned to this indicator, and no monitoring network has been established (§354.34(j)).

As described in **Chapter 6**, 2027 Interim Milestones (IMs) were developed for monitoring network wells in the OID and Non-District East Management Areas. The first IM occurs in 2027 with target values set below the MTs to provide a buffer to allow water levels to drop below the MT, recognizing that water levels in these wells may continue to decline after the GSP is adopted as projects are being brought online. This concept acknowledges that the aquifer response to projects and management actions will take time. 2027 IM values assume that recent water level declines will continue at similar rates between 2022 and 2027. Additional IMs are at five-year increments: the 2032 IM is the MT, the 2037 IM is half-way between the MT and the MO, and the 2042 IM is the MO. IMs provide a glide path for the Modesto Subbasin to reach its sustainability goal.

Summaries of the monitoring networks are provided in **Tables 7-1** and **7-2**. Well information includes the well ID, State Well Number, CASGEM identification number where applicable, well type, and Principal Aquifer and Management Area in which the well is located, location coordinates, well depth, screen interval depth, the MT and MO, a brief summary of how the MT and MO were developed, and the 2027 IM where applicable.

Hydrographs for each monitoring network well are provided in **Appendix X**. The hydrographs include well screen interval, ground surface elevation, the MT and MO for each well, and the 2027 IM, where applicable. Hydrograph presentation meets the data and reporting standards for hydrographs in Article 3 of the GSP regulations (§352.4(e)).

In addition to the representative wells in the monitoring networks, the GSAs will measure groundwater elevations in over 40 existing wells. These wells will be designated as SGMA monitoring wells, and will not be used to monitor the sustainability indicators, and therefore do not have MTs and MOs. However, groundwater elevation data collected from the SGMA monitoring wells will be used for monitoring overall groundwater conditions and support analyses, such as the preparation of groundwater elevation contour maps. As part of the GSP five-year update, water level data from the SGMA monitoring wells will be compared to data from representative monitoring wells and these wells can be added to the monitoring network to reduce uncertainty or address data gaps, as needed. This task will be a part of the overall monitoring network assessment required by GSP regulations (§354.38(a)). The SGMA monitoring wells are summarized in **Table 7-3**.

A Management Action has been incorporated into the GSP to address current data gaps and other improvements needed for the current GSP monitoring network (see **Section 8.x**).

The monitoring networks for each sustainability indicator are described in the following sections.

7.1.1. Chronic Lowering of Groundwater Levels

The monitoring network for chronic lowering of groundwater levels for each of the three principal aquifers is presented on **Figures 7-1, 7-2 and 7-3.** The wells in this monitoring network are summarized in **Table 7-1**.

Well density was an important consideration in identifying monitoring network wells for this sustainability indicator. DWR guidance (DWR, 2016a, see Table 1) generally recommends between one and ten monitoring wells per 100 square miles. This monitoring network is consistent with this guidance.

The following is a description of the monitoring network in each principal aquifer of the Subbasin.

7.1.1.1. Western Upper Principal Aquifer

The monitoring network for the Western Upper Principal Aquifer is illustrated on **Figure 7-1**. The monitoring network is composed of 17 wells, including 12 CASGEM wells, 2 City of Modesto monitoring wells, 2 Proposition 68 monitoring wells, and 1 USGS well. The STRGBA GSA is working with the USGS to obtain ownership and access to the USGS monitoring well. Well data are summarized in **Table 7-1**.

The wells in this monitoring network were chosen based on the following scientific rationale:

- Known locations and construction, with screen intervals or total depth above the Corcoran Clay (in the Western Upper Principal Aquifer).
- Spatial distribution and density of wells throughout the Western Upper Principal Aquifer.

- Length, completeness, and reliability of historical groundwater level record.
- Accessibility for future water level measurement.

Hydrographs for the wells in this monitoring network are presented in **Appendix X**. The CASGEM wells have historical water level records, many with water level data since the start of the GSP study period (water year (WY) 1991). As described in **Chapter 6**, the MT for the chronic lowering of groundwater level sustainability indicator is the historical low groundwater elevation observed from WY 1991 to WY 2020 and the MO is the midpoint between the historical high groundwater elevation during this time period and the MT. The MTs and MOs for the CASGEM wells were based on direct measurements in each well.

The City of Modesto monitoring wells, USGS wells and Proposition 68 monitoring wells have limited water level data. The MTs and MOs at these wells are based on the groundwater elevation contour maps in fall 2015 and spring 1998 (see **Figures 3-26 and 3-27**) or nearby wells with historical data.

The USGS well (MRWA-2) and one of the City of Modesto monitoring wells (MOD-MWD-1) are part of well clusters. At each of these locations, there are two wells screened in the Western Upper Principal Aquifer (and wells screened in the Western Lower Principal Aquifer). One representative well was chosen for the monitoring network from each location based on a review of the water level data, lithologic logs, and geophysical logs. The wells chosen for the monitoring network are screened in conductive sand or gravel units and have similar water levels to the other well in the cluster. The remaining well at each location are SGMA monitoring wells and are summarized in **Table 7-3**.

Static groundwater elevations will be measured twice a year in these monitoring wells to represent seasonal high and seasonal low groundwater conditions. The wells in this monitoring network will be monitored by one of the STRGBA GSA member agencies.

The SGMA monitoring wells in the Western Upper Principal Aquifer will also be monitored twice a year. These wells can be added to the monitoring network if problems arise with current monitoring network wells.

7.1.1.2. Western Lower Principal Aquifer

The monitoring network for the Western Lower Principal Aquifer contains five wells, as illustrated on **Figure 7-2** and summarized in **Table 7-1**. The monitoring network includes two City of Modesto monitoring wells, two Proposition 68 monitoring wells, and one USGS monitoring well.

The wells in this monitoring network were chosen because they have known locations and construction, with discrete screen intervals in the Western Lower Principal Aquifer (below the Corcoran Clay), and because they will be accessible for water level measurement in the future. As described in **Section 3.1.4**, The Corcoran Clay is the primary aquitard in the Subbasin and separates the alluvial aquifers above and below the clay, creating confined

conditions in the Western Lower Principal Aquifer. The STRGBA GSA is working with the USGS to obtain ownership and access to the USGS monitoring well.

The two City of Modesto wells in this monitoring network (MOD-MWB-2 and MOD-MWD-3) are part of well clusters with two or three wells screened in the Western Lower Principal Aquifer at each location. One representative well was chosen for the monitoring network from each location based on a review of the water level data, lithologic logs, and geophysical logs. The wells chosen for the monitoring network are screened in conductive sand or gravel units and have similar water levels to the other well at the same location. The remaining well(s) at each location are SGMA monitoring wells and are summarized in **Table 7-3**.

As shown on **Figure 7-2**, most of the wells in the monitoring network are in the eastern region of the Western Lower Principal Aquifer, with one City of Modesto monitoring well in the southwestern Western Lower Principal Aquifer. There is a lack of well coverage in the central and western regions of the aquifer. This data gap of groundwater elevations in the Western Lower Principal Aquifer is identified in **Section 3.2.9**. Further improvements to the monitoring network are described in a Management Action in **Chapter 8** (**Section 8.2.x**).

Hydrographs for wells in this monitoring network are presented in **Appendix X**. There are no measured data from Fall 2015 at any of these monitoring network wells. Historic data from other wells in the western aquifers suggest the historic low water level occurred during the recent drought in 2015 and have recovered to some degree since then. As noted in **Table 7-1**, the MTs selected for the Western Lower Principal Aquifer wells are based on estimates from the Fall 2015 groundwater elevation contour map (see **Figure 3-27**) or Fall 2015 model groundwater elevation contours. The MOs are based on the Spring 1998 contour map (see **Figure 3-26**) or available measured data at the well.

Static groundwater elevations will be measured in these monitoring wells twice a year, once in the spring and once in the fall, to represent seasonal high and seasonal low groundwater conditions. The wells will be monitored by one of the STRGBA GSA member agencies.

7.1.1.3. Eastern Principal Aquifer

The monitoring network for the Eastern Principal Aquifer consists of 39 wells, as shown on **Figure 7-3**. The monitoring network includes CASGEM wells, City of Modesto monitoring wells, Proposition 68 monitoring wells and USGS monitoring wells. Well data are summarized in **Table 7-1**.

The wells were chosen for this monitoring network because they have known locations and construction, are accessible for future water level measurement, and have good spatial distribution throughout the Eastern Principal Aquifer. The STRGBA GSA is working with the USGS to obtain ownership and access to the USGS monitoring wells.

The monitoring network wells are distributed throughout most of the Eastern Principal Aquifer, but are sparse in the eastern Subbasin. This data gap of groundwater elevations in

the Eastern Principal Aquifer is identified in **Section 3.2.9**. The four Proposition 68 monitoring wells constructed in the eastern Subbasin in 2021 (MW-7, MW-8, MW-9, and MW-10) help to fill this data gap. However, additional monitoring wells are necessary to fully characterize groundwater levels and flow in the eastern Subbasin. Further improvements to the monitoring network are described in a Management Action in **Chapter 8** (**Section 8.x**).

Hydrographs for wells in this monitoring network are presented in **Appendix X**. Several methods were used to develop MTs and MOs, based on available data. Most of the wells in the monitoring network are CASGEM wells with sufficient historical water level records and therefore, MTs and MOs are based on measured data at the wells. The City of Modesto, Proposition 68 and USGS monitoring wells, however, do not have sufficient historical measured water levels so their MTs and MOs were developed with a variety of methods. For these wells, MTs were either based on the Fall 2015 groundwater elevation contour map (see **Figure 3-27**), groundwater elevations at nearby wells, or the limited measured water level data at the well. MOs were based on either measured historic high groundwater levels or estimates from the Spring 1998 contour map (see **Figure 3-26**). A summary of the MT/MO development method for each well in the monitoring network is provided in **Table 7-1**.

The City of Modesto wells (MOD-MWA-2 and MOD-MWC-3) and the USGS wells (FPA-2 and OFPB-2) are part of well clusters with two or four wells at each location. One representative well was chosen for the monitoring network from each location based on a review of the water level data, lithologic logs, and geophysical logs. The wells chosen for the monitoring network are screened in conductive sand or gravel units and have similar water levels to the other well at the same location. Similarly, the three Proposition 68 monitoring wells (MW-4S, MW-5S and MW-6S) have two wells at each location and the shallower of the two wells at each location were chosen for the monitoring network. The remaining well(s) at each location are SGMA monitoring wells and are summarized in **Table 7-3**.

Static depth to water will be measured twice a year in these monitoring network wells to represent seasonal high and seasonal low groundwater conditions. The wells will be monitored by one of the STRGBA GSA member agencies.

As summarized on **Table 7-3**, there are SGMA monitoring wells in the Eastern Principal Aquifer that will be monitored on a semi-annual basis. Future water level data from these wells will be evaluated, and some of these wells may be added to the monitoring network during the GSP five-year update.

7.1.2. Reduction of Groundwater in Storage

As described in **Section 6.4**, the sustainable management criteria for chronic lowering of groundwater levels will be used as a proxy for the reduction of groundwater in storage indicator. Accordingly, the monitoring network for the reduction of groundwater in storage is the same as the monitoring network for the chronic lowering of groundwater levels. This

monitoring network is described above in **Section 7.1.1**, summarized in **Table 7-1**, and illustrated on **Figures 7-1, 7-2, and 7-3**.

Static groundwater elevations will be measured twice a year in these monitoring network wells to represent seasonal high and low groundwater conditions.

In addition to the required reporting of groundwater levels over time, regulations also require that the GSP annual reports provide an annual estimation of the change in groundwater in storage (§354.34(c)(2)). As described in **Chapters 5 and 6**, the historical reduction of groundwater in storage is estimated at about 43,000 AFY. As discussed in **Section 6.4**, both the change in groundwater in storage and corresponding water levels in the Subbasin will be documented annually in the GSP annual reports. Collectively, these data will allow the connection between the reduction of groundwater in storage to groundwater elevations to be documented on an annual basis, providing further justification for the use of a groundwater elevation proxy for this indicator.

7.1.3. Seawater Intrusion

As described in **Section 6.5**, the STRGBA GSA found that seawater intrusion is not an applicable sustainability indicator for the Modesto Subbasin. Specifically, the GSA determined that seawater intrusion is not present in the Modesto Subbasin and is not likely to occur in the future. Therefore, neither sustainable management criteria nor a monitoring network has been established for this sustainability indicator (§354.34(j)).

7.1.4. Degraded Water Quality

As summarized in **Section 6.6.1.3**, undesirable results for degraded water quality are defined as significant and unreasonable adverse impacts to groundwater quality caused by GSA projects, management actions, or other management of groundwater such that beneficial uses are affected and well owners experience an increase in operational costs. The MTs are set as a new exceedance of the maximum contaminant level (MCL) at a potable supply well for any of the seven constituents of concern (COC): nitrate, uranium tetrachloroethene (PCE), 1,2,3-trichloropropane (1,2,3-TCP), 1,2-Dibromo-3-chloropropane (DBCP), total dissolved solids (TDS), and arsenic.

The SWRCB and other agencies have the primary responsibility for water quality and the GSAs do not intend to duplicate this authority. Numerous regulated water quality monitoring programs exist in the Modesto Subbasin, providing data from hundreds of monitoring sites over time. Accordingly, the monitoring network for this sustainability indicator will incorporate existing monitoring data. The MTs will be quantitively monitored by public agencies (and others) in representative monitoring wells for each Principal Aquifer in accordance with other water quality regulatory monitoring program requirements. The GSAs will download water quality data from the State GeoTracker website each year and analyze any new exceedances of the seven COCs in potable supply wells. New exceedances or further degradation of the wells with prior exceedances will be evaluated in relation to GSA management of water level and groundwater extractions, as well as GSA projects and

management actions, to determine whether these exceedances were caused, or exacerbated, by the GSAs. This analysis will be included in the GSP annual reports.

The monitoring network consists of drinking water supply wells, monitoring wells at regulated facilities, and monitoring sites associated with other regulatory water quality programs such as GAMA. Data from two specific regulatory water quality programs, CV-SALTS and the Nitrate Control Program (implemented by the Valley Water Collaborative – see **Section 2.4.4**), will be compiled separately if not already included in the GeoTracker data. These two programs are regulated through the CVRWQCB and provide water quality data for nitrate and total dissolved solids in groundwater throughout the Subbasin. Collectively, this dataset represents a comprehensive network for ongoing tracking and evaluation with respect to the sustainable management criteria.

The monitoring network will vary from year-to-year based on regulatory requirements for each water quality program. Water quality data collected in Subbasin wells during water year 2020 (October 2019 to September 2020) for the COCs were downloaded from GeoTracker as an example dataset. The wells with this water quality data are represented on **Figure 7-4**. During this time, water quality data for the COCs were collected from over 300 wells in the Subbasin. Most of the data are from municipal drinking water systems and are therefore clustered in and around the municipalities. As indicated by the numbers of wells sampled for each of the COCs on **Figure 7-4**, there is sufficient data to track and characterize water quality COCs to meet beneficial uses across the Subbasin.

7.1.5. Land Subsidence

Although impacts from land subsidence have not been documented in the Modesto Subbasin, future land subsidence is most likely to occur as a result of the dewatering/depressurization of clays within and below the Corcoran Clay. As described in **Section 6.7**, the sustainable management criteria for chronic lowering of groundwater levels will be used as a proxy for land subsidence. Accordingly, the monitoring network for land subsidence is the same as the monitoring network for the chronic lowering of groundwater levels. This monitoring network is described above in **Section 7.1.1**, summarized in **Table 7-1**, and illustrated on **Figures 7-1, 7-2, and 7-3**.

Static depth to water will be measured twice a year in the monitoring network wells to represent seasonal high and seasonal low groundwater conditions. The wells in this monitoring network will be monitored by one of the STRGBA GSA member agencies.

Remote sensing data will be used as a screening tool to evaluate land subsidence in the Modesto Subbasin as a supplemental monitoring program, but MTs and MOs will not be assigned to these data. As summarized in **Section 3.2.6**, vertical displacement data has been collected using Interferometric Synthetic Aperture Radar (InSAR) since 2015 by TRE Altamira Inc., under contract with DWR. This data set is available on the SGMA Data Viewer (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#landsub). Data collected from June 2015 to June 2018 in the Modesto Subbasin is illustrated on **Figure 3-59**. As shown on this figure, vertical displacement data covers the full extent of the Modesto Subbasin. Land subsidence

will be monitored in the Subbasin by updating and evaluating this InSAR data on an annual basis. This evaluation will be included in the GSP annual reports.

7.1.6. Depletions of Interconnected Surface Water

The monitoring network for depletions of interconnected surface water, summarized in **Table 7-2** and presented on **Figure 7-5**, includes 20 wells along the San Joaquin River, Stanislaus River and Tuolumne River. The wells are screened in the Western Upper Principal Aquifer and the Eastern Principal Aquifer and include CASGEM wells and Proposition 68 monitoring wells.

The wells in this monitoring network were chosen because they are relatively close to the rivers and will be accessible for water level measurement in the future. The wells have known locations with depth-discrete screen intervals and will enable monitoring of the unconfined water level surface adjacent to the river boundaries.

The following summarizes the monitoring network wells along each of the rivers.

7.1.6.1. San Joaquin River

Two CASGEM wells are part of the monitoring network along the San Joaquin River. These wells are approximately 0.75 and 2.0 miles from the San Joaquin River and are the closest wells to the river screened in the Western Upper Principal Aquifer that are accessible for future monitoring. These wells have known construction, with discrete screened intervals from 13 to 148 ft bgs (**Table 7-2**). Each of these wells has historical water level data (hydrographs in **Appendix X**).

As shown on **Figure 7-5**, these two wells are along the Subbasin's central reach of the San Joaquin River and there is a gap in well coverage along the upstream and downstream reaches. This is consistent with the data gap in groundwater conditions along the river boundaries that was identified and described in **Section 3.2.9**.

As described in **Section 6.8.2**, the MT for the San Joaquin River is defined as the low groundwater elevation observed in Fall 2015. The MO is the midpoint between the historical high groundwater elevation and the MT (**Table 7-2**). As noted on **Table 7-2**, the MT and MO are close together (about 6 feet or less), providing relatively small amounts of operational flexibility; however, historical groundwater elevations have been relatively stable in this part of the Subbasin. The MTs and MOs at each of these wells is based on measured data, as shown on the hydrographs in **Appendix X**.

Static groundwater elevations will be measured twice a year, in spring and fall, to represent seasonal high and low groundwater conditions. The wells along the San Joaquin River will be monitored by one of the STRGBA GSA member agencies.

7.1.6.2. Stanislaus River

Eight wells are part of the monitoring network along the Stanislaus River. As shown on **Figure 7-5**, these include CASGEM wells and one Proposition 68 monitoring well. These

wells were chosen for the monitoring network because they are close to the Stanislaus River (one mile or less from the river) and will be accessible for future water level monitoring.

The wells in this monitoring network are in the Eastern Principal Aquifer. The screen intervals of these wells range from ground surface to 550 ft bgs. The wells are along the central reach of the Stanislaus River, with gaps in well coverage along the upstream and downstream reaches. Data gaps in the monitoring network are being addressed with a management action to improve future GSP monitoring (see **Section 8.x.x**).

As described in **Section 6.8.2**, the MT for the Stanislaus River is defined as the low groundwater elevation observed in Fall 2015. The MTs at the CASGEM wells are observed water levels in Fall 2015. The Proposition 68 monitoring well (MW-4S) was constructed in 2021 and its MT is estimated from the October 2015 groundwater elevation contour map (see **Figure 3-27**).

Static groundwater elevations will be measured twice a year, in spring and fall, to represent seasonal high and low groundwater conditions. The wells will be monitored by one of the STRGBA GSA member agencies.

7.1.6.3. Tuolumne River

As shown on **Figure 7-5**, the monitoring network along the Tuolumne River includes 10 wells: 6 CASGEM wells and 4 Proposition 68 monitoring wells. These wells were chosen for the monitoring network because they are close to the Tuolumne River and will be accessible for future monitoring. Well data are summarized in **Table 7-2**.

Most of the wells in this monitoring network are within 1.0 mile of the Tuolumne River, with some between 1.0 and 1.5 miles from the river. Three of the wells (Paradise 235, Philbrick 201 and MW-2S) are within the Corcoran Clay extent and screened within the Western Upper Principal Aquifer. Screens in these three wells range from a depth of 58 ft bgs to 132 ft bgs. The remaining wells are in the Eastern Principal Aquifer, with screens ranging from 113 ft bgs to 360 ft bgs. Although MW-3S appears on **Figure 7-5** to be on the edge of the Corcoran Clay as mapped by the USGS (Burow et al., 2004), Corcoran Clay was not encountered during well drilling.

As shown on **Figure 7-5**, these wells are spaced apart along the full extent of the Tuolumne River. There is less well coverage, however, along the upstream reach of the river. The recently constructed MW-9 helps to fill a previous gap in the upstream reach. As stated previously, groundwater conditions along the river boundaries were identified as a data gap in **Section 3.2.9**.

As described in **Section 6.8.2**, the MT for the Tuolumne River is defined as the low groundwater elevation observed in Fall 2015. The MTs at the CASGEM wells are based on measured data in Fall 2015. The MTs at the Proposition 68 monitoring wells are based on either the Fall 2015 contour map (see **Figure 3-27**) or nearby wells with historical water level data. Due to a lack of data in the eastern Subbasin, the MT at MW-9 is based on the limited

measured water levels at the well since it was constructed in March 2021. Hydrographs with MTs and MOs are in **Appendix X**.

Static groundwater elevations will be measured twice a year, in spring and fall, to represent seasonal high and low groundwater conditions. The wells will be monitored by one of the STRGBA GSA member agencies.

7.2. PROTOCOLS FOR DATA COLLECTION AND MONITORING

As required by the GSP regulations, protocols are provided for groundwater elevation monitoring in the representative monitoring wells in the monitoring network. Applicable portions of DWR's best management practices (BMP) for monitoring protocols have been considered and incorporated. As required by the regulations, monitoring protocols will be reviewed at least every five years as part of the periodic evaluation of the GSP, and modified as necessary.

Protocols are focused on groundwater elevation monitoring standards because that is the only monitoring method applicable to the monitoring network for the Modesto Subbasin (see justification and rationale for the use of groundwater elevations for applicable sustainability indicators described in **Chapter 6**). As discussed in **Section 7.1.4.**, water quality monitoring will be conducted by others, and therefore water quality sampling protocols are not included in this section.

This section describes general procedures for documenting wells in the monitoring program and for collecting consistent high quality groundwater elevation data. In general, the methods for establishing location coordinates (and reference point elevations) follow the data and reporting standards described in the GSP Regulations (§352.4) and the guidelines presented by USGS Groundwater Technical Procedures. These procedures are summarized below.

7.2.1. Field Methods for Monitoring Well Surveying

As described previously, further improvements to the monitoring network will be made in the future. When new monitoring wells are constructed, the following survey procedures will be followed:

- Location coordinates will be surveyed with a survey grade Global Positioning System (GPS). The coordinates will be in Latitude/Longitude decimal degrees and reference the NAD83 datum.
- Reference point elevations will be surveyed with a survey grade GPS with elevation accuracy of approximately 0.5 feet. During surveying, the elevations of the reference point and ground surface near the well will be measured to the nearest 0.5 foot. All elevation measurements will reference NAVD88 vertical datum.

7.2.2. Additional Well Standards

Additional standards and information applicable to new and existing wells are also incorporated into the monitoring network as required by the GSP regulations. This information is summarized on **Tables 7-1** and **7-2** and includes the following:

- CASGEM Well ID (as applicable),
- Well location, ground surface elevation and reference point elevation,
- Description of the well use and status (i.e., active irrigation well or monitoring well),
- Well depth and screen interval depth, and
- Principal Aquifer that is being monitored.

Additional information will be provided on the DWR templates for wells and water levels. For example, well completion report number, well construction diagram and geophysical log will be provided, if available. Additional well details such as boring total depth and well casing diameter, if available, will also be provided on the DWR templates.

There are three representative wells in the monitoring network for which the screen interval information is unknown: CASGEM wells Gates Road 101, Machado 23 and Warnock 46 (see **Tables 7-1** and **7-2**). But, based on the total depths of these wells, they are completed in the Western Upper Principal Aquifer.

7.2.3. Field Methods for Groundwater Elevation Monitoring

Field methods for collecting depth to water measurements at representative monitoring wells in the Modesto Subbasin GSP monitoring network are described below:

- Active production wells will be turned off prior to collecting a depth to water measurement.
- The standard period of time that a well needs to be off before a static measurement is taken is 48 hours; field personnel will attempt to verify the time that the pump last ran and record that time in the field notes.
- To verify that the wells are ready for measurement, STRGBA GSA will coordinate with well operators and/or owners as necessary.
- Coordination with well operators/owners should occur approximately four days prior to the expected measurement date.
- Each well has a unique manner to access the well bore (e.g., inspection port, sounding tube, hole drilled into the side of the casing).
- Depth to groundwater will be measured relative to the established reference point elevation, which will be marked with a marker or notch in the top of the well casing. In the absence of a mark or notch, the groundwater elevation will be measured from the north side of the well casing and then marked for future measurements.
- If a pressure release is observed when the well cap or sounding port plug is removed, the water level will be allowed to stabilize for a short period of time before the depth to groundwater measurement is taken.

- Depth to groundwater measurements are collected by either electric sounding tape (Solinst or Powers type sounders) or by steel tape methods. The depth to water measurement methods described in DWR's Groundwater Elevation Monitoring Guidelines, will apply to the Modesto Subbasin monitoring network for wells monitored with electric sounding tape or a steel tape (DWR, 2010).
- Depth to groundwater will be measured and reported in feet to the nearest 0.01 foot relative to the reference point.
- The measurement will be recorded on a field sheet with the date and time the measurement was made. Any factor that may influence the depth to water measurement will be noted, such as well condition or local flooding.
- The well cap or sounding port cap will be placed back on the well, and the well will be secured and locked.

7.2.4. Frequency and Timing of Groundwater Elevation Monitoring

- Semi-annual monitoring is determined to be appropriate to capture the seasonal high and low groundwater elevations associated with the irrigation pumping cycle.
- Groundwater elevations will be measured in monitoring network wells within as short a time as possible, preferably within a 1 to 2 week period (DWR, 2016b), in order to:
    - provide a snapshot of elevations in time to support mapping and management;
    - capture the seasonal high and low elevations in the Subbasin; and
    - meet reporting requirements for semi-annual monitoring data as required by DWR.
- Based on historical data and current land uses in the Modesto Subbasin, the following measurement time intervals are established:
    - Seasonal high: February 1 through April 15 for reporting to DWR by July 1.
    - Seasonal low: September 1 through November 30 for reporting to DWR by January 1. Although October and November are technically part of the subsequent water year, they are included in the fall monitoring event to ensure that the seasonal low water level can be measured. Depending on the hydrology, agricultural fields may be irrigated through October in the Modesto Subbasin.
- Water level measurements may be adjusted within the time intervals based on hydrologic and land use conditions at that time. The timing for the monitoring events will be coordinated among the GSAs.

7.3. Assessment and Improvement of Monitoring Network

The Modesto Subbasin took a big step towards improving the monitoring network by constructing 17 monitoring wells at 11 locations throughout the Subbasin in 2021 with Proposition 68 grant funding. However, as described in **Section 3.2.9**, data gaps still exist in the Western Lower Principal Aquifer, Eastern Principal Aquifer and along the river boundaries. These data gaps are consistent with the gaps in well coverage in the monitoring

networks, described in **Section 7.1**. The following specific data gaps have been identified for the GSP monitoring network, organized by each sustainability indicator:

- Chronic Lowering of Groundwater Levels: Insufficient number and location of accessible and representative wells screened in the Western Lower Principal Aquifer and in the eastern region of the Eastern Principal Aquifer.
- Reduction of Groundwater in Storage: Insufficient number and location of accessible and representative wells screened in the Western Lower Principal Aquifer and in the eastern region of the Eastern Principal Aquifer.
- Seawater Intrusion: Not applicable.
- Degraded Water Quality: No data gaps (STRGBA GSA will rely on a robust water quality monitoring network that combines numerous ongoing monitoring programs conducted by others – see **Section 7.1.4** and **Figure 7-4**).
- Land Subsidence: Insufficient number and location of accessible and representative wells screened in the Western Lower Principal Aquifer.
- Depletions of Interconnected Surface Water: Insufficient number and location of appropriately constructed, accessible, and representative wells along various segments of all three river boundaries to measure the water table in the Western Upper Principal Aquifer and Eastern Principal Aquifer.

The GSAs have adopted a Management Action to make ongoing improvements to the current GSP monitoring network (see **Section 8.x**). Additional improvements to the monitoring network are envisioned in the first five years of GSP implementation as described in **Section 8.x**. In addition, the monitoring network will be reviewed and evaluated in each five-year assessment in compliance with GSP regulations (§354.38).

7.4. DATA MANAGEMENT SYSTEM

Groundwater elevation data measured in the representative monitoring wells and the additional SGMA wells will be recorded in the data management system (DMS) developed for the GSP. The data collected for the GSP from the GSA member agencies, and other sources, currently resides in relational databases, which consist of an Access database, GIS geodatabase, and Excel workbooks. Future upgrades to this DMS are being considered by the GSAs. The DMS will be updated with the monitoring data annually and provided in the GSP annual reports. The data will also be submitted to DWR electronically.

9. REFERENCES

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Table 7-1: Summary of Monitoring Network, Chronic Lowering of Groundwater Levels

						Management Area												
Program	Well ID	State Well Number	CASGEM Identification Number	Well Use / Status	Principal Aquifer	MID	OID	Non-District East	Non-District West	Latitude (NAD 83)	Longitude (NAD 83)	Ground Surface Elevation (feet msl)	Reference Point Elevation (feet msl)	Total Well Depth (feet bgs)	Screen Interval Depths (feet bgs)	Minimum Threshold (MT) (feet msl)	Measurable Objective (MO) (feet msl)	MT/MO Note	Interim Milestone (2027) (feet msl)
CASGEM	Albers 232	03S10E26D001M	3559	Active Irrigation	Eastern	x				37.651020	-120.847696	145.4	145.7	460	196-288	60	76	based on measured data at the well	--
CASGEM	Allen OID-01	02S10E16M001M	4430	Active Irrigation	Eastern		x			37.759897	-120.885401	145.6	145.7	415	0-120	72	81	based on measured data at the well	61
CASGEM	American 208	02S08E25P001M	3723	Active Irrigation	Eastern	x				37.728064	-121.041430	99.9	99.9	320	79-272	48	55	based on measured data at the well	--
CASGEM	Bangs Ave 243	03S08E01K001M	3152	Active Irrigation	Eastern	x				37.703436	-121.038476	90.0	90.0	346	141-251	32	46	based on measured data at the well	--
CASGEM	Bentley OID-02	02S10E33J001M	4590	Active Irrigation	Eastern		x			37.715973	-120.866949	171.9	172.1	500	120-175	71	85	based on measured data at the well	56
CASGEM	Birnbaum OID-03	02S10E15N001M	4429	Active Irrigation	Eastern		x			37.755921	-120.863872	149.4	149.8	293	55-293	72	86	based on measured data at the well	61
CASGEM	Blossom 230	03S11E30K001M	3903	Active Irrigation	Eastern	x				37.645614	-120.801537	154.8	155.0	412	179-283	61	78	based on measured data at the well	--
CASGEM	Canfield 90	04S08E06L001M	26633	Active Irrigation	Western Upper	x				37.613113	-121.130799	52.0	52.3	151	40-75	32	36	based on measured data at the well	--
CASGEM	Cavil 214	03S10E06G001M	27057	Active Irrigation	Eastern	x				37.705044	-120.911296	135.6	135.6	480	107-275	53	73	based on measured data at the well	--
CASGEM	Claribel 206	03S09E03D001M	2093	Active Irrigation	Eastern	x				37.708526	-120.974280	114.1	114.5	650	96-550	49	62	based on measured data at the well	--
CASGEM	Crane OID-06	02S10E29E001M	29444	Active Irrigation	Eastern		x			37.733378	-120.899126	160.1	160.4	505	155-198	66	77	based on measured data at the well	55
CASGEM	Curtis #2 100	03S08E09P001M	3303	Active Irrigation	Western Upper	x				37.685351	-121.097462	63.6	63.6	124	79-100	34	41	based on measured data at the well	--
CASGEM	Furtado OID-07	02S11E32L001M	2529	Active Irrigation	Eastern		x			37.718381	-120.786289	212.0	212.5	590	200-580	69	81	based on measured data at the well	51
CASGEM	Gates Road 101	03S07E24M001M	3146	Active Irrigation	Western Upper	x				37.659699	-121.155215	44.2	44.2	64	--	24	33	based on measured data at the well	--
CASGEM	Hart Road 88	03S08E08D001M	3301	Active Irrigation	Western Upper	x				37.694807	-121.122902	54.9	55.2	130	73-85	35	40	based on measured data at the well	--
CASGEM	Head Lateral 3 215	03S10E17K001M	3552	Active Irrigation	Eastern	x				37.674398	-120.891430	135.8	135.6	476	116-400	56	73	based on measured data at the well	--
CASGEM	Head Lateral 8 194	02S08E27N001M	38870	Active Irrigation	Eastern	x				37.727189	-121.087002	79.5	79.8	302	148-211	40	47	based on measured data at the well	--
CASGEM	Jones WID 228	03S11E29J001M	38872	Active Irrigation	Eastern	x				37.641798	-120.776177	166.4	166.4	324	188-280	55	75	based on measured data at the well	--
CASGEM	Katen 69	03S07E25P001M	3147	Active Irrigation	Western Upper	x				37.637929	-121.149890	45.1	45.1	160	13-148	27	33	based on measured data at the well	--
CASGEM	Langdon Merle 241	02S09E28H001M	3876	Active Irrigation	Eastern	x				37.734908	-120.977526	128.4	128.5	595	160-300	50	62	based on measured data at the well	--
CASGEM	Lateral one 195	03S10E32G001M	3877	Active Irrigation	Eastern	x				37.632523	-120.889283	126.0	126.0	260	141-210	42	52	based on measured data at the well	--
CASGEM	Machado 23	03S08E17R001M	3864	Active Irrigation	Western Upper	x				37.668045	-121.105038	59.1	59.3	80	--	31	40	based on measured data at the well	--
CASGEM	Marquis OID-10	02S10E20C001M	29436	Active Irrigation	Eastern		x			37.753232	-120.896930	138.4	138.8	125	27-125	85	91	based on measured data at the well	78
CASGEM	North Ave 103	03S08E14B001M	3854	Active Irrigation	Western Upper	x				37.678393	-121.054335	73.9	74.6	130	53-81	41	50	based on measured data at the well	--
CASGEM	Paradise 235	04S08E02L001M	2151	Active Irrigation	Western Upper	x				37.614186	-121.057863	73.7	73.9	258	96-132	34	41	based on measured data at the well	--
CASGEM	Paulsell 1 OID-11	02S12E31K001M	26187	Active Irrigation	Eastern			x		37.717864	-120.691876	195.9	197.5	815	195-410	88	117	based on measured data at the well	53
CASGEM	Paulsell 2 OID-12	02S12E32P001M	38865	Active Irrigation	Eastern			x		37.710953	-120.676939	193.9	195.6	815	132-815	94	123	based on measured data at the well	58
CASGEM	Perley 202	03S09E14P001M	2109	Active Irrigation	Eastern	x				37.667719	-120.951955	104.9	105.4	255	76-204	36	45	based on measured data at the well	--
CASGEM	Philbrick 201	04S08E02H001M	26591	Active Irrigation	Western Upper	x				37.619159	-121.050003	73.1	73.5	88	58-74	34	41	based on measured data at the well	--
CASGEM	Quesenberry 223	03S12E19G001M	27424	Active Irrigation	Eastern			x		37.659773	-120.689681	197.0	197.0	380	168-208	89	110	based on measured data at the well	72
CASGEM	Riverbank OID-13	02S09E27G001M	49463	Active Irrigation	Eastern	x				37.735134	-120.964821	132.3	134.2	560	200-550	42	54	based on measured data at the well	--
CASGEM	Schmidt 227	03S11E27G003M	3897	Active Irrigation	Eastern	x				37.648671	-120.736000	192.3	192.2	248	113-153	59	78	based on measured data at the well	--
CASGEM	Van Buren 43	03S08E21Q001M	3873	Active Irrigation	Western Upper	x				37.654644	-121.094887	63.3	63.5	196	76-116	38	45	based on measured data at the well	--
CASGEM	Warnock 46	03S08E29K001M	4015	Active Irrigation	Western Upper	x				37.642900	-121.108575	55.1	55.1	240	--	35	42	based on measured data at the well	--

Table 7-1: Summary of Monitoring Network, Chronic Lowering of Groundwater Levels

						Management Area												
Program	Well ID	State Well Number	CASGEM Identification Number	Well Use / Status	Principal Aquifer	MID	OID	Non-District East	Non-District West	Latitude (NAD 83)	Longitude (NAD 83)	Ground Surface Elevation (feet msl)	Reference Point Elevation (feet msl)	Total Well Depth (feet bgs)	Screen Interval Depths (feet bgs)	Minimum Threshold (MT) (feet msl)	Measurable Objective (MO) (feet msl)	MT/MO Note	Interim Milestone (2027) (feet msl)
CASGEM	Wellsford 233	03S10E16K001M	3551	Active Irrigation	Eastern	x				37.673607	-120.875297	141.9	142.0	468	158-358	62	77	based on measured data at the well	--
CASGEM	Wood 210	03S10E18P001M	3553	Active Irrigation	Eastern	x				37.667487	-120.912168	121.3	121.3	606	87-547	52	66	based on measured data at the well	--
CASGEM	Young 76	04S08E04G001M	38078	Active Irrigation	Western Upper	x				37.618051	-121.094288	61.5	62.1	175	12-152	36	42	based on measured data at the well	--
City of Modesto	MOD-MWA-2	--	not applicable	Monitoring Well	Eastern	x				37.642986	-120.931770	--	103.8	175	150-170	30	36	MT: based on Oct 2015 contour map; MO: based on historic high, spring 1998 contour map	--
City of Modesto	MOD-MWB-1	--	not applicable	Monitoring Well	Western Upper	x				37.690559	-121.044299	--	78.8	177	152-172	40	49	MT: estimated from fall 2015 contour map; MO: historic high estimated from spring 1998 contour map	--
City of Modesto	MOD-MWB-2	--	not applicable	Monitoring Well	Western Lower	x				37.690559	-121.044245	--	78.7	250	225-245	26	34	MT: estimated from fall 2015 contour map; MO: historic high estimated from spring 1998 contour map	--
City of Modesto	MOD-MWC-3	--	not applicable	Monitoring Well	Eastern	x				37.672249	-120.940908	--	105.6	285	260-280	40	50	MT: based on October 2015 contour map, MO: based on spring 1998 contour map	--
City of Modesto	MOD-MWD-1	--	not applicable	Monitoring Well	Western Upper	x				37.649959	-121.048685	--	73.3	129	104-124	30	40	MT: estimated from fall 2015 contour map and MT at nearby CASGEM well (McDonald); MO: based on historic high from spring 1998 contour map	--
City of Modesto	MOD-MWD-3	--	not applicable	Monitoring Well	Western Lower	x				37.649958	-121.048649	--	73.2	243	218-238	30	37	MT: estimated from fall 2015 measured contour map and model contours (Layer 2); MO: historic high estimated from spring 1998 contour map	--
USGS	FPA-2	003S009E08K004M	not applicable	Monitoring Well	Eastern	x				37.686194	-121.000917	--	91.0	122.2	115-120	38	48	MT: based on October 2015 contour map; MO: based on maximum of measured data (higher than estimate from spring 1998 contour map)	--
USGS	OFPB-2	003S009E11F002M	not applicable	Monitoring Well	Eastern	x				37.690194	-120.951417	--	104.0	174.5	166-171	35	53	MT: based on fall 2015 contour map; MO: historic high based on spring 1998 contour map	--
USGS	MRWA-2	003S008E33R002M	not applicable	Monitoring Well	Western Upper	x				37.624121	-121.086103	--	64.0	183	174-179	36	43	MT: estimated from fall 2015 contour map and based on nearby CASGEM well (Young); MO: historic high estimated from spring 1998 contour map and CASGEM well (Young)	--
USGS	MRWA-3	003S008E33R001M	not applicable	Monitoring Well	Western Lower	x				37.624121	-121.086103	--	64.0	280	269-274	28	36	MT: estimated from model contours September 2015 (Layer 2); MO: historic high based on measured data	--
Prop 68	MW-1S	--	not applicable	Monitoring Well	Western Upper	x				37.707639	-121.087224	69.0	--	125	100-120	33	43	MT: based on fall 2015 contour map; MO: historic high based on spring 1998 contour map	--
Prop 68	MW-1D	--	not applicable	Monitoring Well	Western Lower	x				37.707639	-121.087224	69.0	--	250	225-245	14	27	MT: based on measured data in April 2021 (lower than fall 2015 contour map); MO: historic high based on spring 1998 contour map	--
Prop 68	MW-2S	--	not applicable	Monitoring Well	Western Upper	x				37.613903	-121.023493	72.0	--	135	110-130	34	41	MT/MO: based on nearby CASGEM well (Philbrick)	--
Prop 68	MW-2D	--	not applicable	Monitoring Well	Western Lower	x				37.613903	-121.023493	72.0	--	281	256-276	35	40	MT: based on fall 2015 model contour map (Lay 2); MO: based on historic high of measured data	--
Prop 68	MW-3S	--	not applicable	Monitoring Well	Eastern	x				37.630833	-120.967648	95.0	--	161	136-156	25	31	MT: based on historic low at nearby MOD-225; MO: based on max of measured data (slightly higher than historic high based on spring 1998 contour map)	--
Prop 68	MW-3D	--	not applicable	Monitoring Well	Eastern	x				37.630833	-120.967648	95.0	--	283	258-278	25	31	MT/MO: same as MW-3S (so far, measured water level data are similar)	--

Table 7-1: Summary of Monitoring Network, Chronic Lowering of Groundwater Levels

						Management Area												
Program	Well ID	State Well Number	CASGEM Identification Number	Well Use / Status	Principal Aquifer	MID	OID	Non-District East	Non-District West	Latitude (NAD 83)	Longitude (NAD 83)	Ground Surface Elevation (feet msl)	Reference Point Elevation (feet msl)	Total Well Depth (feet bgs)	Screen Interval Depths (feet bgs)	Minimum Threshold (MT) (feet msl)	Measurable Objective (MO) (feet msl)	MT/MO Note	Interim Milestone (2027) (feet msl)
Prop 68	MW-4S	--	not applicable	Monitoring Well	Eastern				x	37.728639	-120.941518	134.0	--	165	140-160	56	67	MT: based on fall 2015 contour map; MO: historic high based on spring 1998 contour map	--
Prop 68	MW-5S	--	not applicable	Monitoring Well	Eastern		x			37.763081	-120.825389	193.0	--	175	150-170	69	89	MT: based on historic low at nearby Oak-008; MO: based on historic high at nearby Oak-008	68
Prop 68	MW-6S	--	not applicable	Monitoring Well	Eastern	x				37.646139	-120.752628	170.0	--	179	154-174	65	83	MT: based on fall 2015 contour map; MO: historic high based on spring 1998 contour map	--
Prop 68	MW-7	--	not applicable	Monitoring Well	Eastern			x		37.743599	-120.704563	236.0	--	300	275-295	75	110	MT: based on minimum of available measured data at this well. There is a lack of water level data in this area of the Subbasin. MO: based on historic high at CASGEM well Paulsell-1 (~2 miles south).	40
Prop 68	MW-8	--	not applicable	Monitoring Well	Eastern			x		37.732326	-120.632880	295.0	--	290	265-285	75	110	MT: based on minimum of available measured data at this well. Similar value to nearby well on fall 2015 contour map. MO: based on historic high at CASGEM well Paulsell-1	49
Prop 68	MW-9	--	not applicable	Monitoring Well	Eastern			x		37.649542	-120.535005	248.0	--	365	340-360	150	180	MT: based on minimum of available measured data at this well. There is a lack of water level data in this area of the Subbasin. MO: Based on similar operational range as other eastern Subbasin wells (~30 ft)	138
Prop 68	MW-10	--	not applicable	Monitoring Well	Eastern			x		37.739979	-120.756492	259.0	--	265	240-260	72	101	MT: based on historic low at a nearby DWR WDL well - Dec 2013 (data from 1990 to 2014); MO: based on historic high at nearby DWR WDL well - Nov 1997	63
Prop 68	MW-11	--	not applicable	Monitoring Well	Eastern	x				37.643900	-120.901031	118.0	--	175	150-170	35	48	MT: based on historic low at nearby MOD-247; based on historic high at nearby MOD-247	--

Table 7-2: Summary of Monitoring Network, Interconnected Surface Water

						Management Area													
Program	**Well ID**	**State Well Number**	**CASGEM Identification Number**	**Well Use / Status**	**Principal Aquifer**	**MID**	**OID**	**Non-District East**	**Non-District West**	**Latitude (NAD 83)**	**Longitude (NAD 83)**	**Ground Surface Elevation (feet msl)**	**Reference Point Elevation (feet msl)**	**Total Well Depth (feet bgs)**	**Screen Interval Depths (feet bgs)**	**Minimum Threshold (MT) (feet msl)**	**Measurable Objective (MO) (feet msl)**	**MT/MO Note**	**Interim Milestone (2027) (feet msl)**
San Joaquin River																			
CASGEM	Canfield 90	04S08E06L001M	26633	Active Irrigation	Western Upper	x				37.613113	-121.130799	52.0	52.3	151	40-75	33	37	based on measured data at the well	--
CASGEM	Katen 69	03S07E25P001M	3147	Active Irrigation	Western Upper	x				37.637929	-121.149890	45.1	45.1	160	13-148	27	33	based on measured data at the well	--
Stanislaus River																			
CASGEM	Allen OID-01	02S10E16M001M	4430	Active Irrigation	Eastern		x			37.759897	-120.885401	145.6	145.7	415	0-120	75	83	based on measured data at the well	61
CASGEM	American 208	02S08E25P001M	3723	Active Irrigation	Eastern	x				37.728064	-121.041430	99.9	99.9	320	79-272	48	55	based on measured data at the well	--
CASGEM	Birnbaum OID-03	02S10E15N001M	4429	Active Irrigation	Eastern		x			37.755921	-120.863872	149.4	149.8	293	55-293	74	87	based on measured data at the well	61
CASGEM	Head Lateral 8 194	02S08E27N001M	38870	Active Irrigation	Eastern	x				37.727189	-121.087002	79.5	79.8	302	148-211	40	47	based on measured data at the well	--
CASGEM	Langdon Merle 241	02S09E28H001M	3876	Active Irrigation	Eastern	x				37.734908	-120.977526	128.4	128.5	595	160-300	50	62	based on measured data at the well	--
CASGEM	Marquis OID-10	02S10E20C001M	29436	Active Irrigation	Eastern		x			37.753232	-120.896930	138.4	138.8	125	27-125	86	92	based on measured data at the well	78
CASGEM	Riverbank OID-13	02S09E27G001M	49463	Active Irrigation	Eastern	x				37.735134	-120.964821	132.3	134.2	560	200-550	42	54	based on measured data at the well	--
Prop 68	MW-4S	--	not applicable	Monitoring Well	Eastern				x	37.728639	-120.941518	134.0	--	165	140-160	56	67	MT: based on fall 2015 contour map; MO: historic high based on spring 1998 contour map	--
Tuolumne River																			
CASGEM	Jones WID 228	03S11E29J001M	38872	Active Irrigation	Eastern	x				37.641798	-120.776177	166.4	166.4	324	188-280	55	75	based on measured data at the well	--
CASGEM	Lateral one 195	03S10E32G001M	3877	Active Irrigation	Eastern	x				37.632523	-120.889283	126.0	126.0	260	141-210	42	52	based on measured data at the well	--
CASGEM	Paradise 235	04S08E02L001M	2151	Active Irrigation	Western Upper	x				37.614186	-121.057863	73.7	73.9	258	96-132	34	41	based on measured data at the well	--
CASGEM	Philbrick 201	04S08E02H001M	26591	Active Irrigation	Western Upper	x				37.619159	-121.050003	73.1	73.5	88	58-74	38	43	based on measured data at the well	--
CASGEM	Quesenberry 223	03S12E19G001M	27424	Active Irrigation	Eastern			x		37.659773	-120.689681	197.0	197.0	380	168-208	89	110	based on measured data at the well	72
CASGEM	Schmidt 227	03S11E27G003M	3897	Active Irrigation	Eastern	x				37.648671	-120.736000	192.3	192.2	248	113-153	59	78	based on measured data at the well	--
Prop 68	MW-2S	--	not applicable	Monitoring Well	Western Upper	x				37.613903	-121.023493	72.0	--	135	110-130	38	43	MT/MO: based on nearby CASGEM well (Philbrick)	--
Prop 68	MW-3S	--	not applicable	Monitoring Well	Eastern	x				37.630833	-120.967648	95.0	--	161	136-156	26	32	MT: based on fall 2015 level at nearby MOD-225; MO: historic high based on spring 1998 contour map	--
Prop 68	MW-6S	--	not applicable	Monitoring Well	Eastern	x				37.646139	-120.752628	170.0	--	179	154-174	65	83	MT: based on fall 2015 contour map; MO: historic high based on spring 1998 contour map	--
Prop 68	MW-9	--	not applicable	Monitoring Well	Eastern			x		37.649542	-120.535005	248.0	--	365	340-360	150	180	MT: based on minimum of available measured data at this well. There is a lack of water level data in this area of the Subbasin. MO: Based on similar operational range as other eastern Subbasin wells (~30 ft)	138

Table 7-3: Summary of SGMA Monitoring Wells

Program	Well ID	State Well Number	CASGEM Identification Number	Well Use / Status	Principal Aquifer	Management Area				Latitude (NAD 83)	Longitude (NAD 83)	Ground Surface Elevation (feet msl)	Reference Point Elevation (feet msl)	Total Well Depth (feet bgs)	Screen Interval Depths (feet bgs)
						MID	OID	Non-District East	Non-District West						
CASGEM	Basso 2	03S08E18C001M	3865	Active Irrigation	Western Upper	x				37.677888	-121.136328	49.0	49.0	200	1-119
CASGEM	Gove 18	03S08E19Q001M	3868	Active Irrigation	Western Upper	x				37.653607	-121.128597	54.7	54.7	136	36-96
City of Modesto	MOD-MWA-1	--	not applicable	Monitoring Well	Eastern	x				37.643037	-120.931769	--	103.9	109	84-104
City of Modesto	MOD-MWA-3	--	not applicable	Monitoring Well	Eastern	x				37.642945	-120.931770	--	103.7	285	260-280
City of Modesto	MOD-MWA-4	--	not applicable	Monitoring Well	Eastern	x				37.642905	-120.931769	--	103.6	356	331-351
City of Modesto	MOD-MWB-3	--	not applicable	Monitoring Well	Western Lower	x				37.690560	-121.044196	--	78.7	299	274-294
City of Modesto	MOD-MWB-4	--	not applicable	Monitoring Well	Western Lower	x				37.690561	-121.044144	--	78.7	385	360-380
City of Modesto	MOD-MWC-1	--	not applicable	Monitoring Well	Eastern	x				37.672249	-120.940957	--	105.5	135	110-130
City of Modesto	MOD-MWC-2	--	not applicable	Monitoring Well	Eastern	x				37.672250	-120.941012	--	105.3	191	166-186
City of Modesto	MOD-MWC-4	--	not applicable	Monitoring Well	Eastern	x				37.672250	-120.941058	--	105.3	445	420-440
City of Modesto	MOD-MWD-2	--	not applicable	Monitoring Well	Western Upper	x				37.649920	-121.048682	--	73.3	179	154-174
City of Modesto	MOD-MWD-4	--	not applicable	Monitoring Well	Western Lower	x				37.649919	-121.048652	--	73.0	325	300-320
City of Modesto	MOD-MWE-2	--	not applicable	Monitoring Well	Eastern	x				37.635224	-121.010426	--	83.9	200	175-195
City of Modesto	MOD-MWE-3	--	not applicable	Monitoring Well	Eastern	x				37.635184	-121.010427	--	83.8	265	240-260
City of Modesto	MOD-MWE-4	--	not applicable	Monitoring Well	Eastern	x				37.635272	-121.010426	--	83.8	430	405-425
USGS	FPA-1	003S009E08K005M	not applicable	Monitoring Well	Eastern	x				37.686194	-121.000917	--	91.0	37	30-35
USGS	FPA-3	003S009E08K003M	not applicable	Monitoring Well	Eastern	x				37.686194	-121.000917	--	91.0	222	215-220
USGS	FPA-4	003S009E08K002M	not applicable	Monitoring Well	Eastern	x				37.686194	-121.000917	--	91.0	350	343-348
USGS	FPB-1	003S009E08H003M	not applicable	Monitoring Well	Eastern	x				37.692611	-120.997333	--	95.0	39	30-35
USGS	FPB-2	003S009E08H002M	not applicable	Monitoring Well	Eastern	x				37.692611	-120.997333	--	95.0	194	187-192
USGS	FPB-3	003S009E08H001M	not applicable	Monitoring Well	Eastern	x				37.692611	-120.997333	--	95.0	335	328-333
USGS	FPD-1	003S009E04G003M	not applicable	Monitoring Well	Eastern	x				37.705972	-120.983250	--	104.0	35	28-33
USGS	FPD-2	003S009E04G002M	not applicable	Monitoring Well	Eastern	x				37.705972	-120.983250	--	104.0	174	167-172
USGS	FPD-3	003S009E04G001M	not applicable	Monitoring Well	Eastern	x				37.705972	-120.983250	--	104.0	359	334-339

Table 7-3: Summary of SGMA Monitoring Wells

						Management Area									
Program	Well ID	State Well Number	CASGEM Identification Number	Well Use / Status	Principal Aquifer	MID	OID	Non-District East	Non-District West	Latitude (NAD 83)	Longitude (NAD 83)	Ground Surface Elevation (feet msl)	Reference Point Elevation (feet msl)	Total Well Depth (feet bgs)	Screen Interval Depths (feet bgs)
USGS	FPE-1	003S009E09L003M	not applicable	Monitoring Well	Eastern	x				37.687722	-120.988056	--	96.0	39	30-35
USGS	FPE-2	003S009E09L002M	not applicable	Monitoring Well	Eastern	x				37.687722	-120.988056	--	96.0	106	98-103
USGS	FPE-3	003S009E09L001M	not applicable	Monitoring Well	Eastern	x				37.687722	-120.988056	--	96.0	211	203-208
USGS	OFPA-1	003S009E16C003M	not applicable	Monitoring Well	Eastern	x				37.680000	-120.986000	--	94.0	38	30-35
USGS	OFPA-2	003S009E16C002M	not applicable	Monitoring Well	Eastern	x				37.680000	-120.986000	--	94.0	105	95-100
USGS	OFPA-3	003S009E16C001M	not applicable	Monitoring Well	Eastern	x				37.680000	-120.986000	--	94.0	200	188-193
USGS	OFPB-1	003S009E11F003M	not applicable	Monitoring Well	Eastern	x				37.690194	-120.951417	--	104.0	36	28-33
USGS	SA	003S009E09F001M	not applicable	Monitoring Well	Eastern	x				37.692361	-120.987333	--	99.0	39	30-35
USGS	SB	003S009E10D001M	not applicable	Monitoring Well	Eastern	x				37.692944	-120.973389	--	104.0	36	30-35
USGS	SC	003S009E10L001M	not applicable	Monitoring Well	Eastern	x				37.685722	-120.971500	--	99.0	41	30-35
USGS	MRWA-1	003S008E33R003M	not applicable	Monitoring Well	Western Upper	x				37.624121	-121.086103	--	64.0	35	25-30
USGS	MREA-1	003S010E17K004M	not applicable	Monitoring Well	Eastern	x				37.674092	-120.891361	--	132.0	46	40-45
USGS	MREA-2	003S010E17K003M	not applicable	Monitoring Well	Eastern	x				37.674092	-120.891361	--	132.0	56	51-56
USGS	MREA-3	003S010E17K002M	not applicable	Monitoring Well	Eastern	x				37.674092	-120.891361	--	132.0	266	100-260
Prop 68	MW-4D	--	not applicable	Monitoring Well	Eastern				x	37.728639	-120.941518	134.0	--	255	230-250
Prop 68	MW-5D	--	not applicable	Monitoring Well	Eastern		x			37.763081	-120.825389	193.0	--	285	260-280
Prop 68	MW-6D	--	not applicable	Monitoring Well	Eastern	x				37.646139	-120.752628	170.0	--	261	236-256

Legend

- CASGEM Well -- Western Upper (12)
- City of Modesto Monitoring Well (2)
- Prop 68 Monitoring Well (2)
- USGS Monitoring Well (1)
- Corcoran Clay Extent (Burow et al., 2004)

Management Area

- Modesto ID (17)
- Oakdale ID (0)
- Non-District West (0)
- Non-District East (0)

(MT / MO) MT = minimum threshold, MO = measurable objective

N

0 3

Miles

MW-1S
(33 / 43)

Hart Road 88
(35 / 40)

MOD-MWB-1
(40 / 49)

Curtis #2 100
(34 / 41)

North Ave 103
(41 / 50)

Machado 23
(31 / 40)

Van Buren 43
(38 / 45)

Gates Road 101
(24 / 33)

Warnock 46
(35 / 42)

MOD-MWD-1
(30 / 40)

Katen 69
(27 / 33)

MRWA-2
(36 / 43)

Young 76
(36 / 42)

Canfield 90
(32 / 36)

MW-2S
(34 / 41)

Philbrick 201
(34 / 41)

Paradise 235
(34 / 41)

Ripon
Escalon
Oakdale
Modesto
Ceres
Hughson
Hickman
Waterford
Shackelford
Keyes
Denair
Turlock
Westley
Woodward Reservoir
Modesto Reservoir
Turlock Lake State Park
Turlock Lake
Martel's Creek
Littlejohns Creek
Lone Tree Creek
Rybberg Creek
Gallup Creek
Escalon-Bellota Rd
Albers Rd
Crows Landing Rd
Santa Fe Ave
California State Univ Stanislaus
Laird Park
294 ft
614 ft
169 ft

Note:
This monitoring network is used as a proxy for the reduction of groundwater in storage and land subsidence sustainability indicators.

October 2021

TODD GROUNDWATER

Figure 7-1
Monitoring Network, Chronic Lowering of Water Levels, Western Upper Principal Aquifer

Legend

- City of Modesto Monitoring Well (2)
- Prop 68 Monitoring Well (2)
- USGS Monitoring Well (1)
- Corcoran Clay Extent (Burow et al., 2004)

Management Area

- Modesto ID (5)
- Oakdale ID (0)
- Non-District West (0)
- Non-District East (0)

(MT / MO) MT = minimum threshold, MO = measurable objective

N

0 3

Miles

MW-1D
(14 / 27)

MOD-MWB-2
(26 / 34)

MOD-MWD-3
(30 / 37)

MW-2D
(35 / 40)

MRWA-3
(28 / 36)

Ripon
Escalon
Oakdale
Modesto
Ceres
Hughson
Hickman
Waterford
Shackelford
Keyes
Denair
Turlock
Westley
Woodward Reservoir
Modesto Reservoir
Turlock Lake State Park
Turlock Lake
Martell's Creek
Littlejohns Creek
Lone Tree Creek
Rybberg Creek
Gallup Creek
Escalon-Bellota Rd
Albers Rd
Crows Landing Rd
Maze Blvd
Laird Park
California State Univ Stanislaus
Santa Fe Ave
294 ft
614 ft
169 ft

Note:
This monitoring network is used as a proxy for the reduction of groundwater in storage and land subsidence sustainability indicators.

October 2021

TODD GROUNDWATER

Figure 7-2
Monitoring Network,
Chronic Lowering of Water Levels,
Western Lower Principal Aquifer

Legend

- CASGEM Well -- Eastern (25)
- City of Modesto Monitoring Well (2)
- Prop 68 Monitoring Well (10)
- USGS Monitoring Well (2)
- Corcoran Clay Extent (Burow et al., 2004)

Management Area

- Modesto ID (24)
- Oakdale ID (7)
- Non-District West (1)
- Non-District East (7)

(MT / MO) MT = minimum threshold, MO = measurable objective

N

0 3

Miles

Allen OID-01 (72 / 81)
Marquis OID-10 (85 / 91)
MW-5S (69 / 89)
Langdon Merle 241 (50 / 62)
American 208 (48 / 55)
Riverbank OID-13 (42 / 54)
Head Lateral 8 194 (40 / 47)
Birnbaum OID-03 (72 / 86)
MW-7 (75 / 110)
MW-10 (72 / 101)
MW-8 (75 / 110)
MW-4S (56 / 67)
Crane OID-06 (66 / 77)
Claribel 206 (49 / 62)
Furtado OID-07 (69 / 81)
Bangs Ave 243 (32 / 46)
Cavil 214 (53 / 73)
Bentley OID-02 (71 / 85)
Paulsell 1 OID-11 (88 / 117)
Paulsell 2 OID-12 (94 / 123)
FPA-2 (38 / 48)
OFPB-2 (35 / 53)
Wood 210 (52 / 66)
Wellsford 233 (62 / 77)
Blossom 230 (61 / 78)
Perley 202 (36 / 45)
Head Lateral 3 215 (56 / 73)
MW-6S (65 / 83)
MOD-MWC-3 (40 / 50)
MW-3D (25 / 31)
MW-11 (35 / 48)
Albers 232 (60 / 76)
MW-9 (150 / 180)
MOD-MWA-2 (30 / 36)
Jones WID 228 (55 / 75)
Quesenberry 223 (89 / 110)
MW-3S (25 / 31)
Schmidt 227 (59 / 78)
Lateral one 195 (42 / 52)

Note:
This monitoring network is used as a proxy for the reduction of groundwater in storage and land subsidence sustainability indicators.

October 2021

TODD GROUNDWATER

Figure 7-3
Monitoring Network, Chronic Lowering of Water Levels, Eastern Principal Aquifer

Legend

- Nitrate as N (323)
- Uranium (57)
- PCE (162)
- 1,2,3-TCP (88)
- DBCP (144)
- TDS (150)
- Arsenic (174)
- Corcoran Clay Extent (Burow et al., 2004)

Note

N

0 3

Miles

Manteca
Escalon
Ripon
Salida
Modesto
Ceres
Oakdale
Riverbank
Hughson
Hickman
Turlock
Denair
Keyes
Westley
Shackelford
Woodward Reservoir
Modesto Reservoir
Turlock Lake
Turlock Lake State Park
Laird Park
Escalon-Bellota Rd
Albers Rd
Crows Landing Rd
Maze Blvd
Martell's Creek
Littlejohns Creek
Lone Tree Creek
Rybberg Creek
Gallup Creek
Santa Fe Ave
294 ft
614 ft
169 ft

September 2021

TODD GROUNDWATER

Figure 7-4
Water Quality Monitoring Sites, October 2019 to September 2020

Legend

- CASGEM Well -- Western Upper (4)
- CASGEM Well -- Eastern (11)
- Prop 68 Monitoring Well (5)
- Corcoran Clay Extent (Burow et al., 2004)

Management Area

- Modesto ID (13)
- Oakdale ID (3)
- Non-District West (2)
- Non-District East (2)

(MT / MO) MT = minimum threshold, MO = measurable objective

Western Upper Principal Aquifer (5)

Eastern Principal Aquifer (15)

N

0 3

Miles

Allen OID-01
(75 / 83)

Langdon Merle 241
(50 / 62)

Head Lateral 8 194
(40 / 47)

Marquis OID-10
(86 / 92)

Birnbaum OID-03
(74 / 87)

MW-4S
(56 / 67)

American 208
(48 / 55)

Riverbank OID-13
(42 / 54)

Katen 69
(27 / 33)

Canfield 90
(33 / 37)

Philbrick 201
(38 / 43)

Paradise 235
(34 / 41)

MW-2S
(38 / 43)

MW-3S
(26 / 32)

Lateral one 195
(42 / 52)

Jones WID 228
(55 / 75)

MW-6S
(65 / 83)

Schmidt 227
(59 / 78)

Quesenberry 223
(89 / 110)

MW-9
(150 / 180)

October 2021

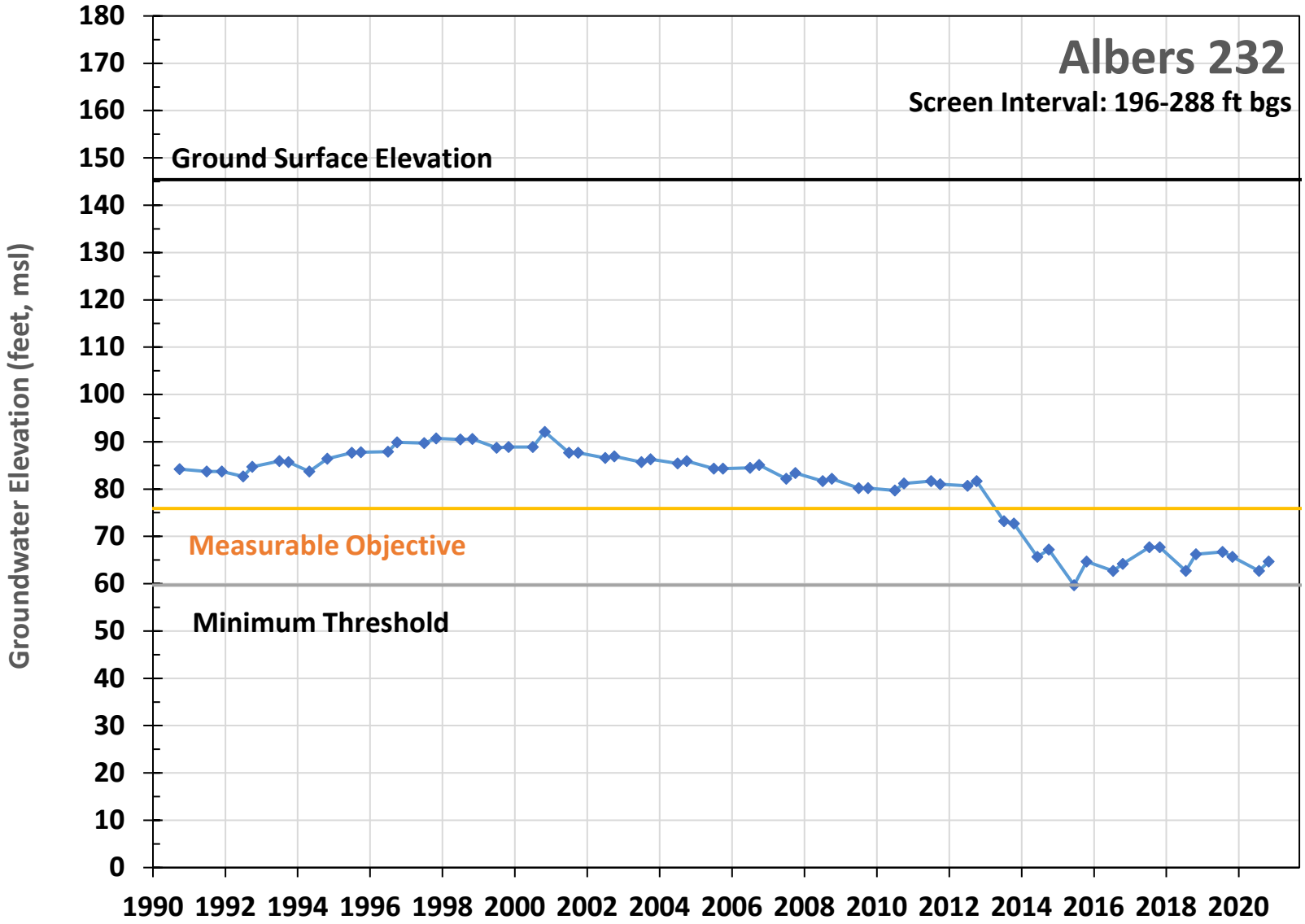
TODD GROUNDWATER

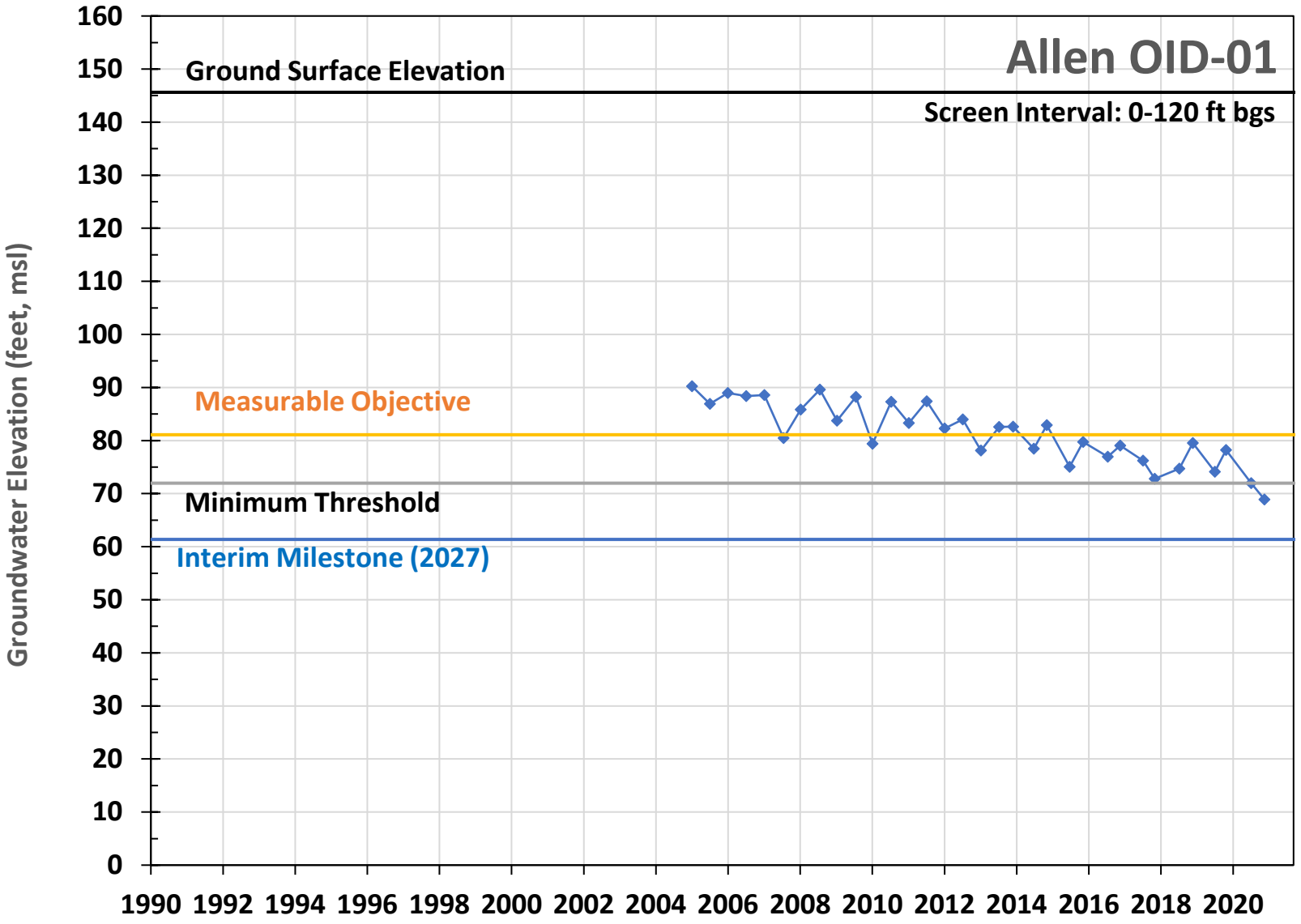
Figure 7-5
Monitoring Network, Interconnected Surface Water

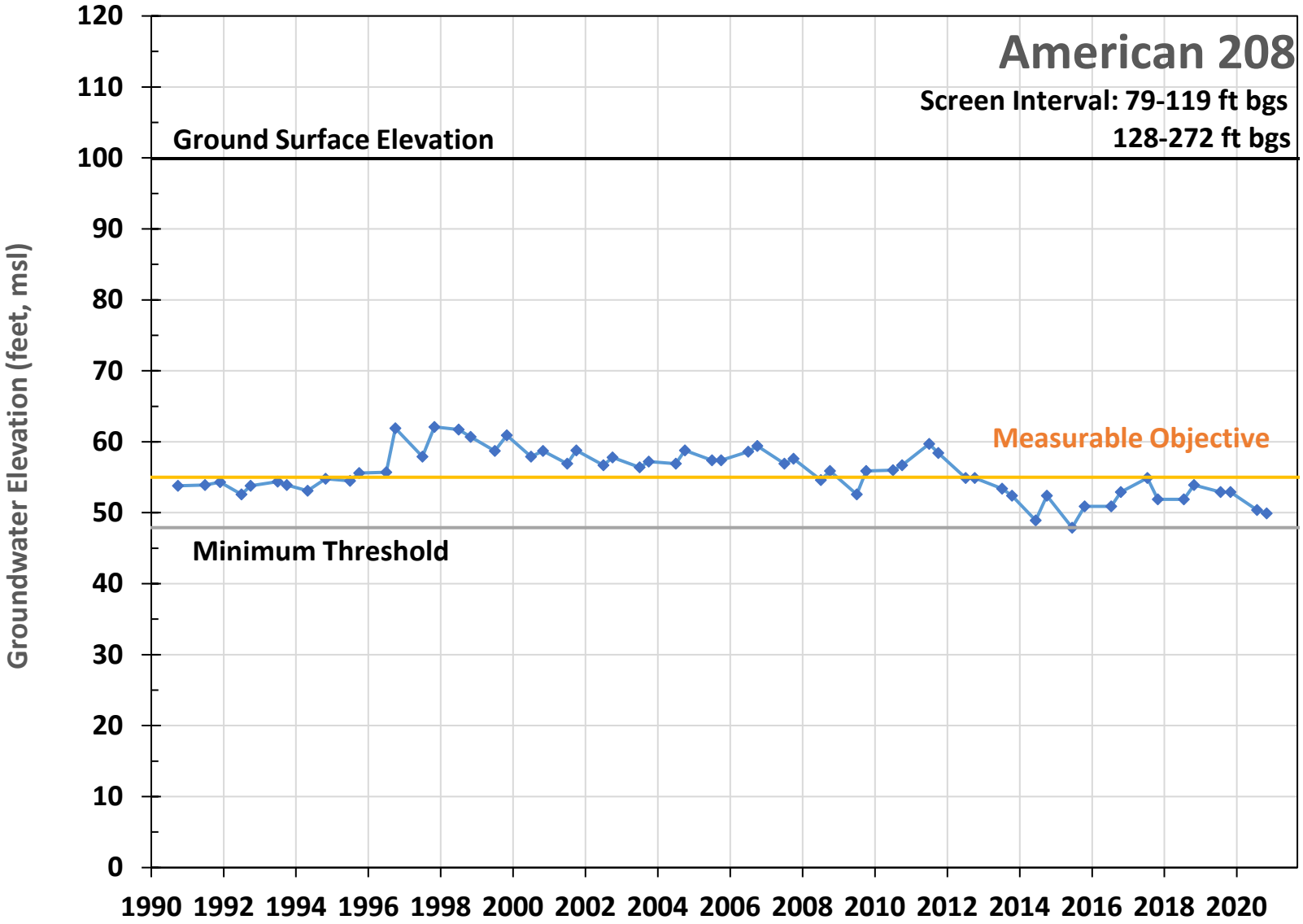
Appendix X
Hydrographs for Monitoring Network Wells

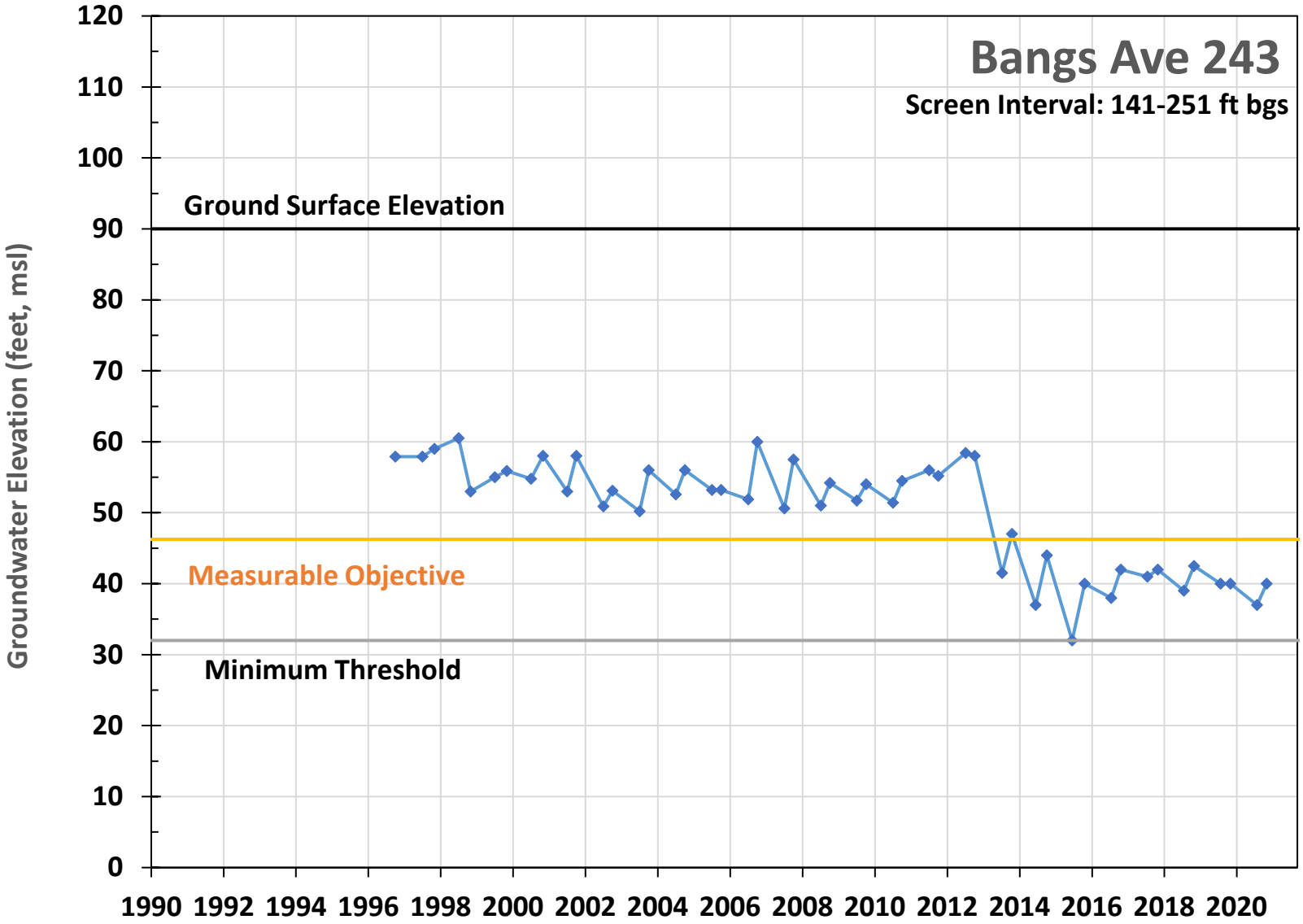
Hydrographs for Wells in the Monitoring Network for:
Chronic Lowering of Groundwater Levels
Reduction of Groundwater in Storage
Land Subsidence

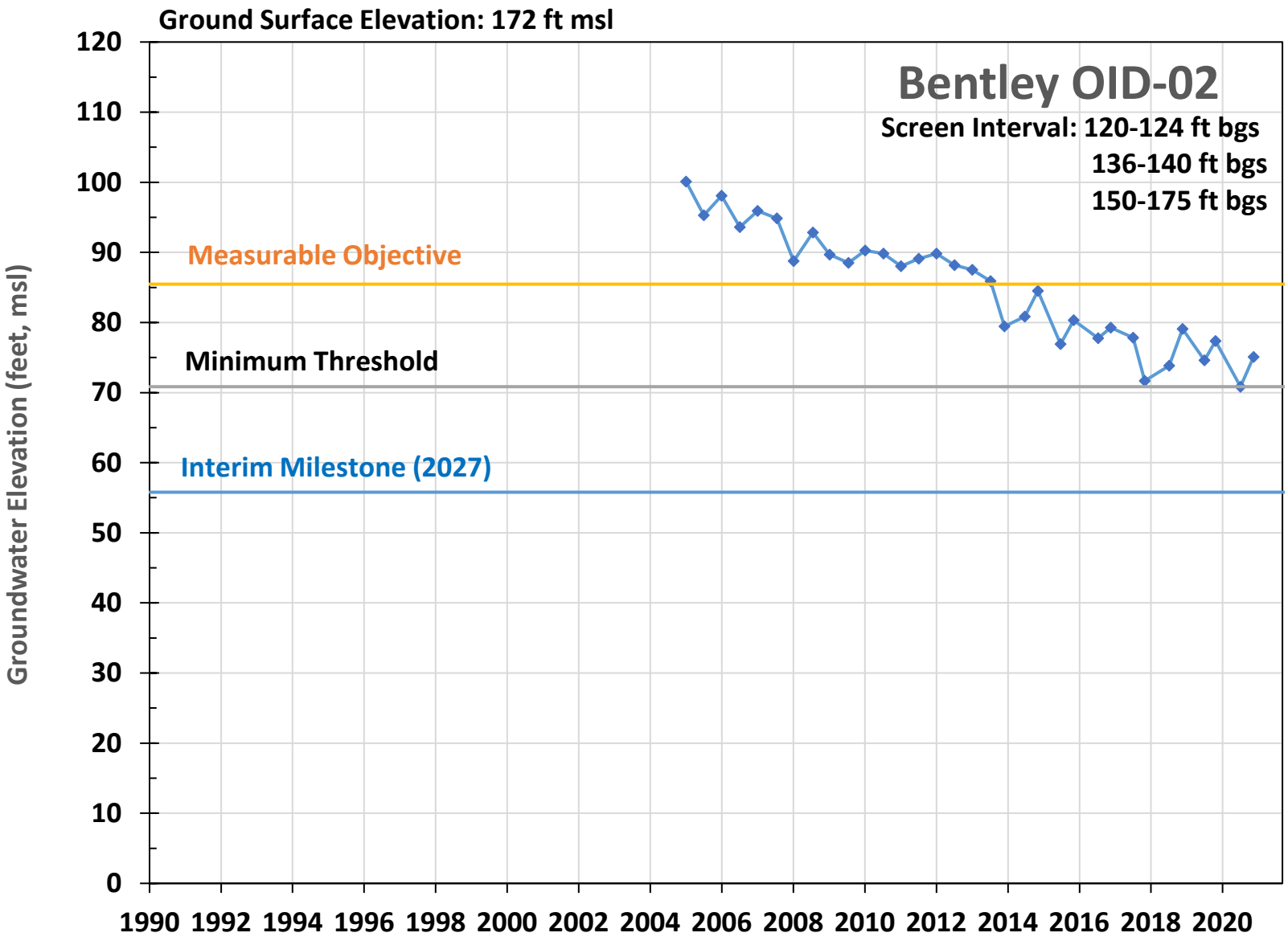
(in the order as they appear on Table 7-1)

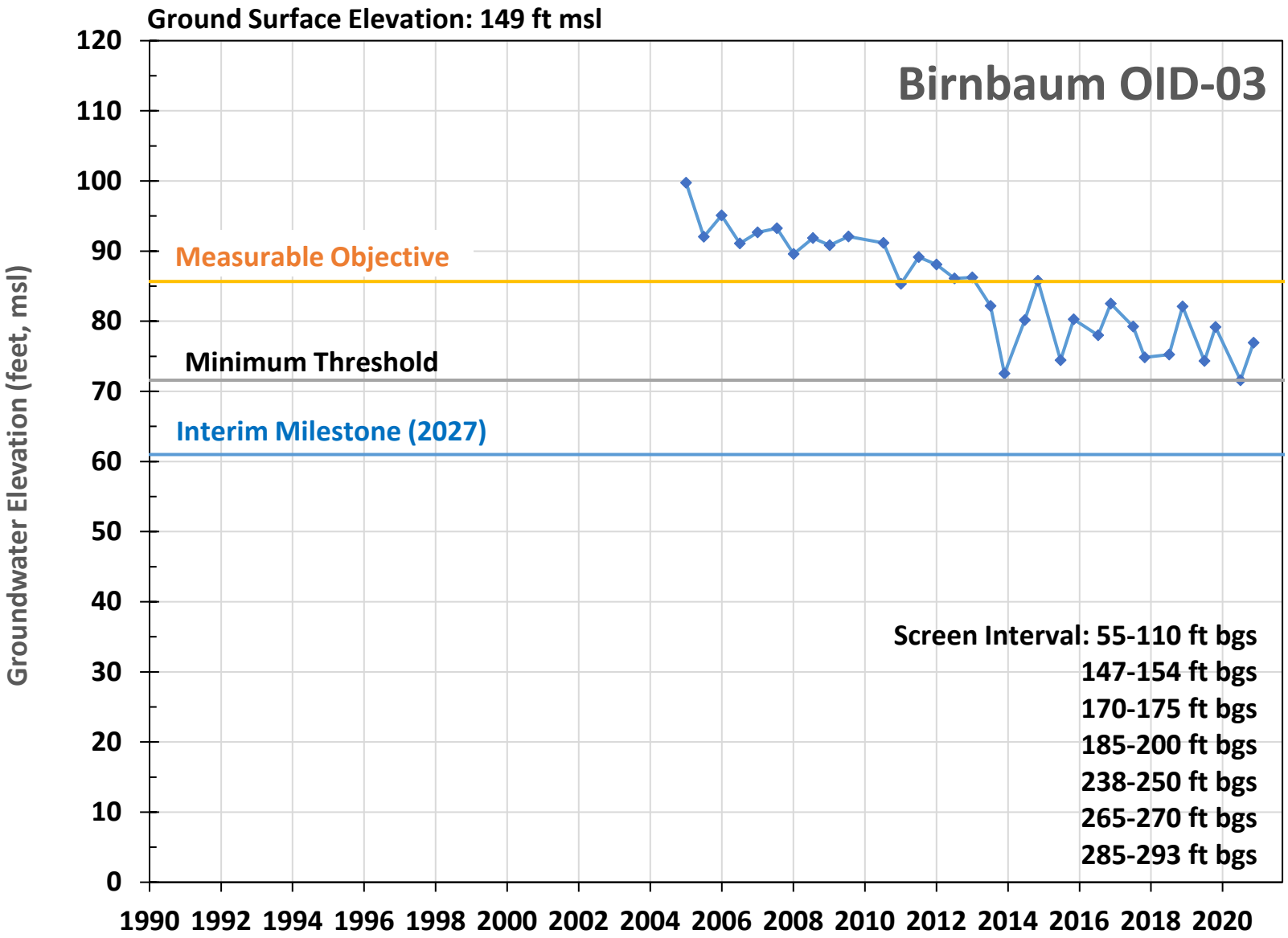

Albers 232
Screen Interval: 196-288 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

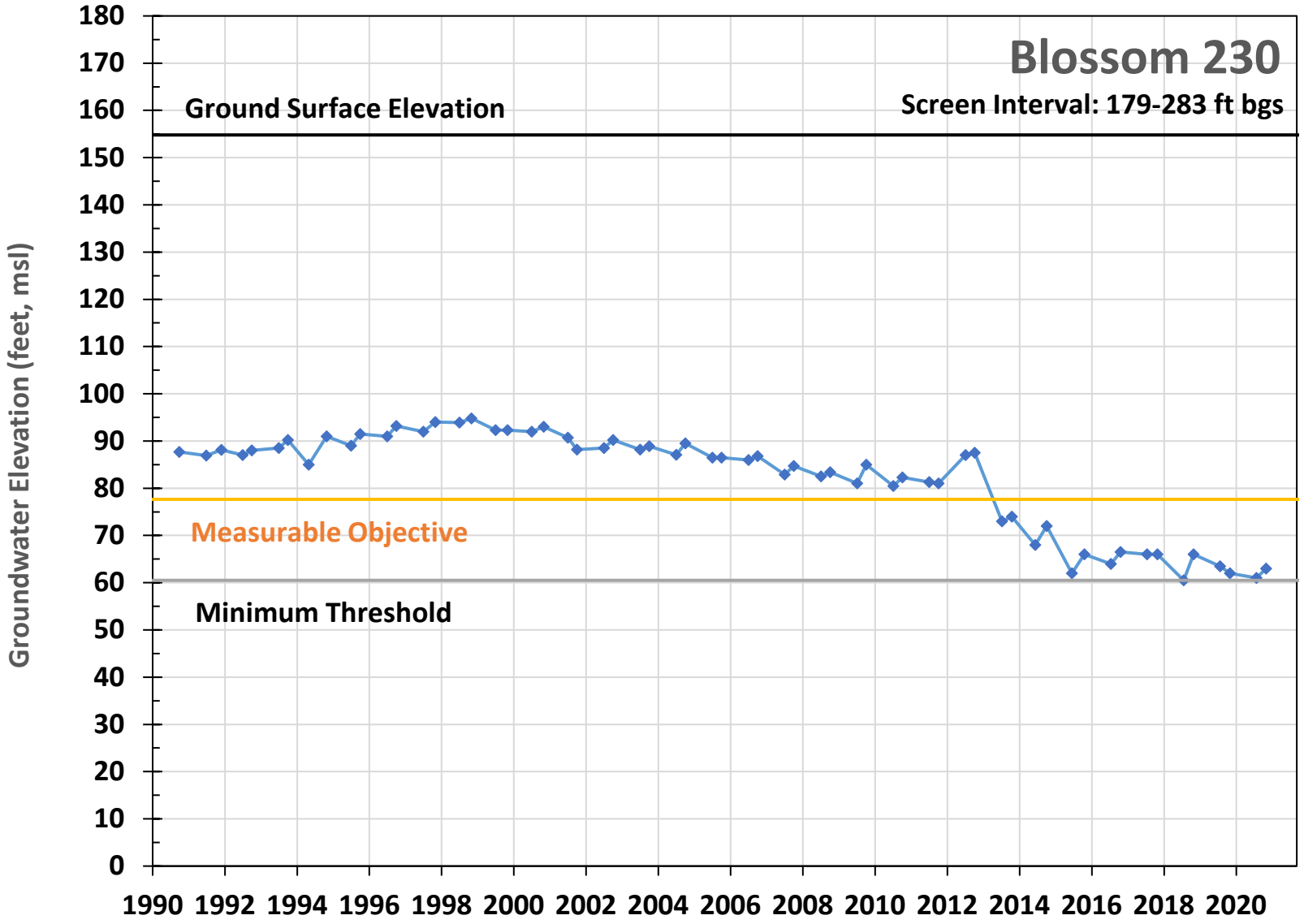

Allen OID-01
Ground Surface Elevation
Screen Interval: 0-120 ft bgs
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

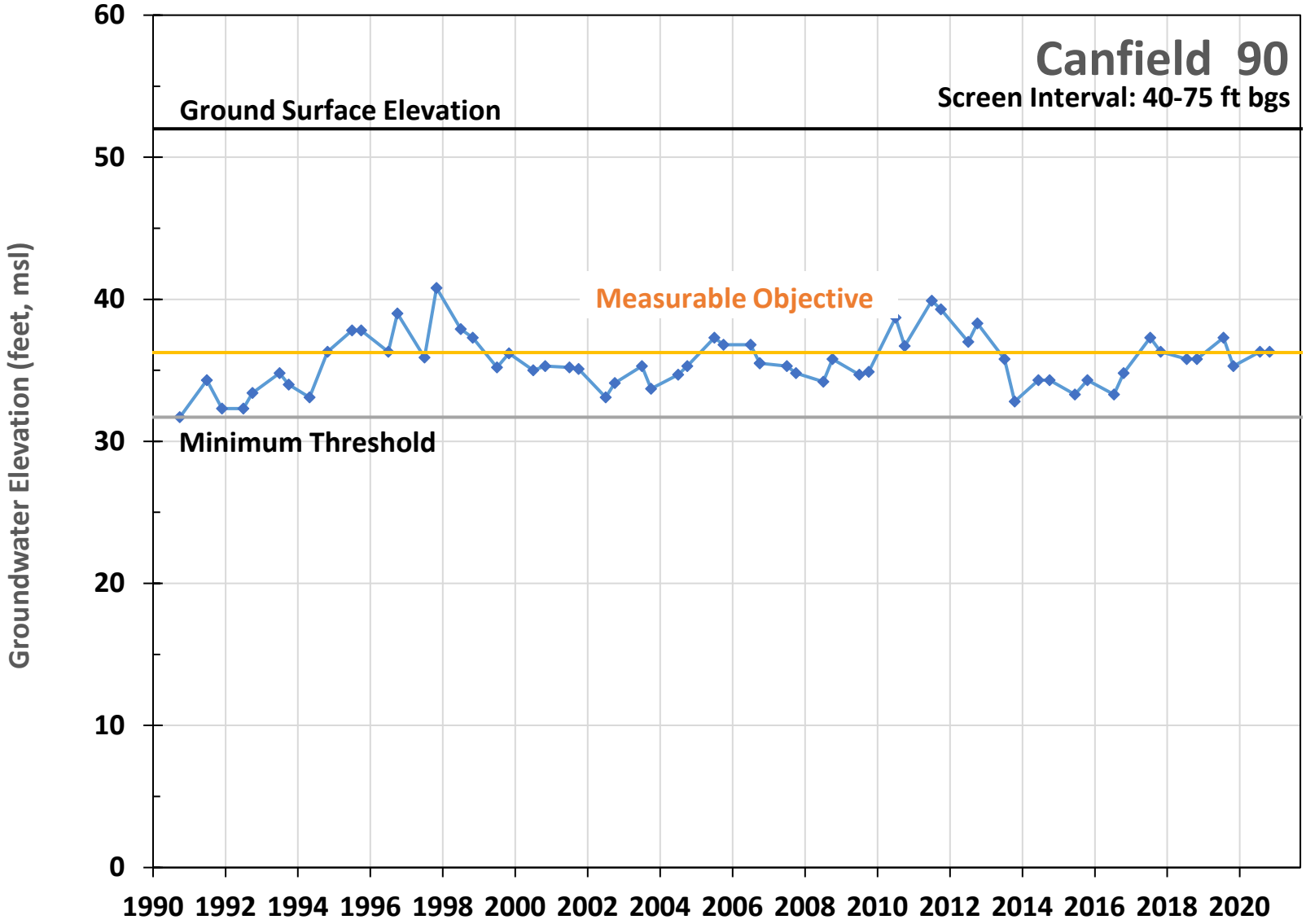

American 208
Screen Interval: 79-119 ft bgs
128-272 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

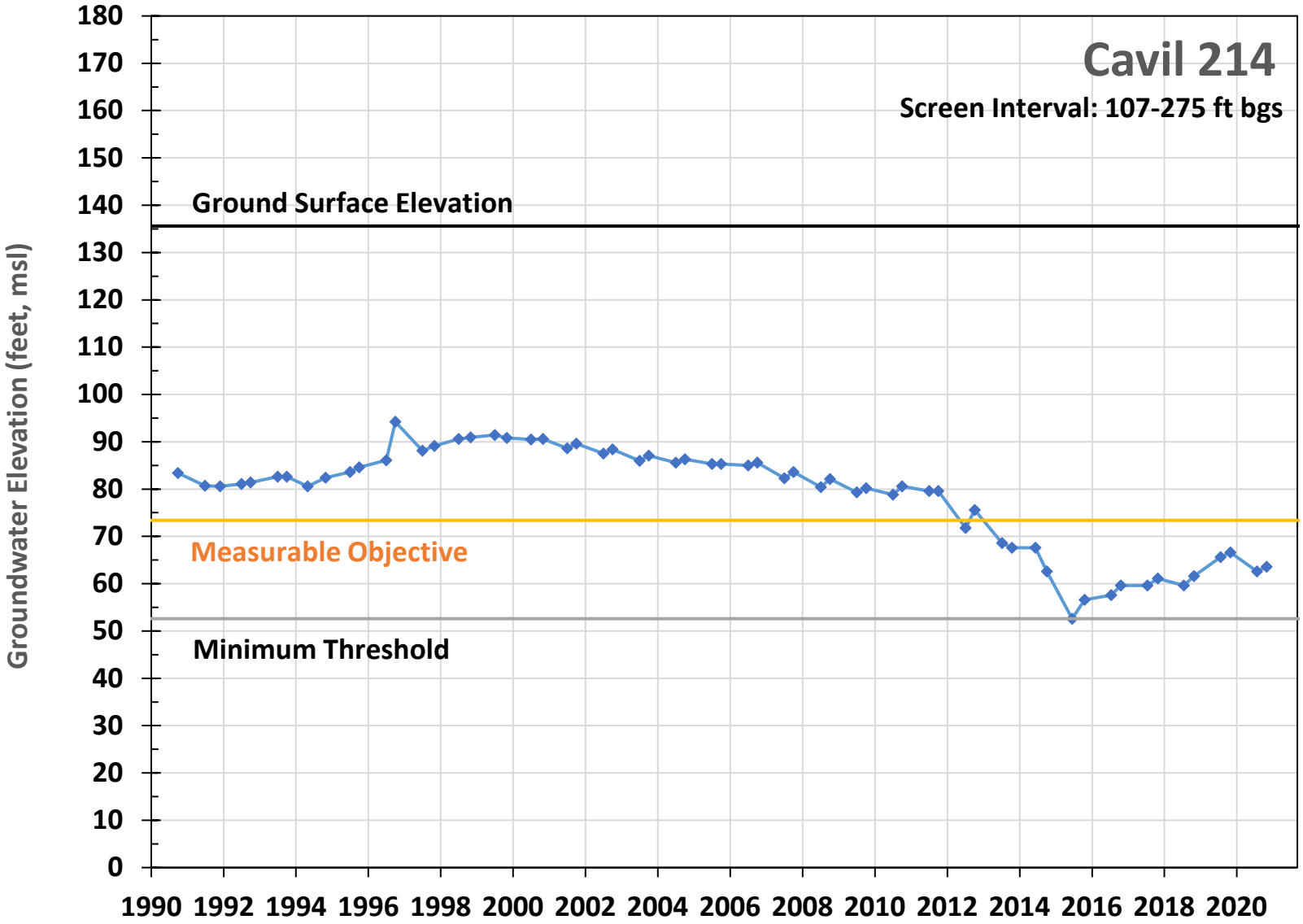

Bangs Ave 243
Screen Interval: 141-251 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

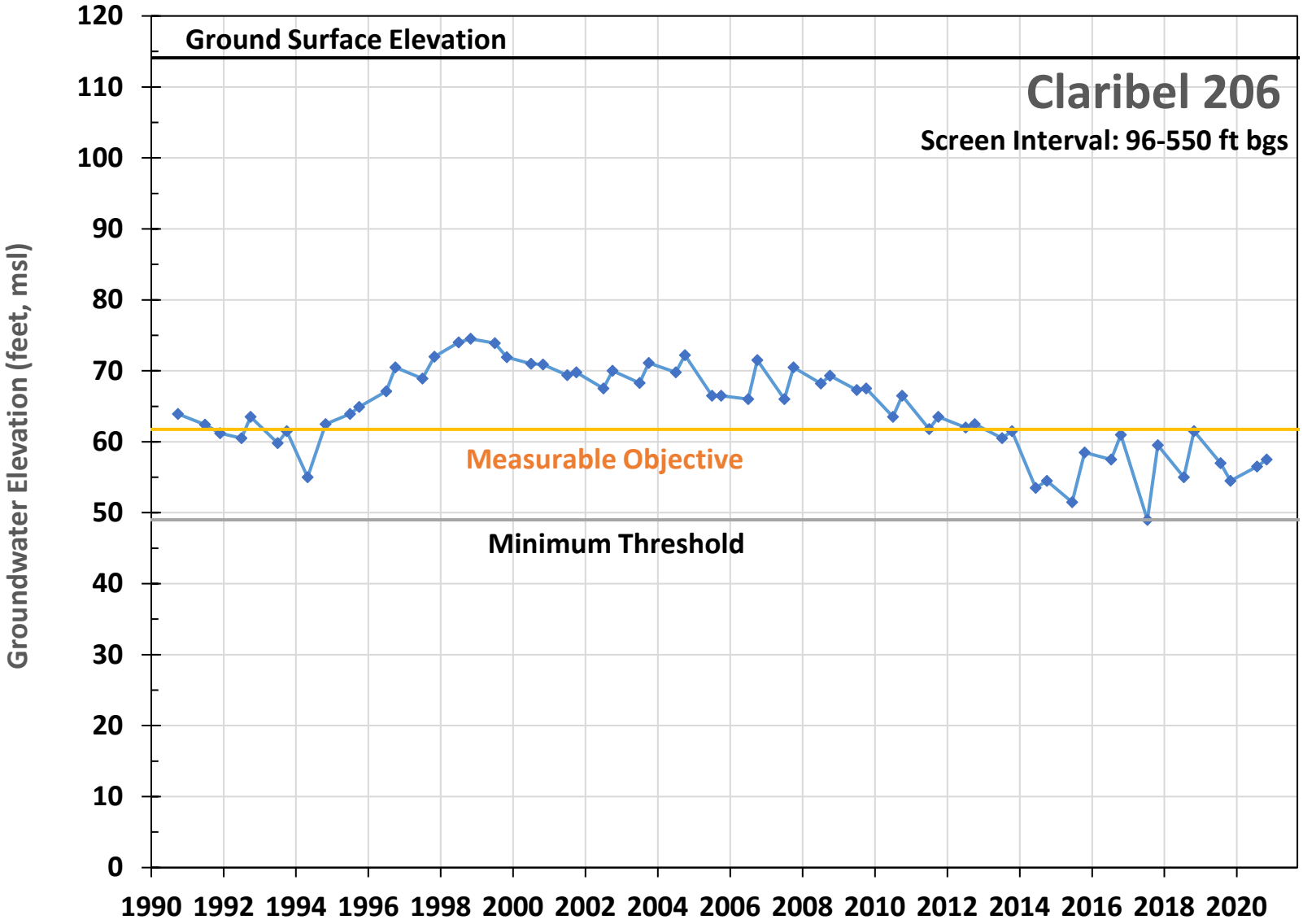

Ground Surface Elevation: 172 ft msl
Bentley OID-02
Screen Interval: 120-124 ft bgs
136-140 ft bgs
150-175 ft bgs
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

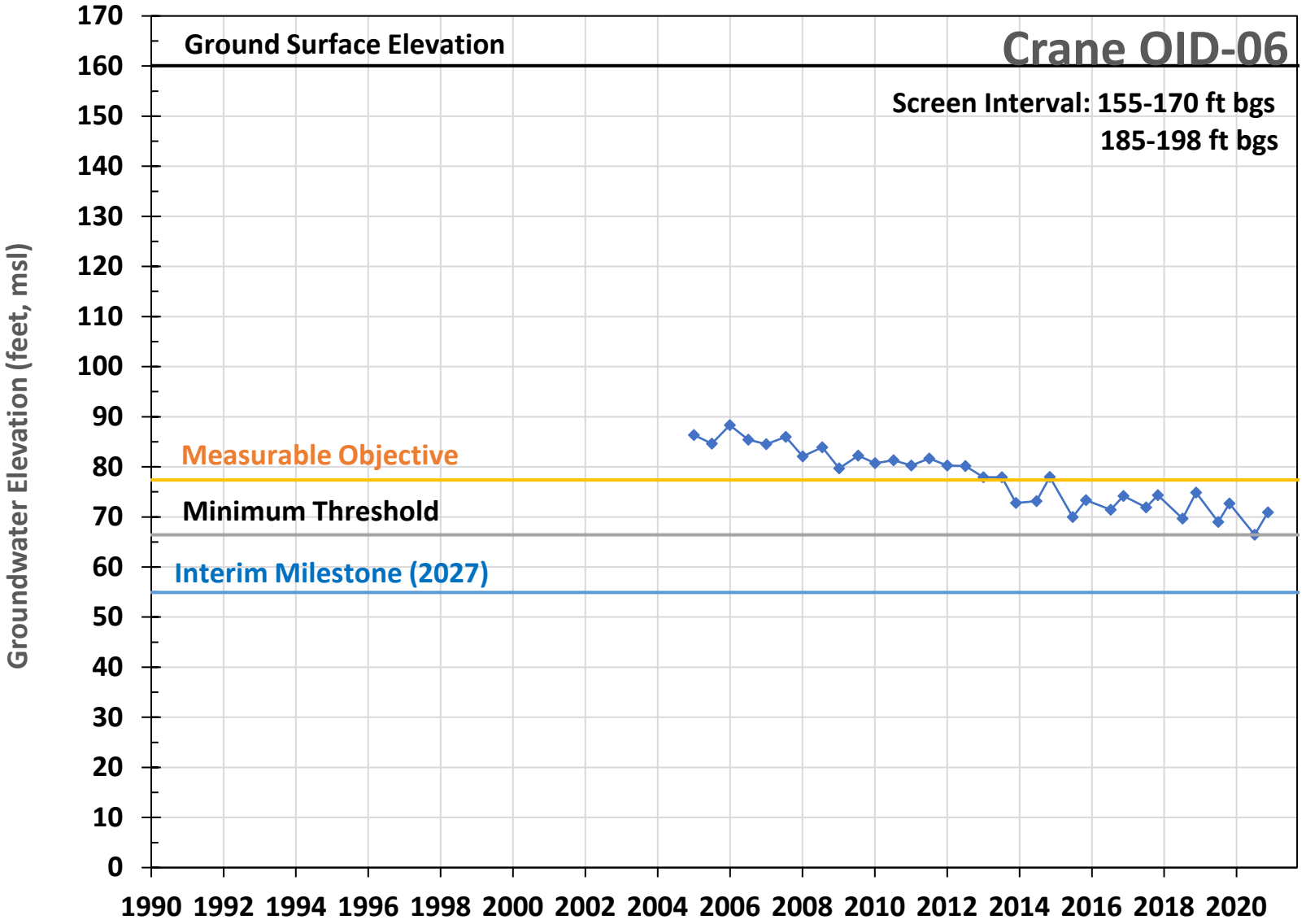

Ground Surface Elevation: 149 ft msl
Birnbaum OID-03
Groundwater Elevation (feet, msl)
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Screen Interval: 55-110 ft bgs
147-154 ft bgs
170-175 ft bgs
185-200 ft bgs
238-250 ft bgs
265-270 ft bgs
285-293 ft bgs
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

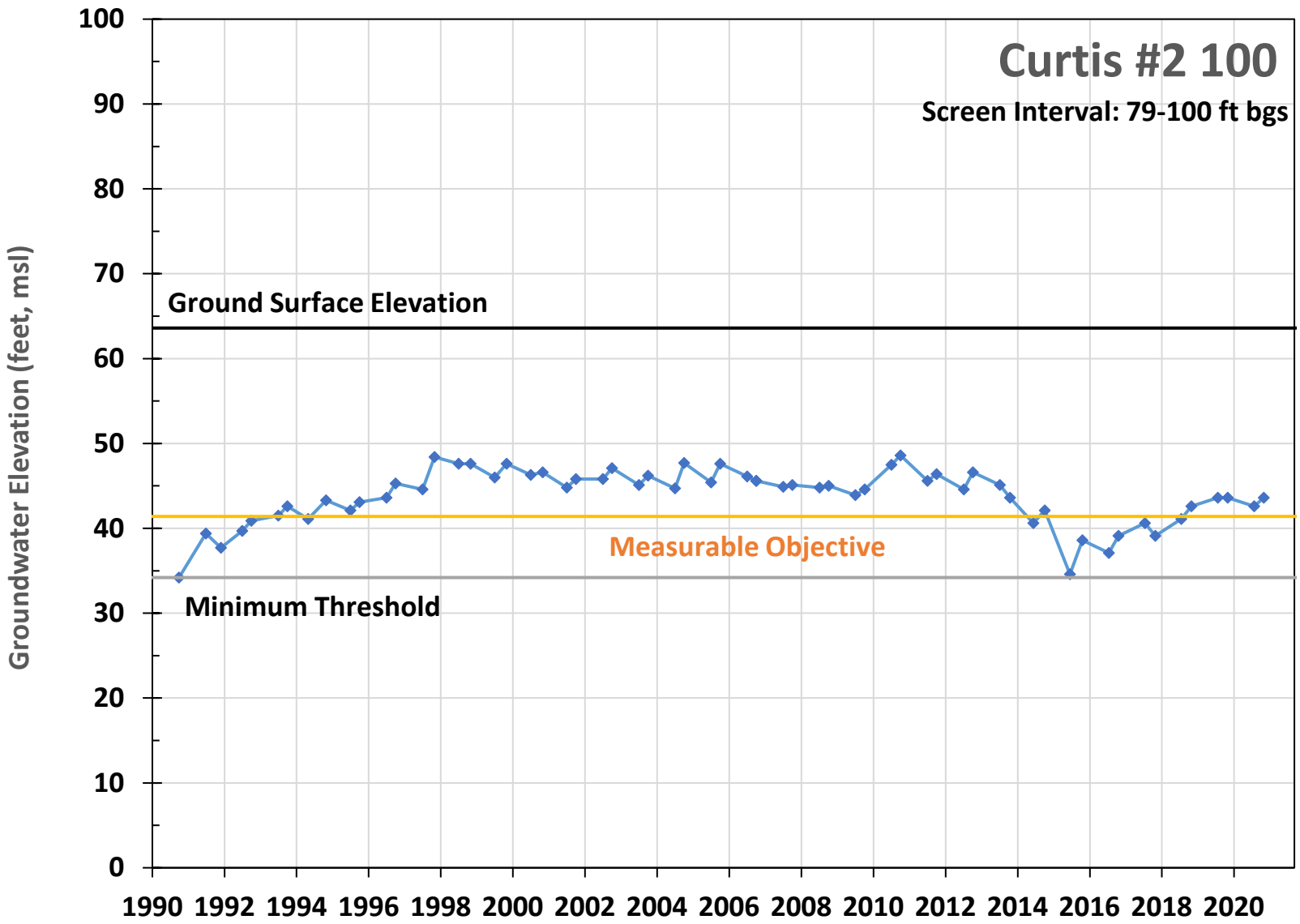

Blossom 230
Screen Interval: 179-283 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

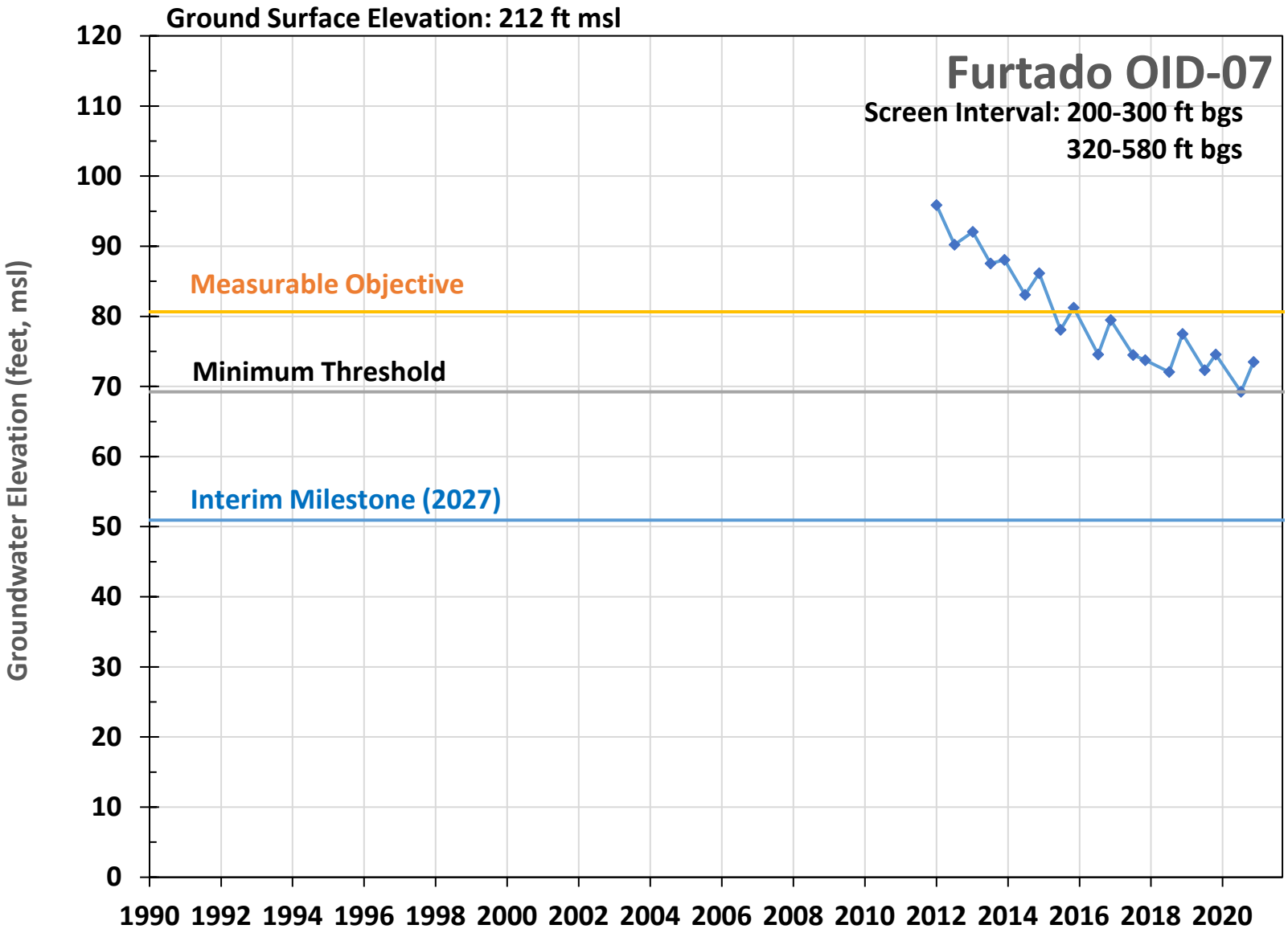

Canfield 90
Screen Interval: 40-75 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

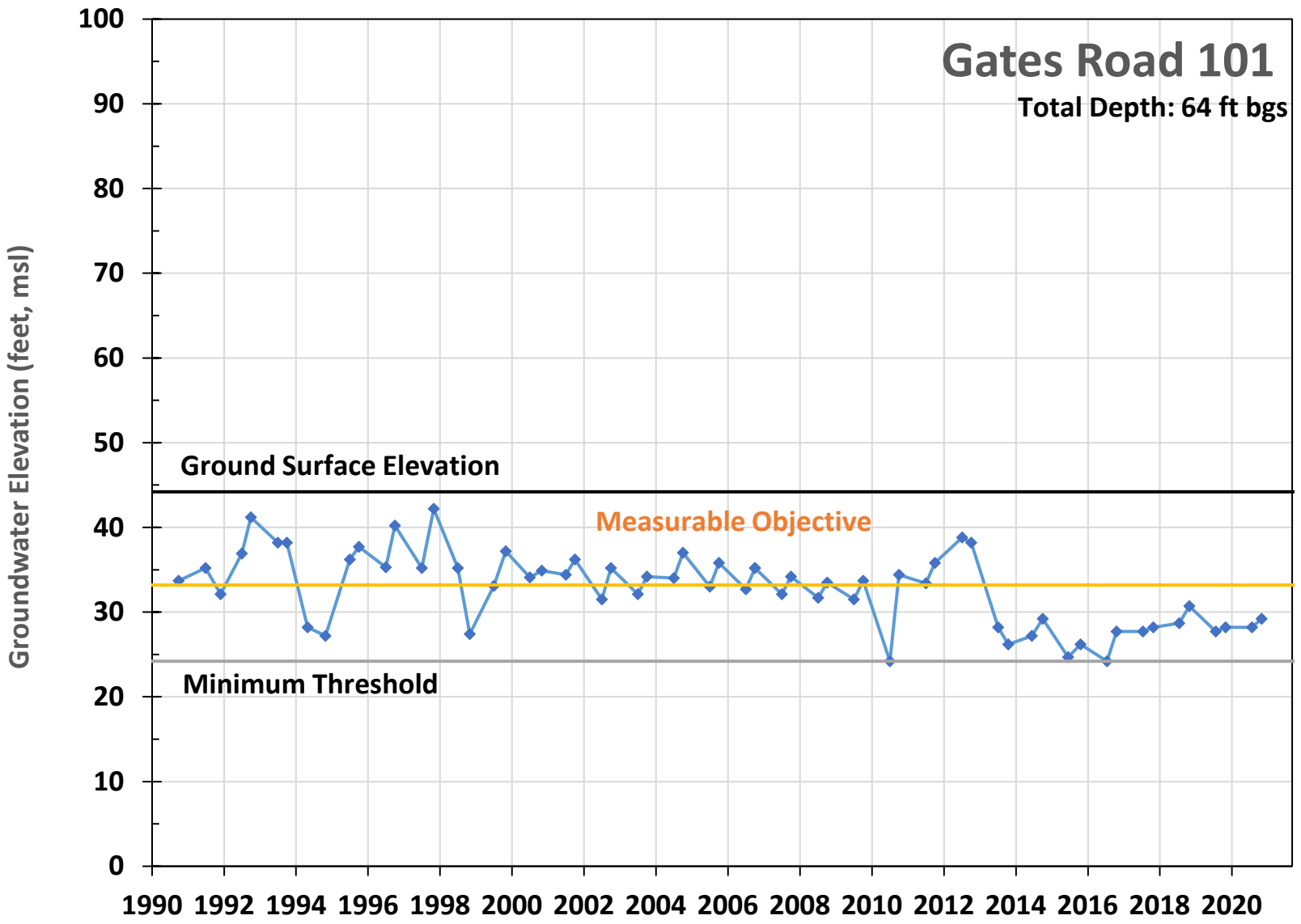

Cavil 214
Screen Interval: 107-275 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

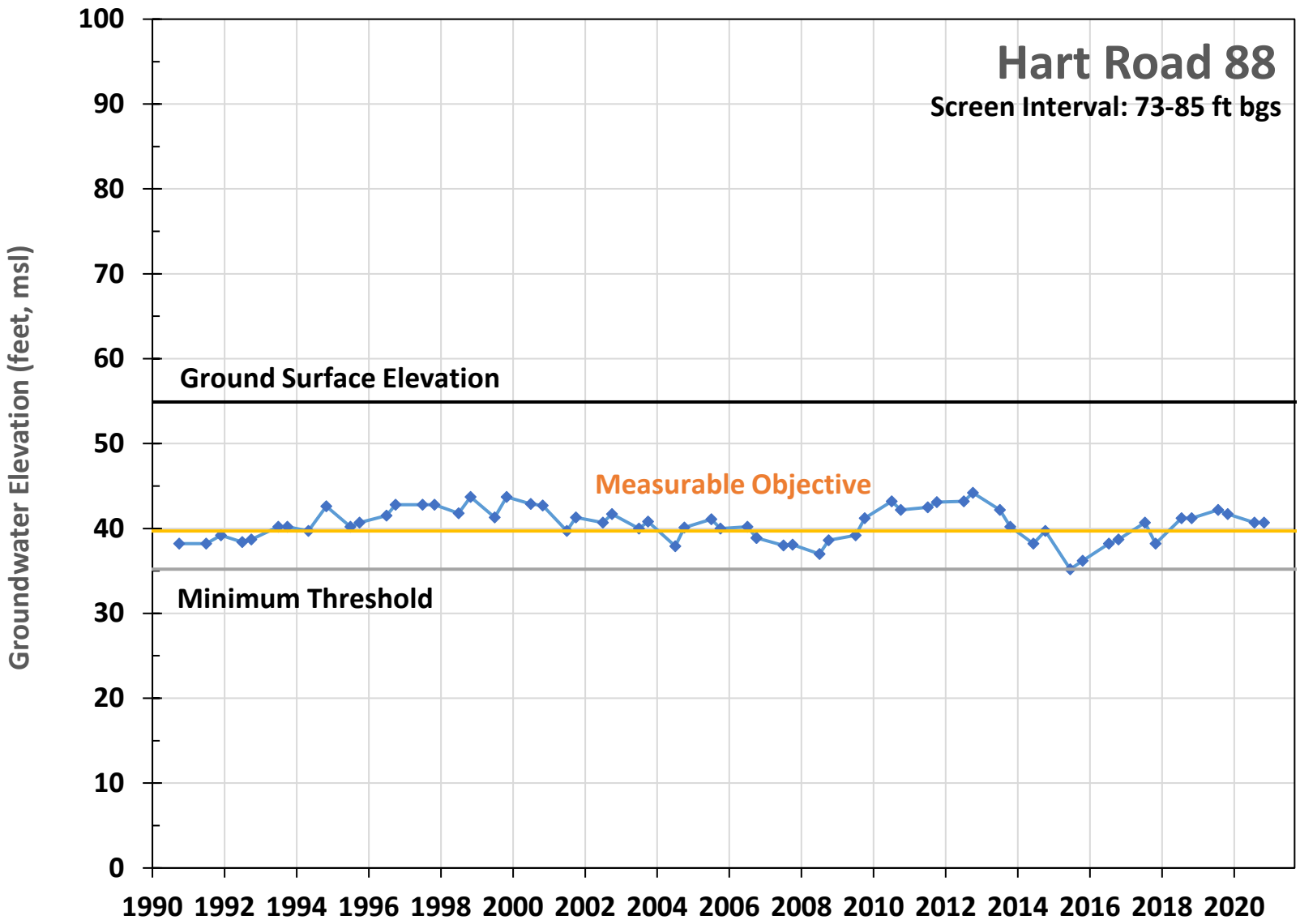

Ground Surface Elevation
Claribel 206
Screen Interval: 96-550 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

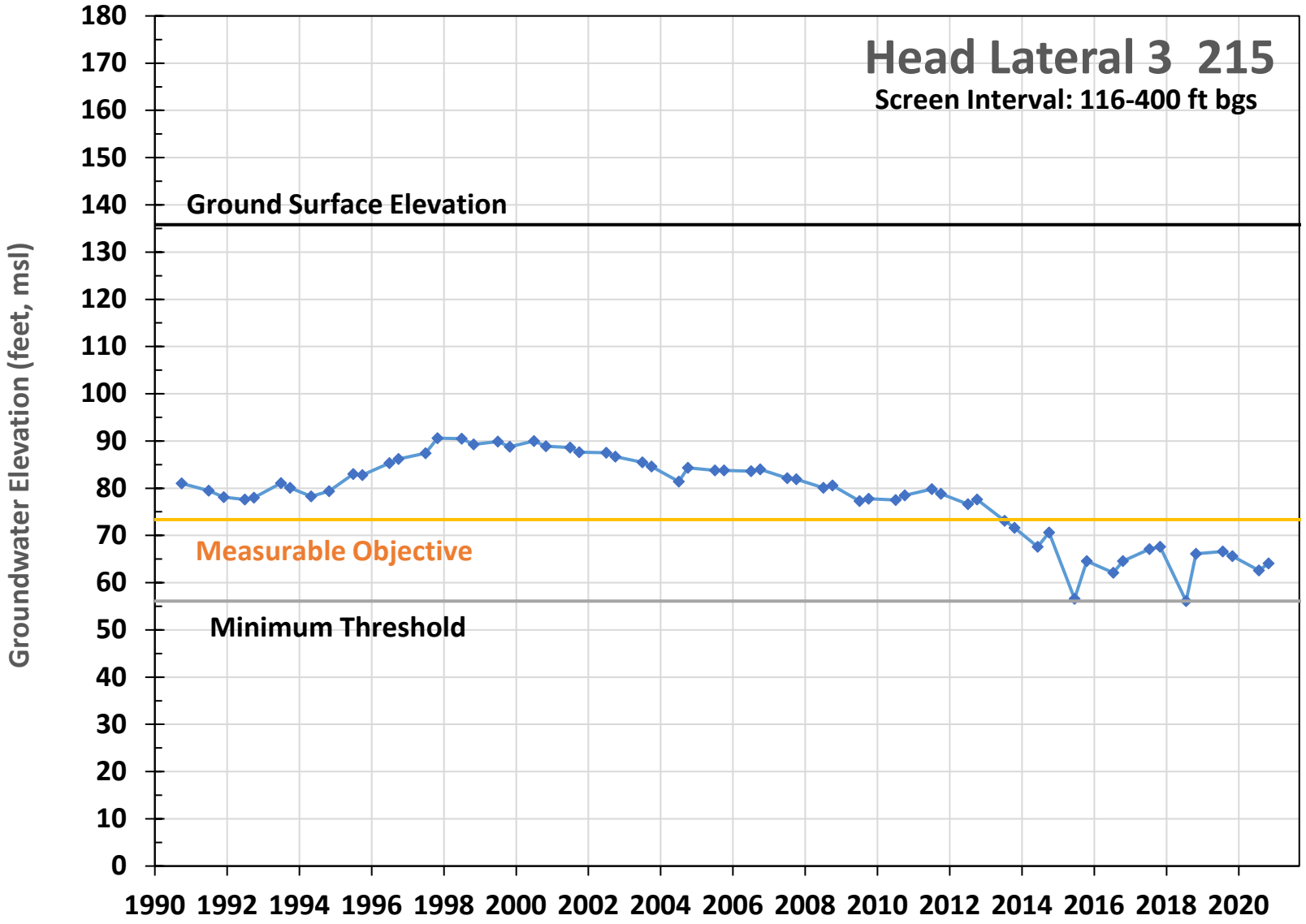

Crane OID-06
Ground Surface Elevation
Screen Interval: 155-170 ft bgs
185-198 ft bgs
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

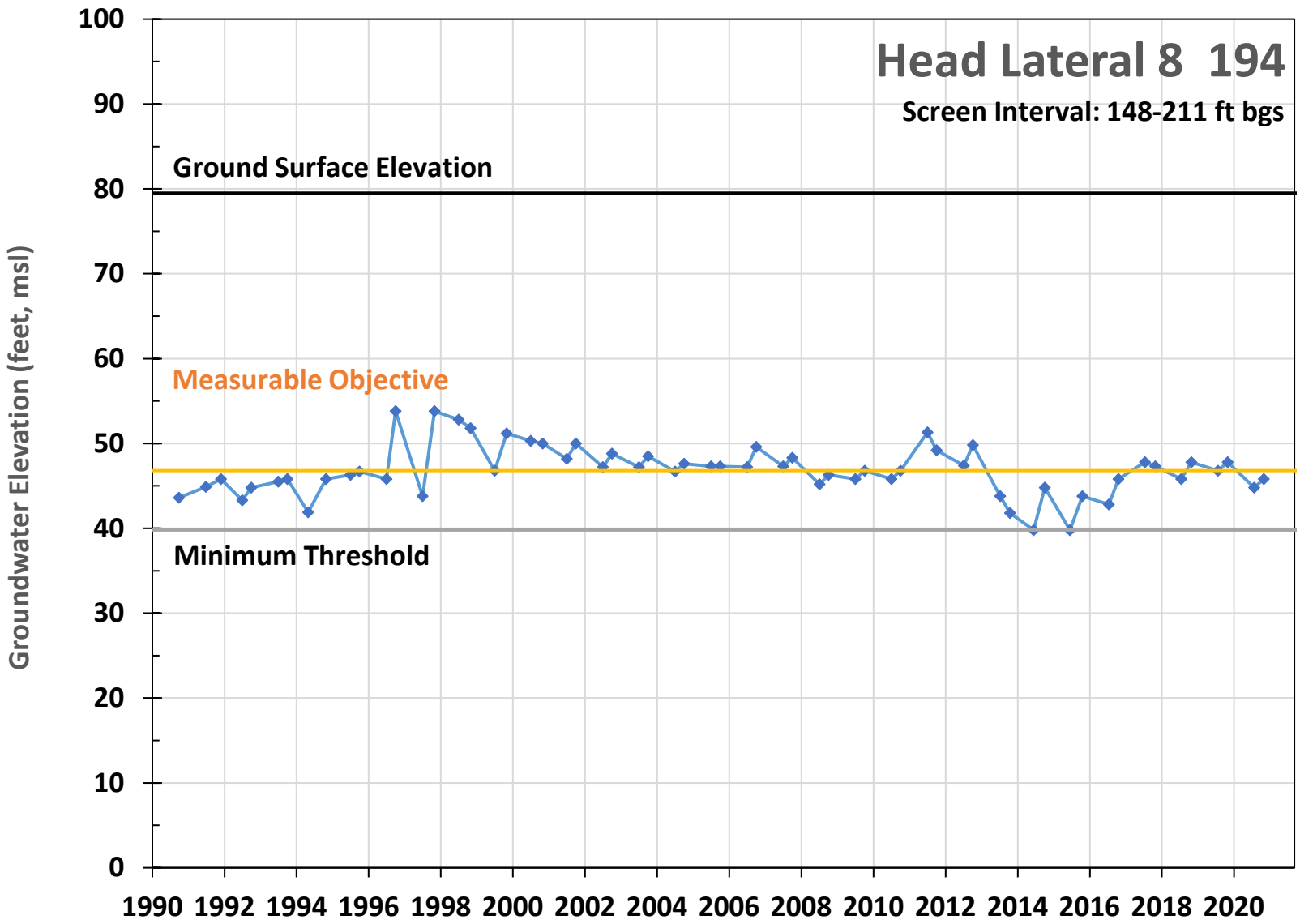

Curtis #2 100
Screen Interval: 79-100 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

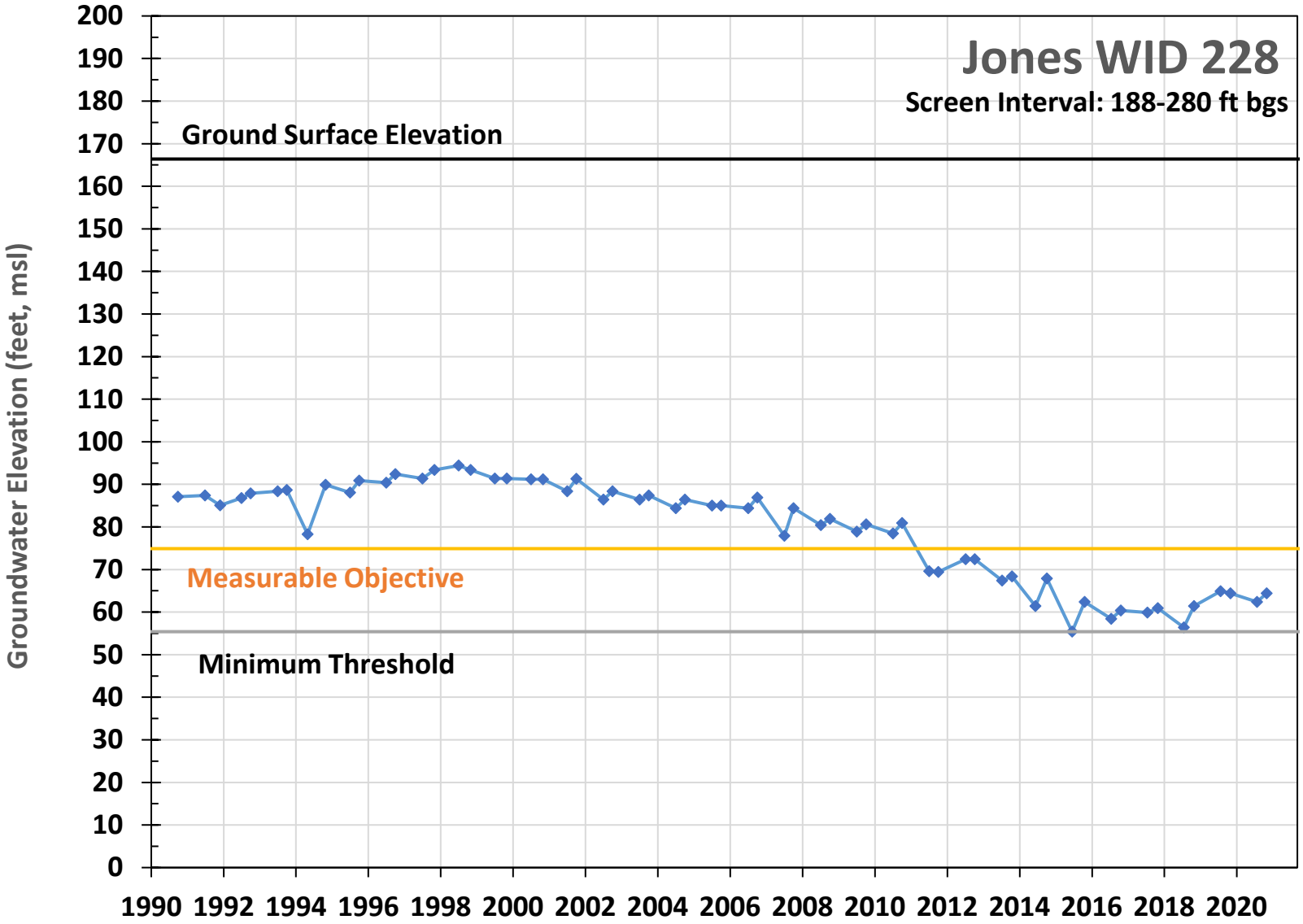

Ground Surface Elevation: 212 ft msl
Furtado OID-07
Screen Interval: 200-300 ft bgs
320-580 ft bgs
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

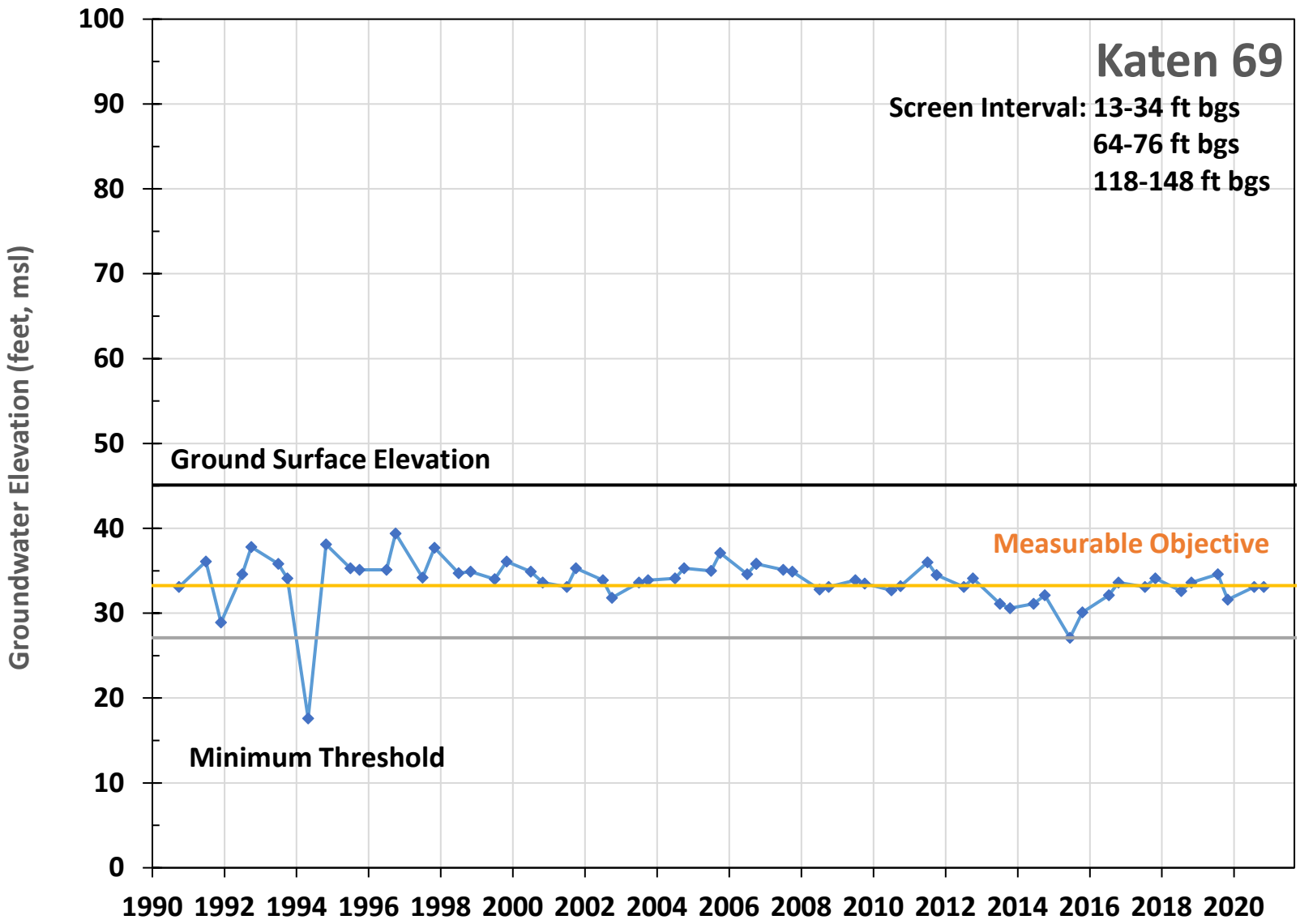

Gates Road 101
Total Depth: 64 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

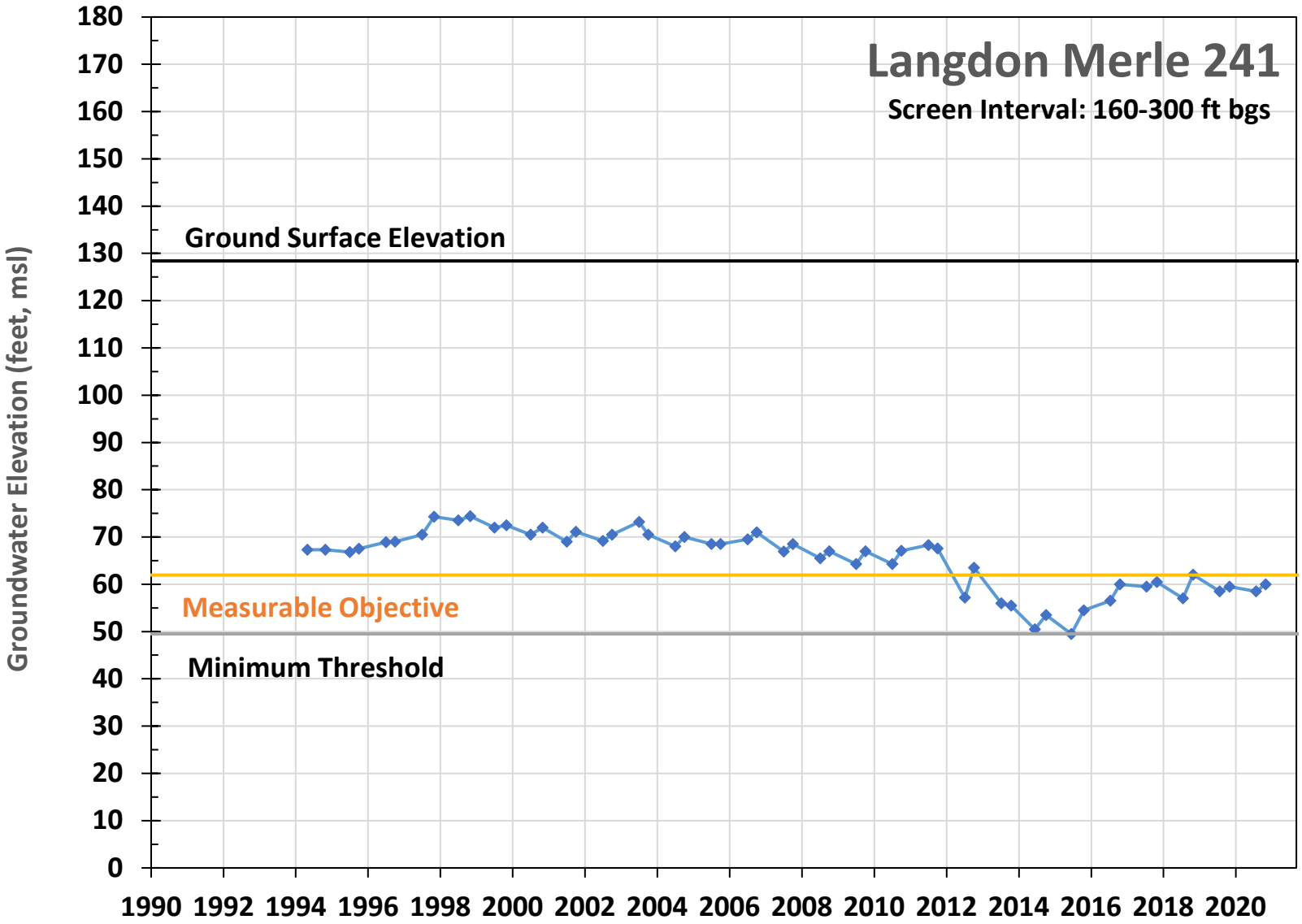

Hart Road 88
Screen Interval: 73-85 ft bgs
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

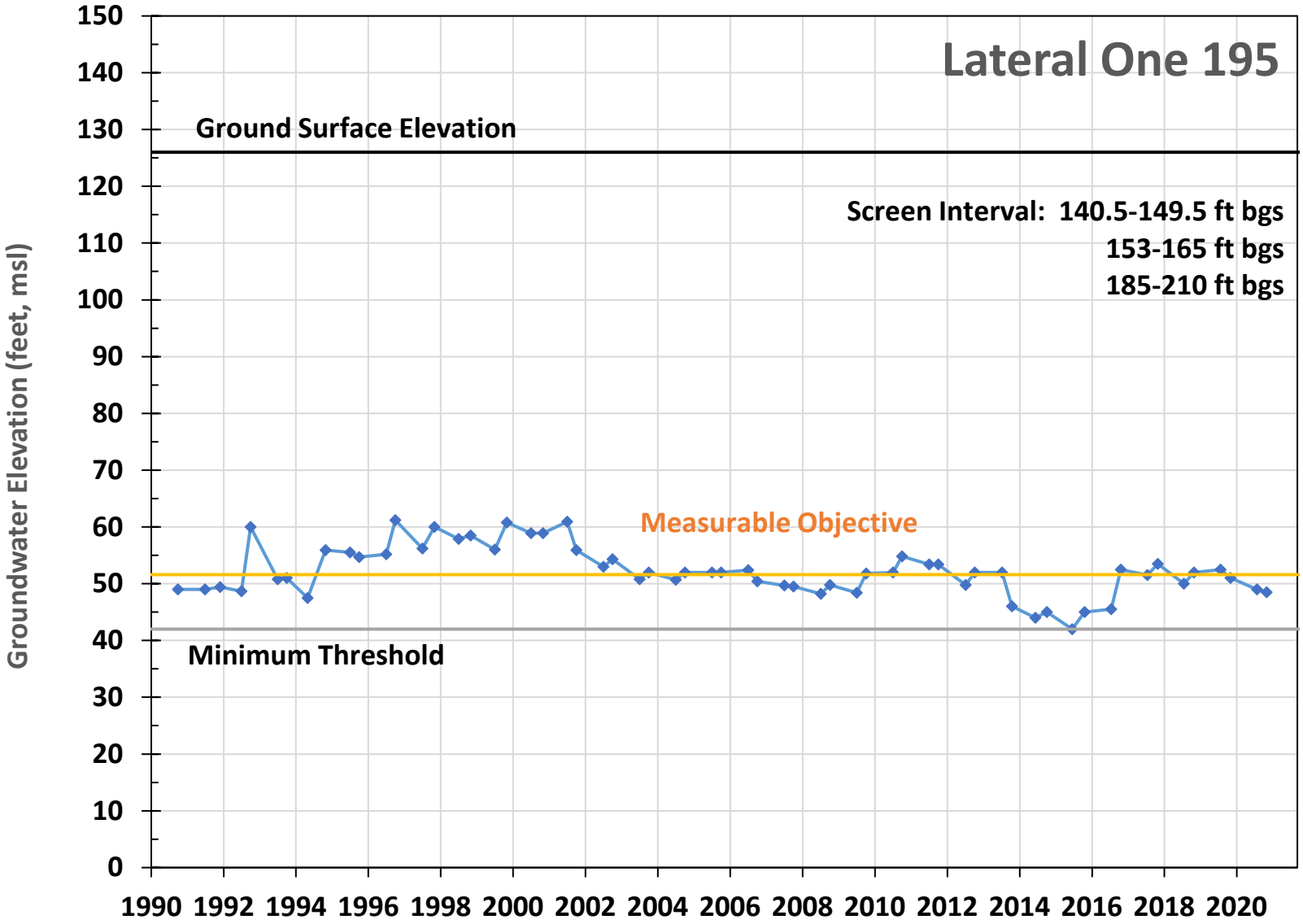

Head Lateral 3 215
Screen Interval: 116-400 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

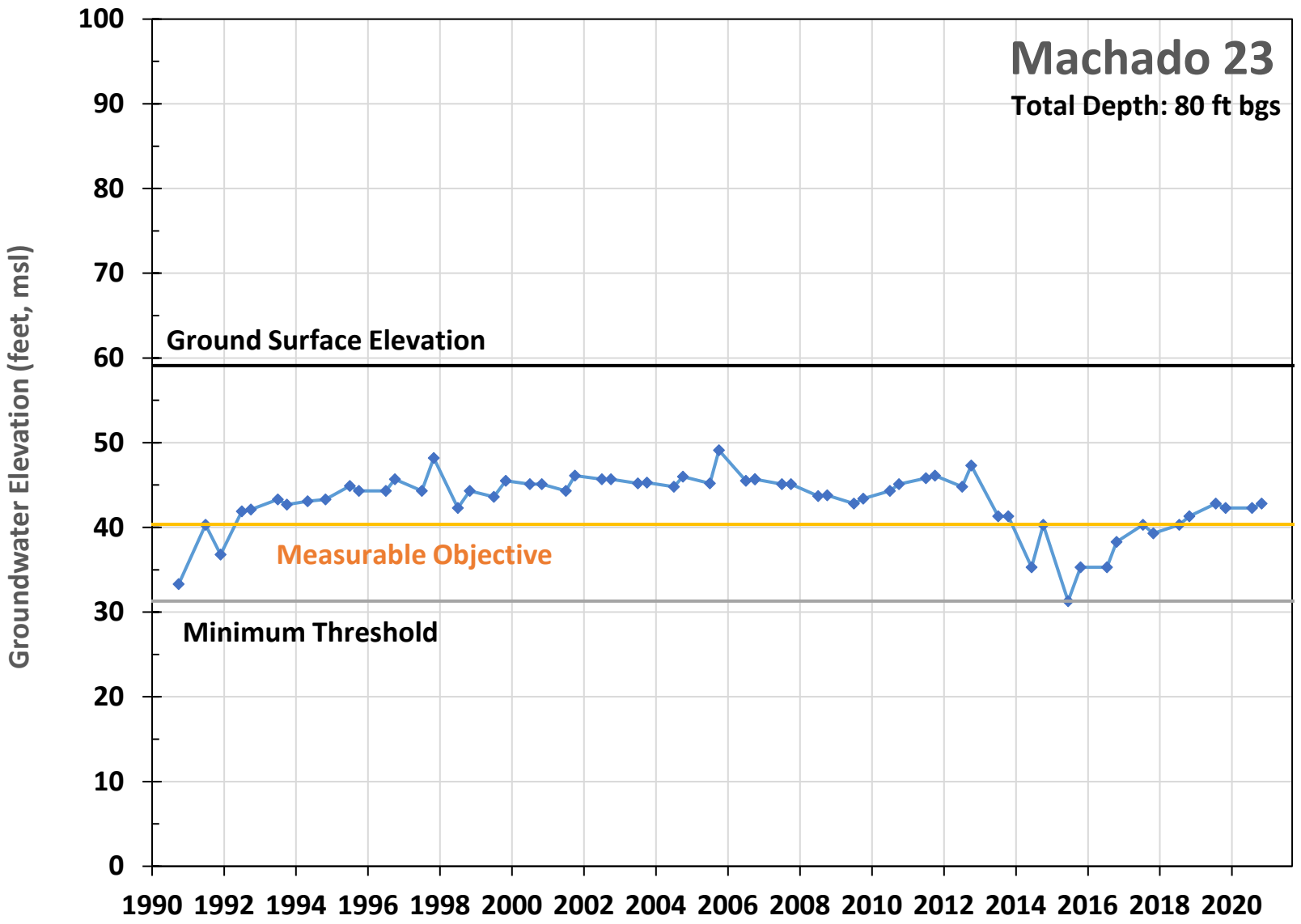

Head Lateral 8 194
Screen Interval: 148-211 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

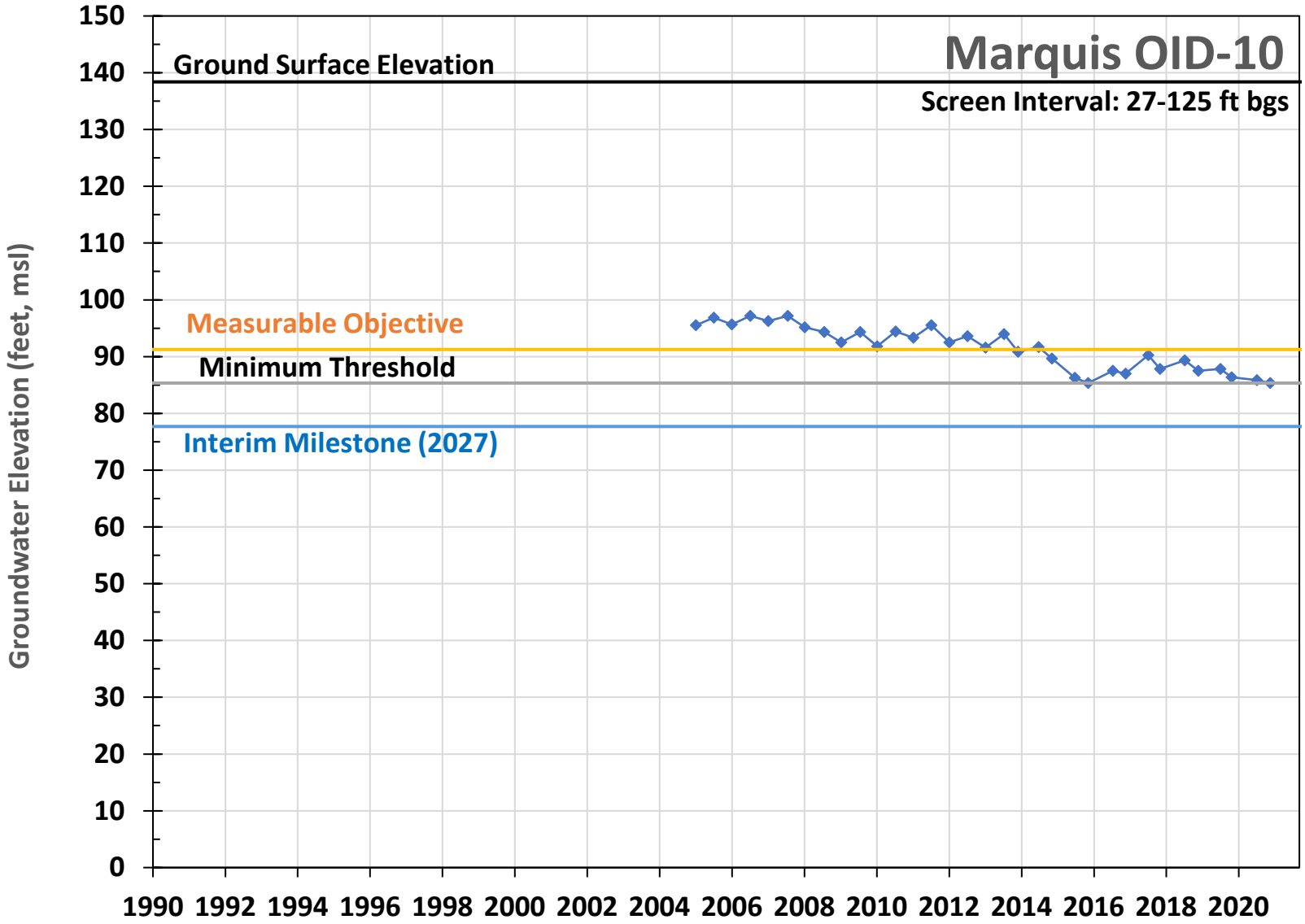

Jones WID 228
Screen Interval: 188-280 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

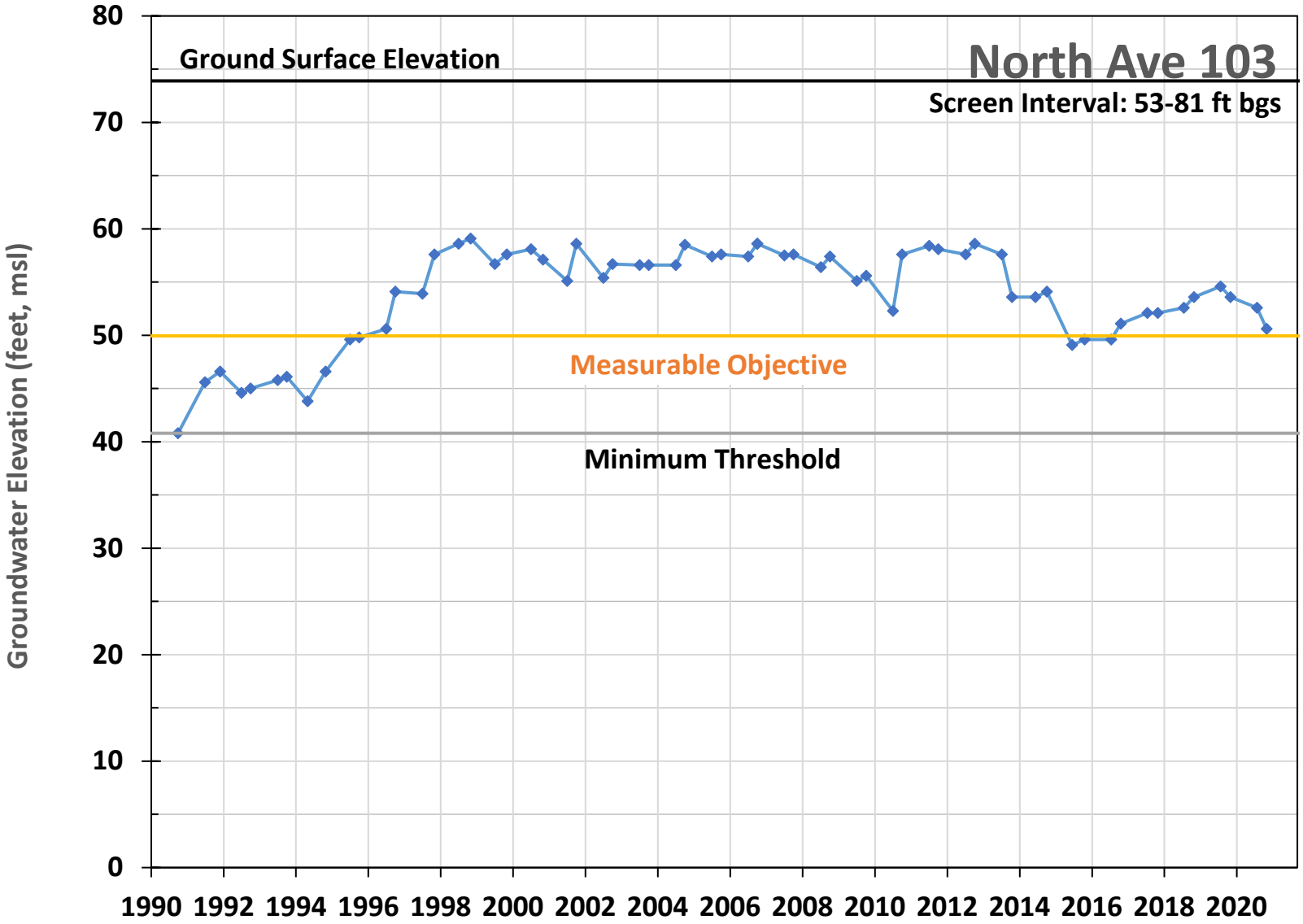

Katen 69
Screen Interval: 13-34 ft bgs
64-76 ft bgs
118-148 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

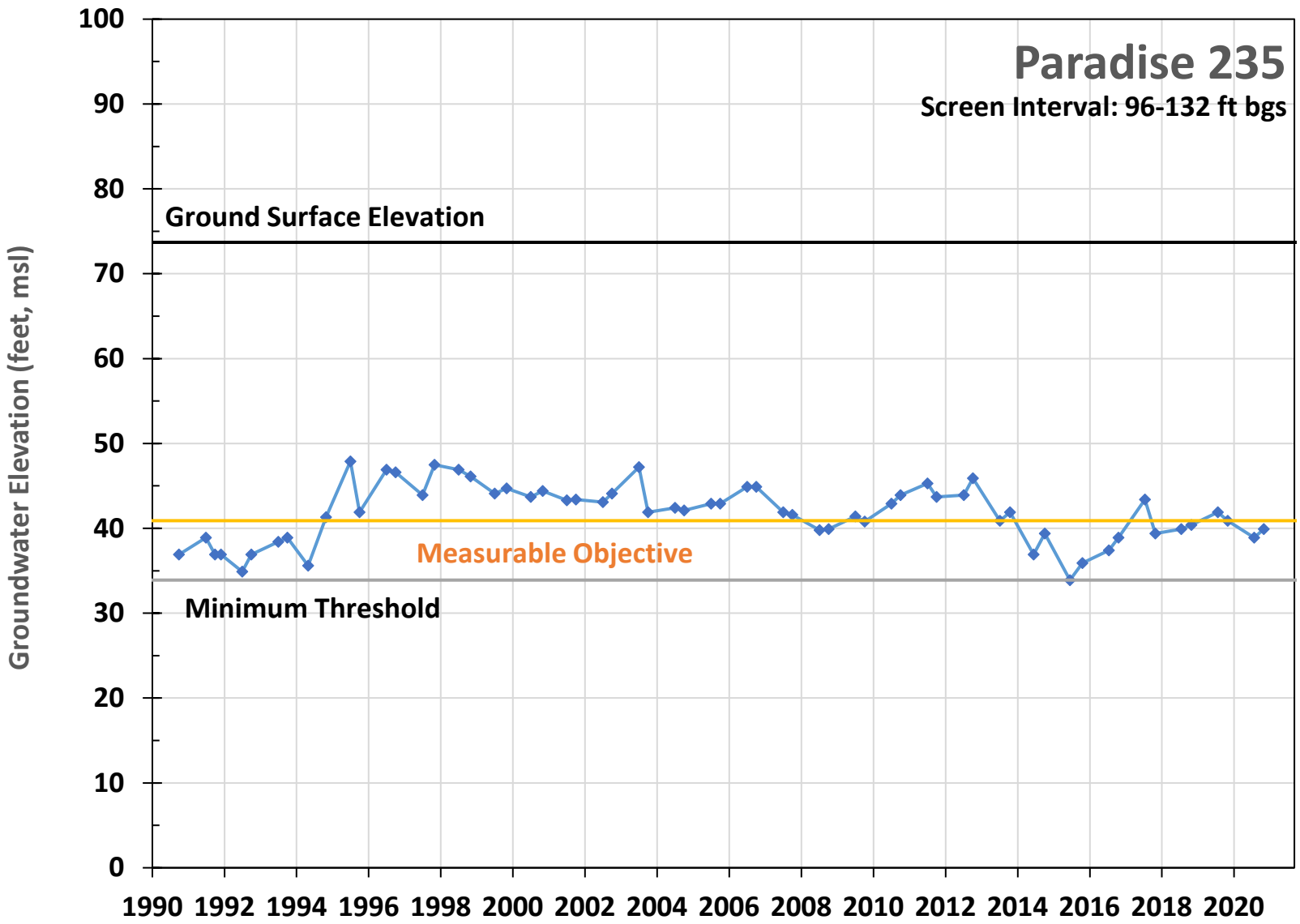

Langdon Merle 241
Screen Interval: 160-300 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

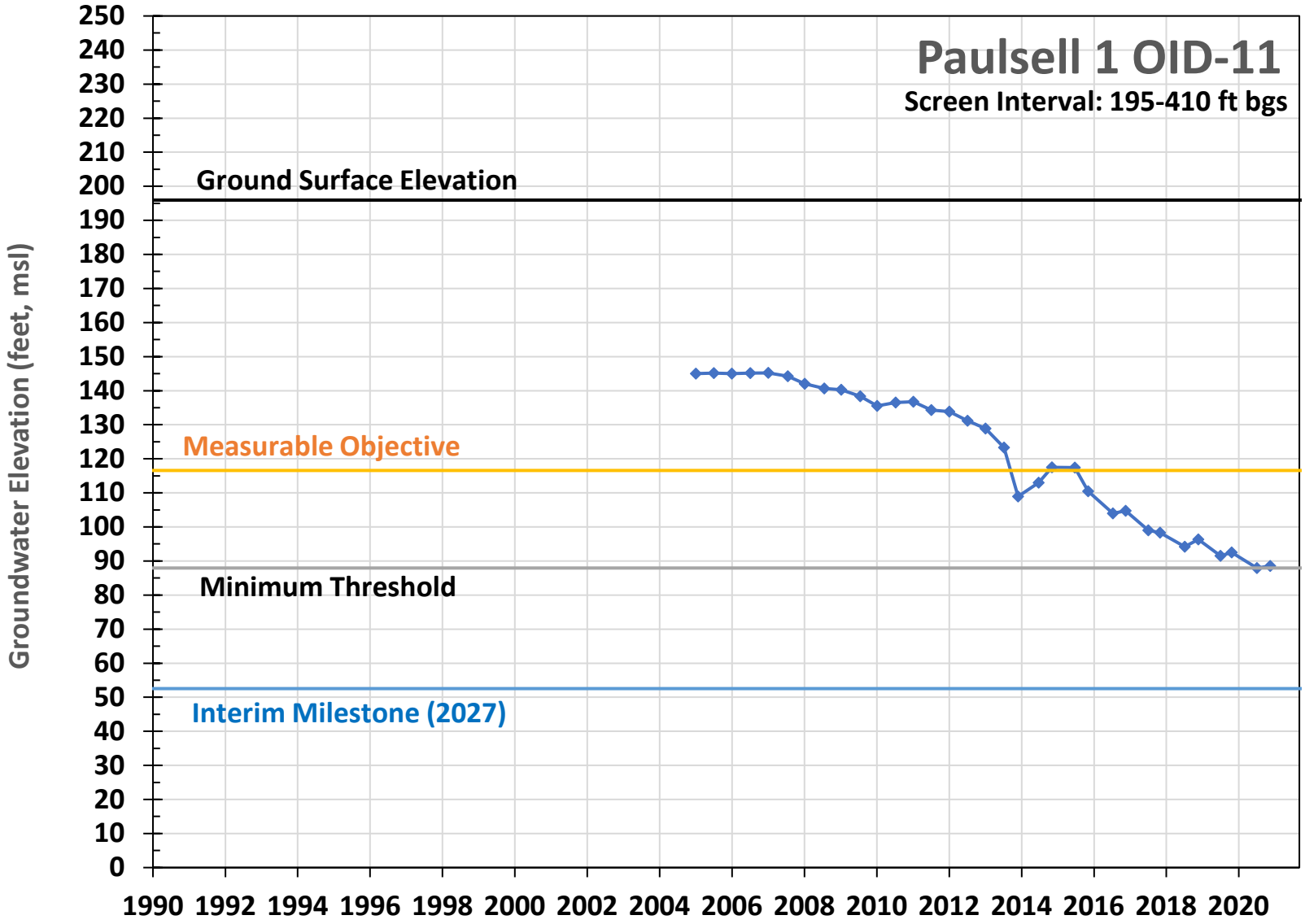

Lateral One 195
Ground Surface Elevation
Screen Interval: 140.5-149.5 ft bgs
153-165 ft bgs
185-210 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

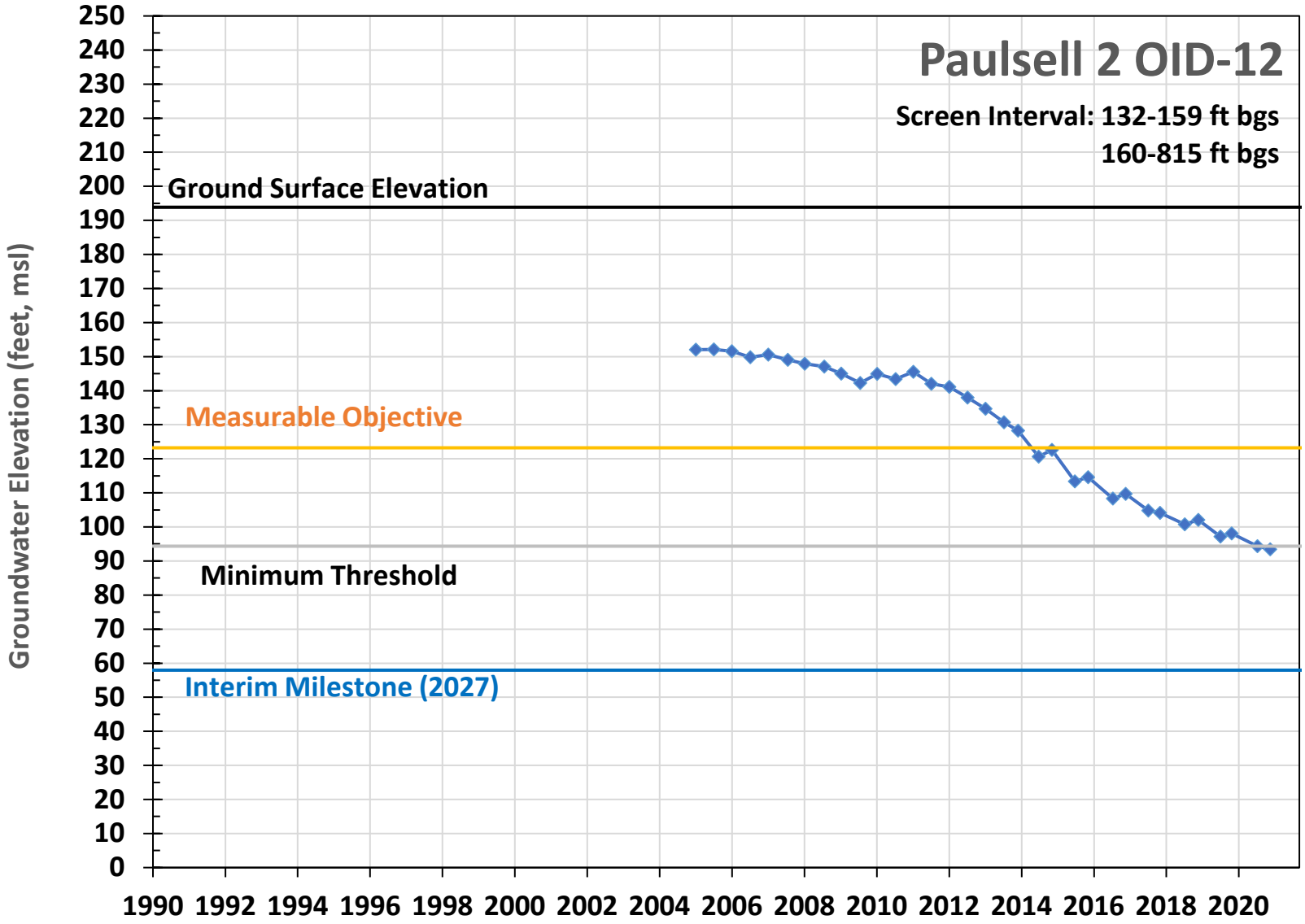

Machado 23
Total Depth: 80 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

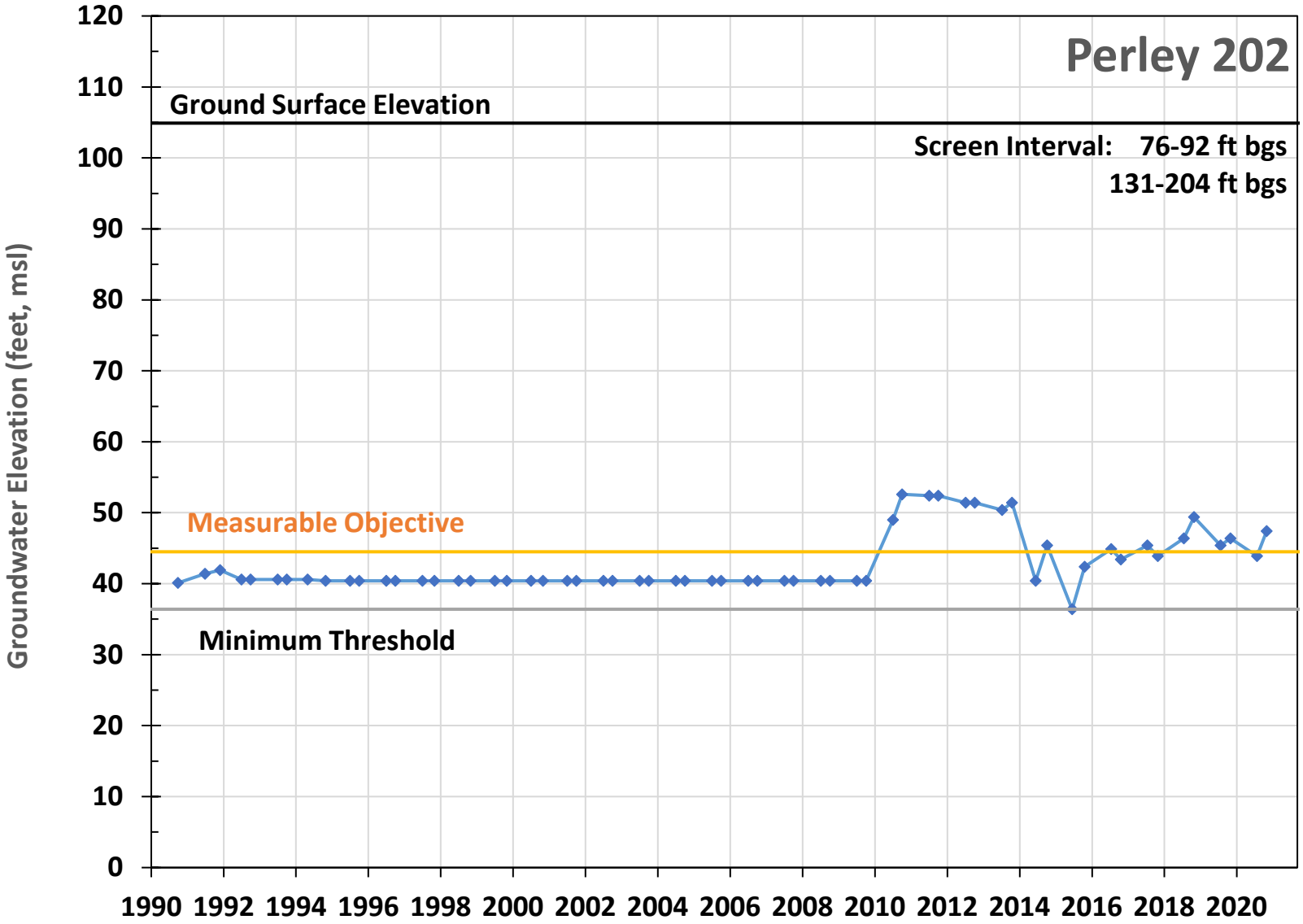

Marquis OID-10
Screen Interval: 27-125 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

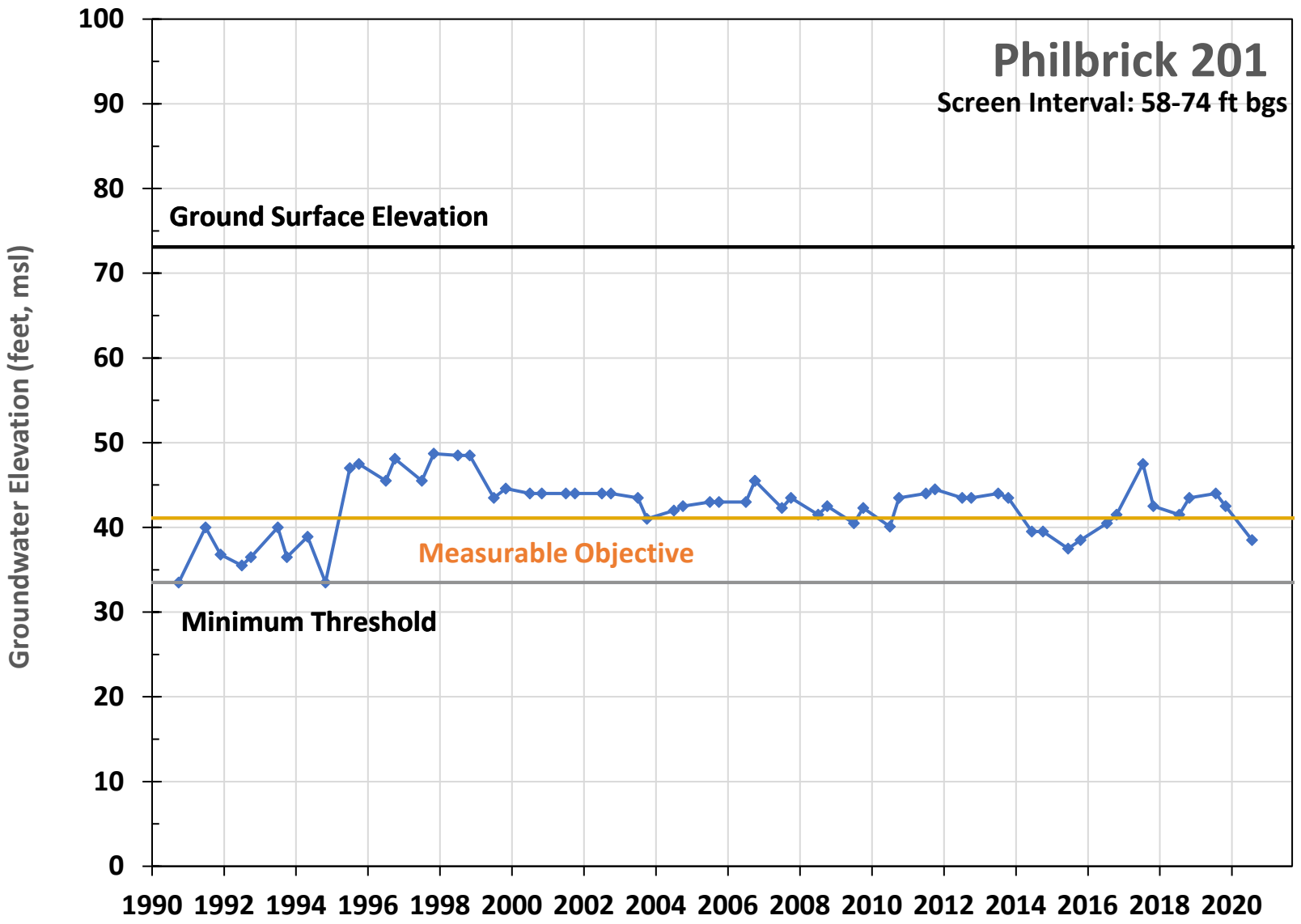

North Ave 103
Screen Interval: 53-81 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

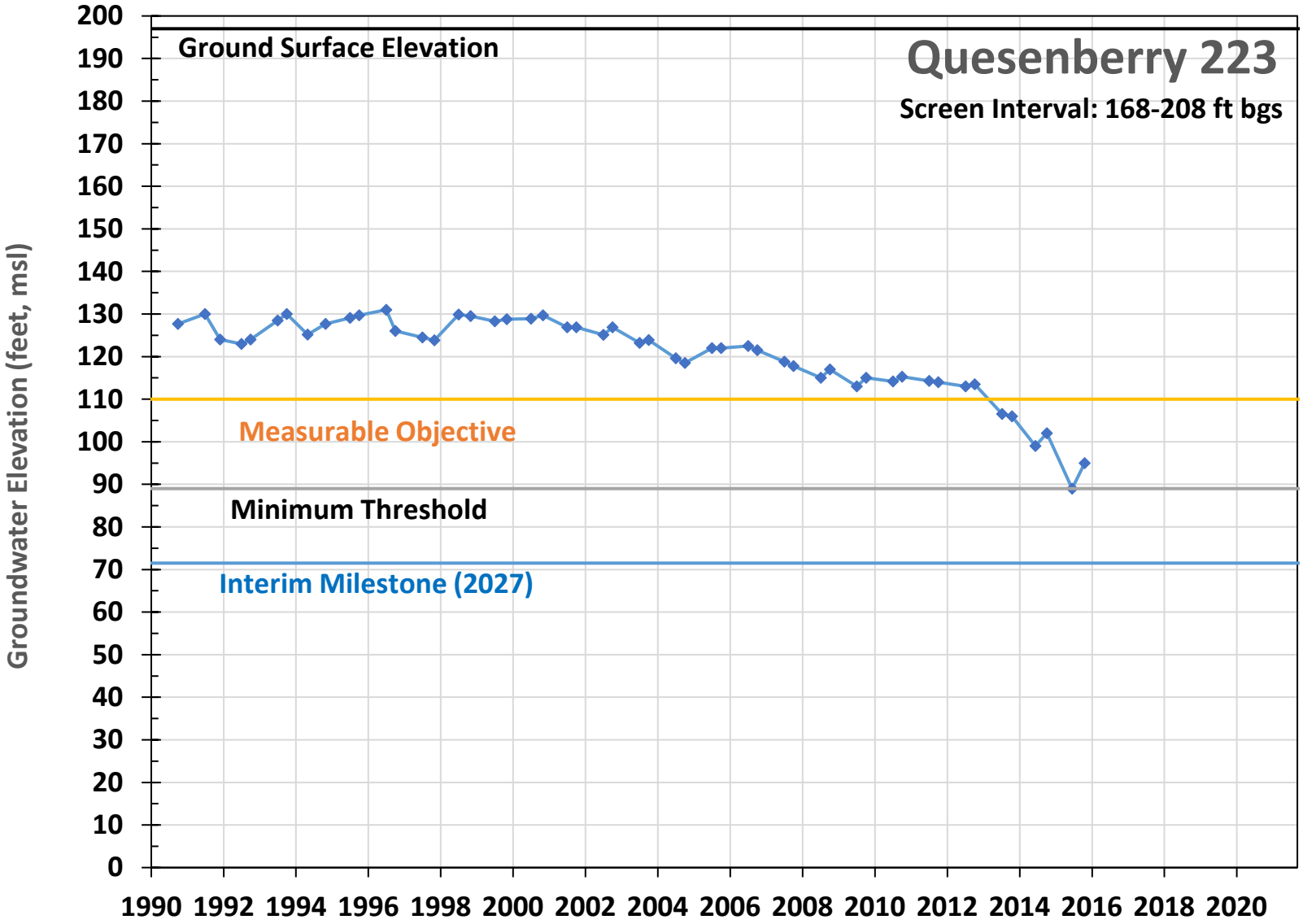

Paradise 235
Screen Interval: 96-132 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

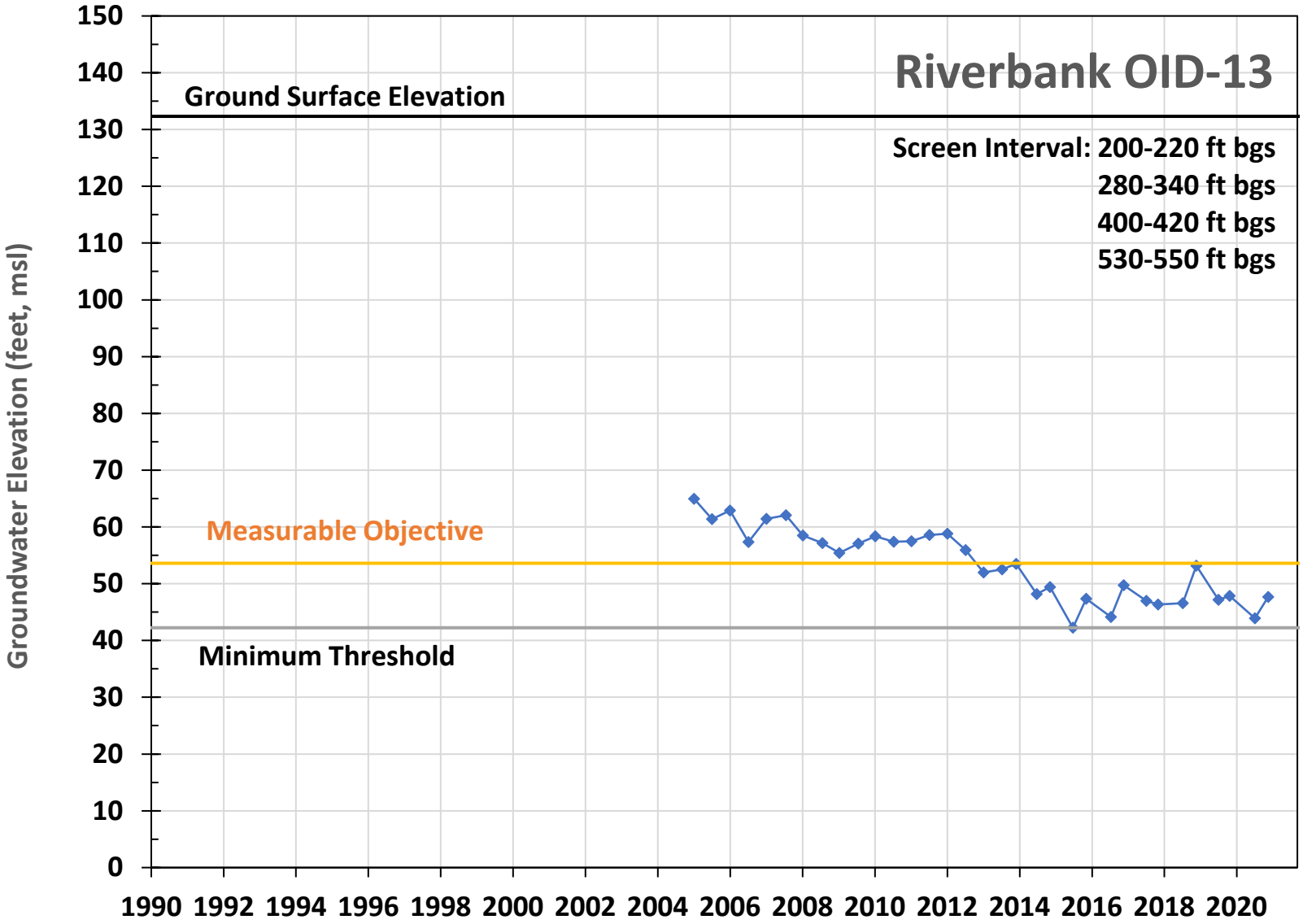

Paulsell 1 OID-11
Screen Interval: 195-410 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

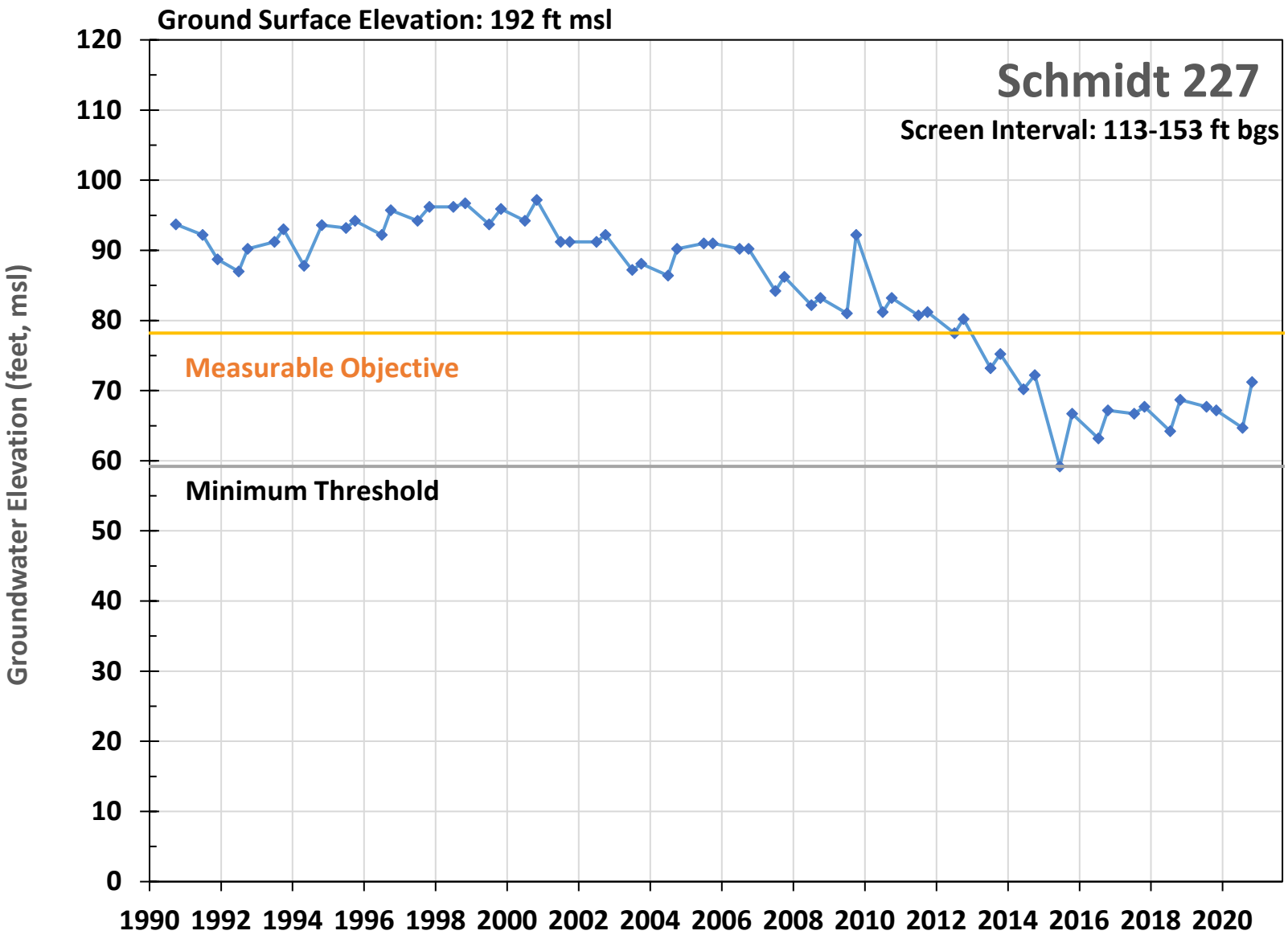

Paulsell 2 OID-12
Screen Interval: 132-159 ft bgs
160-815 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

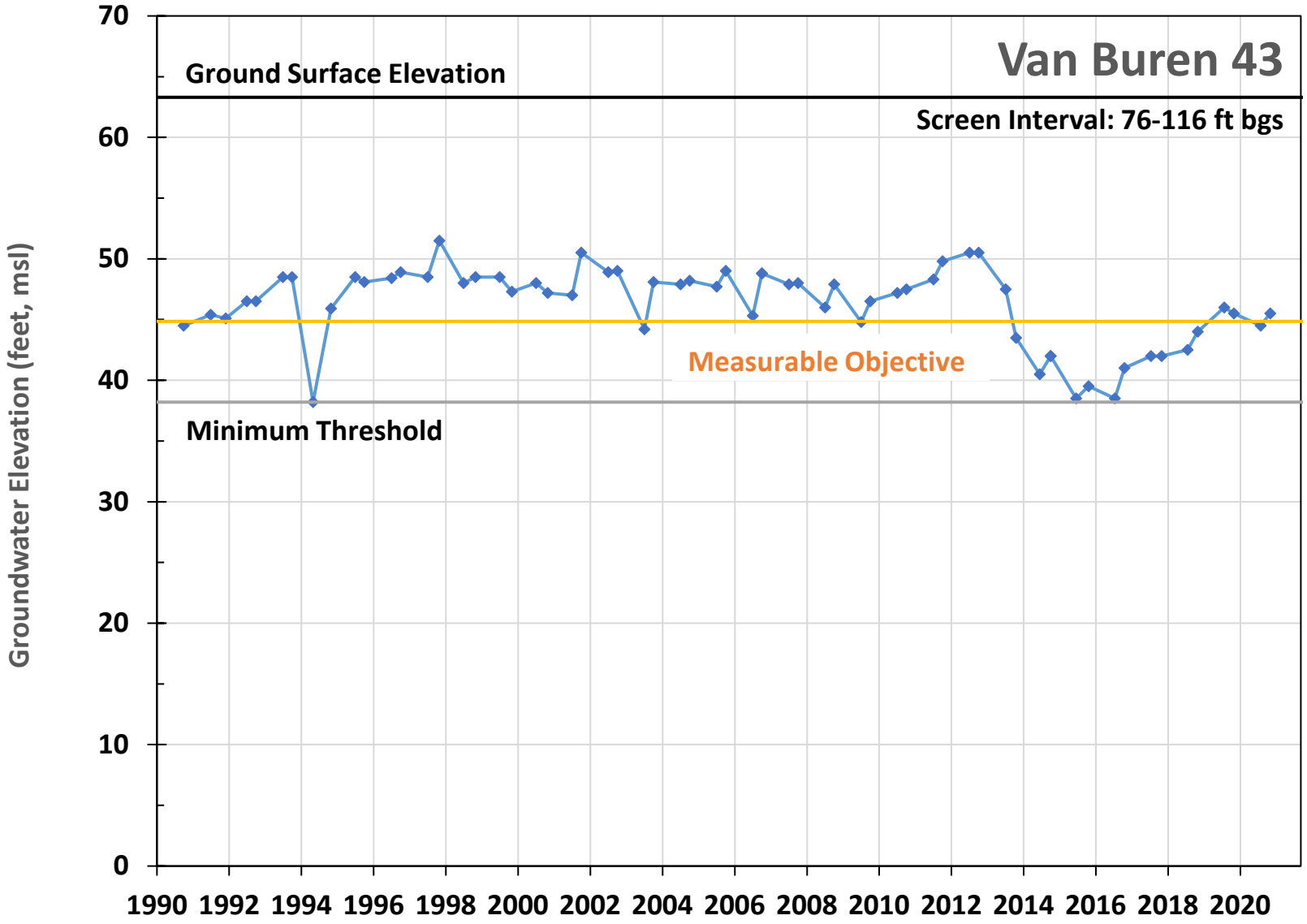

Perley 202
Ground Surface Elevation
Screen Interval: 76-92 ft bgs
131-204 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

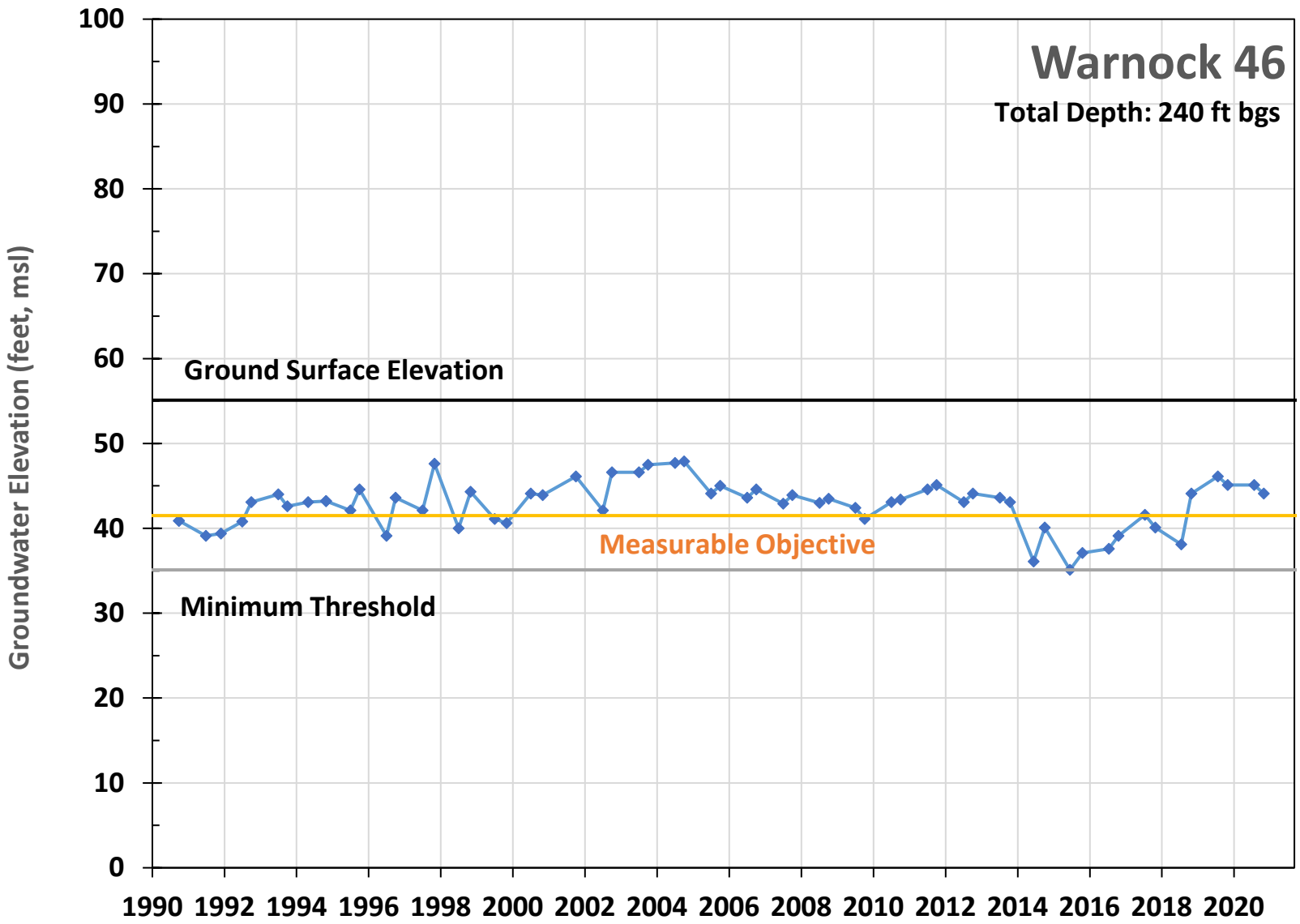

Philbrick 201
Screen Interval: 58-74 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

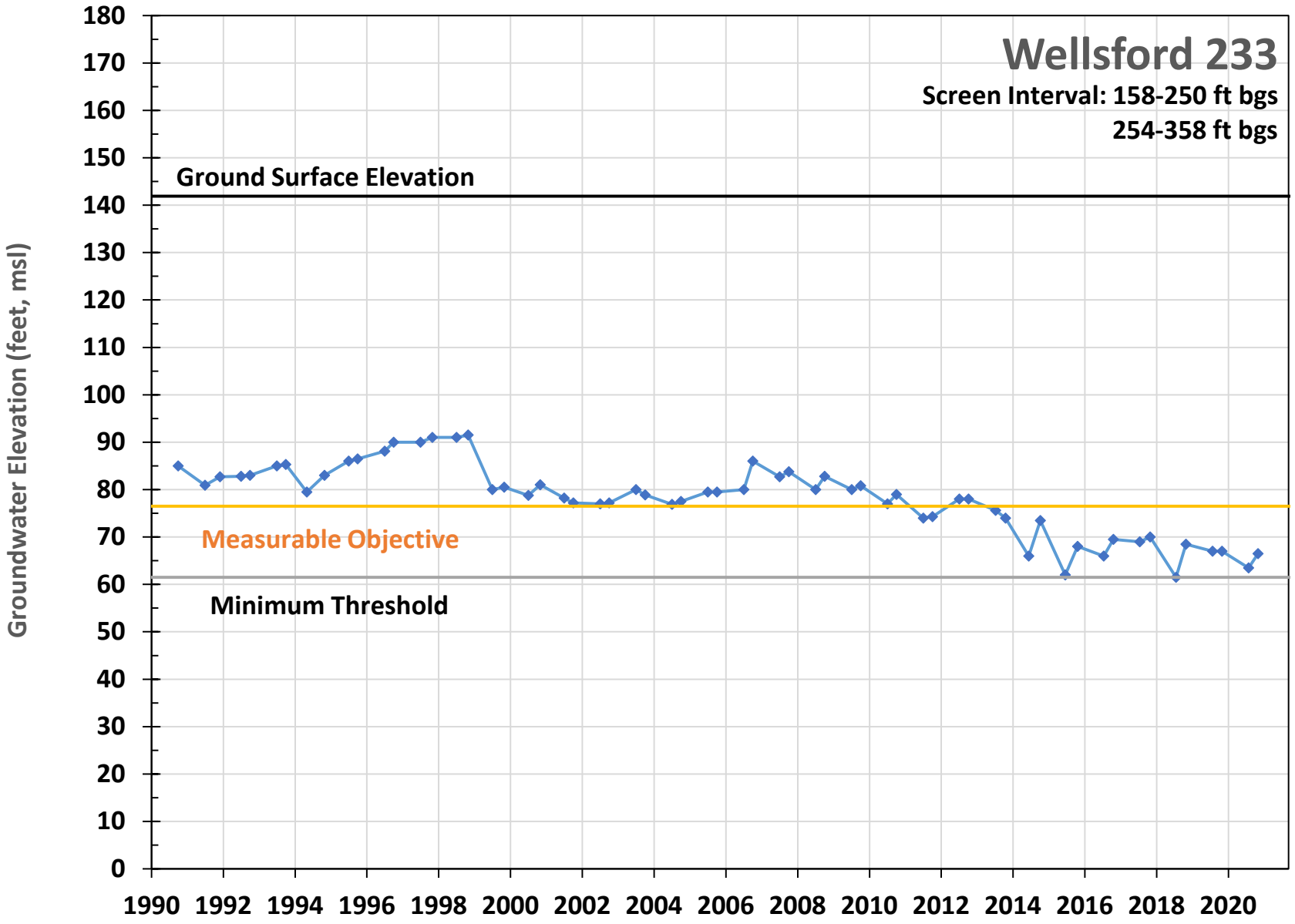

Quesenberry 223
Screen Interval: 168-208 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

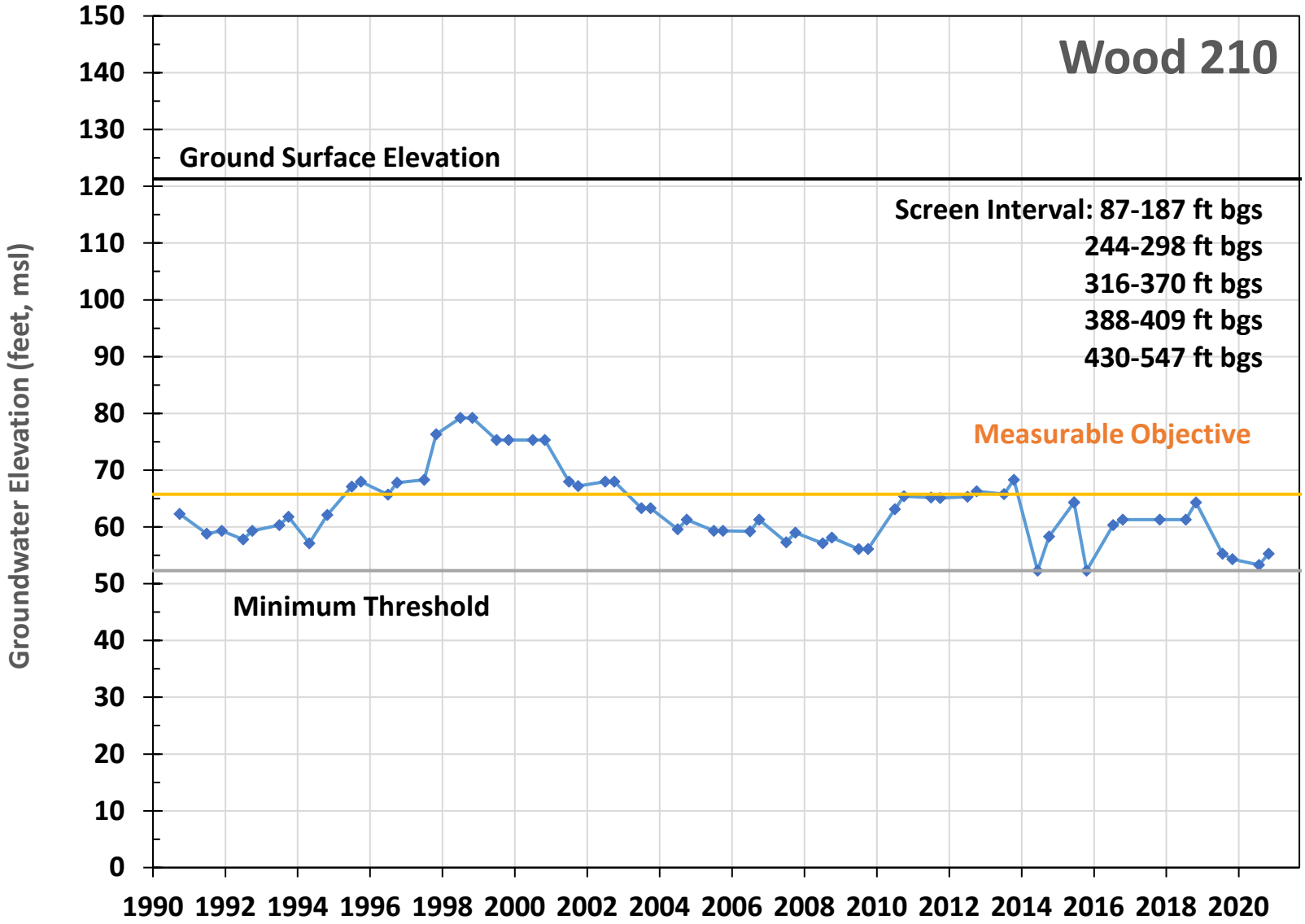

Riverbank OID-13
Ground Surface Elevation
Screen Interval: 200-220 ft bgs
280-340 ft bgs
400-420 ft bgs
530-550 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

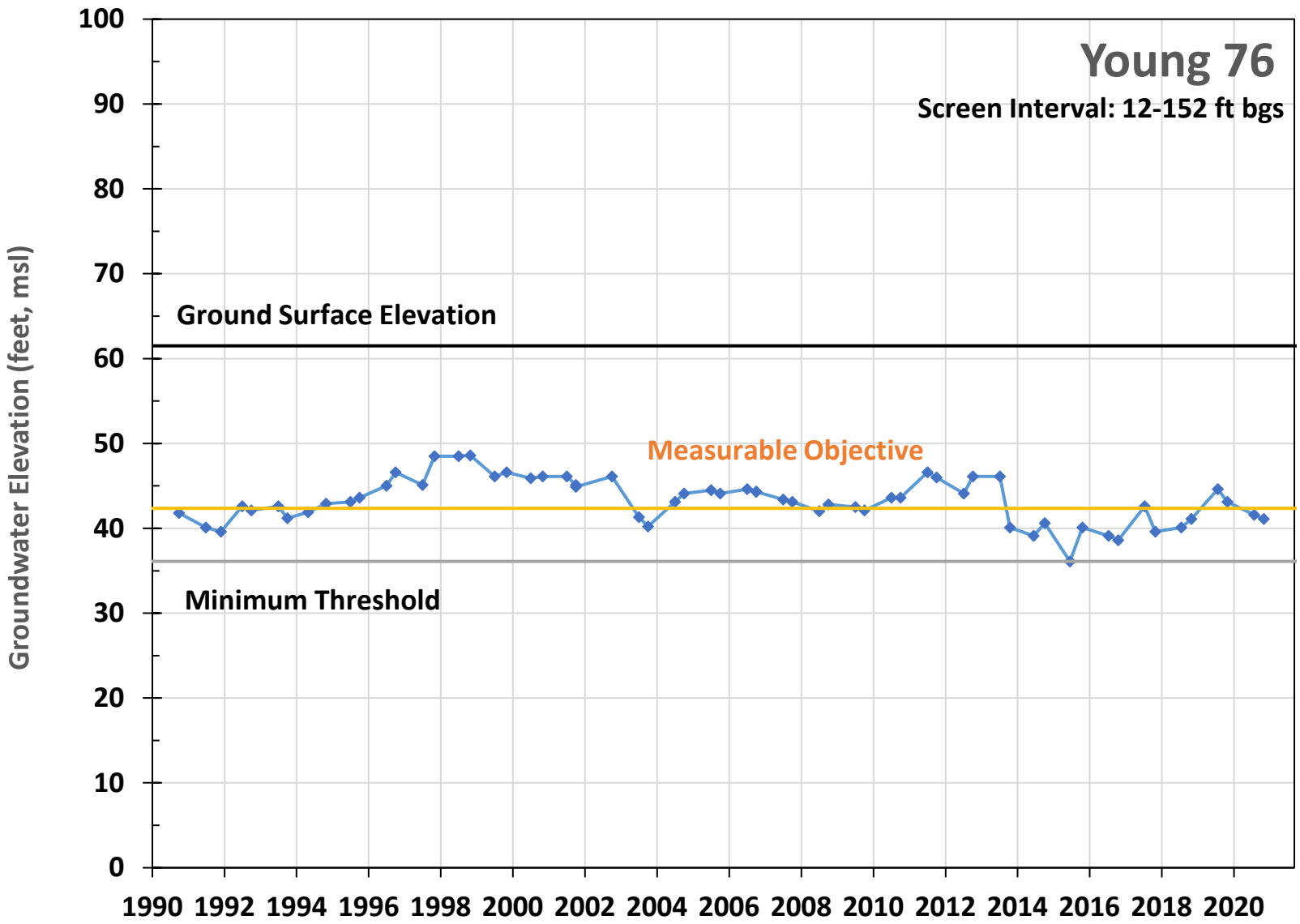

Ground Surface Elevation: 192 ft msl
Schmidt 227
Screen Interval: 113-153 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

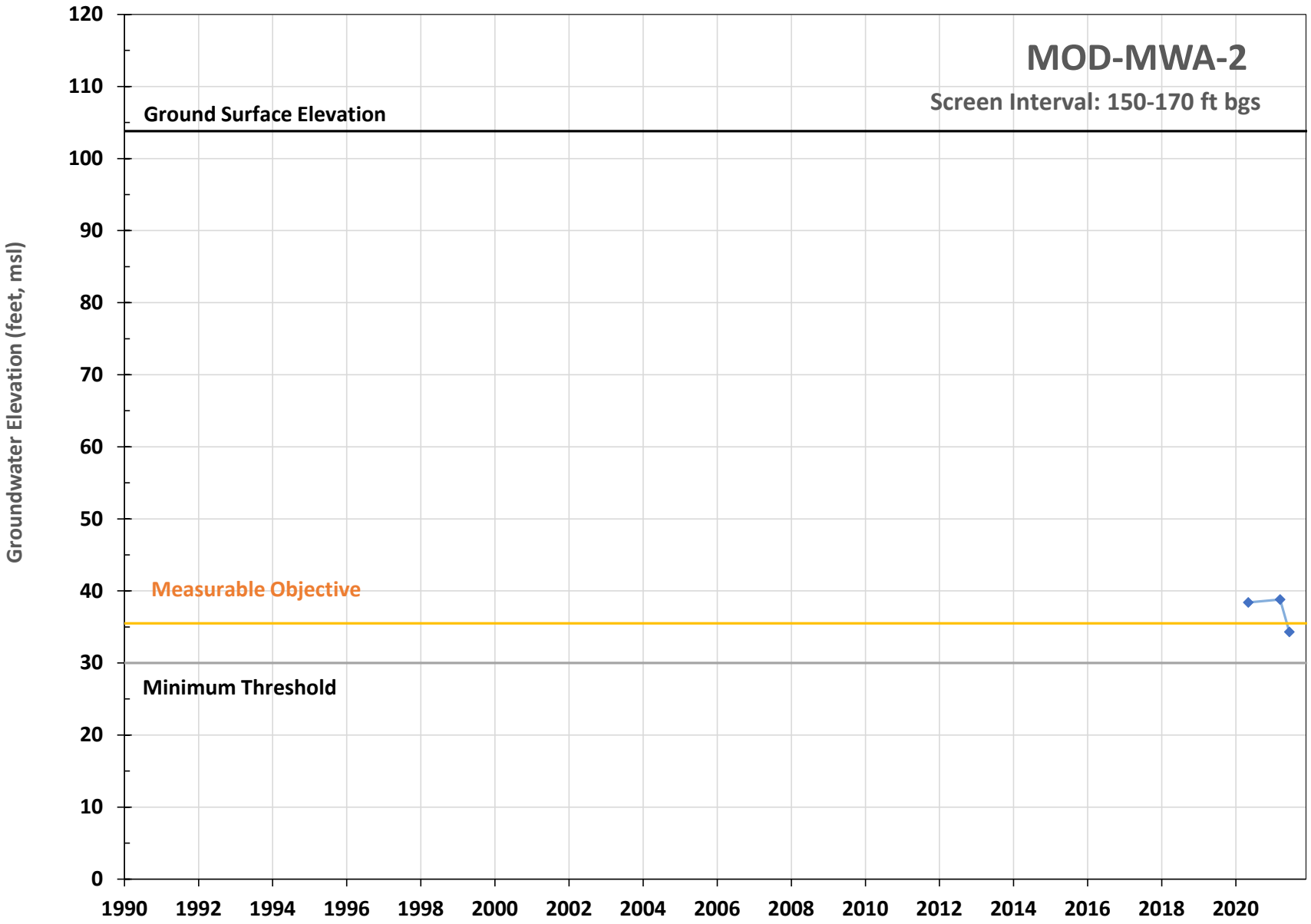

Van Buren 43
Ground Surface Elevation
Screen Interval: 76-116 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

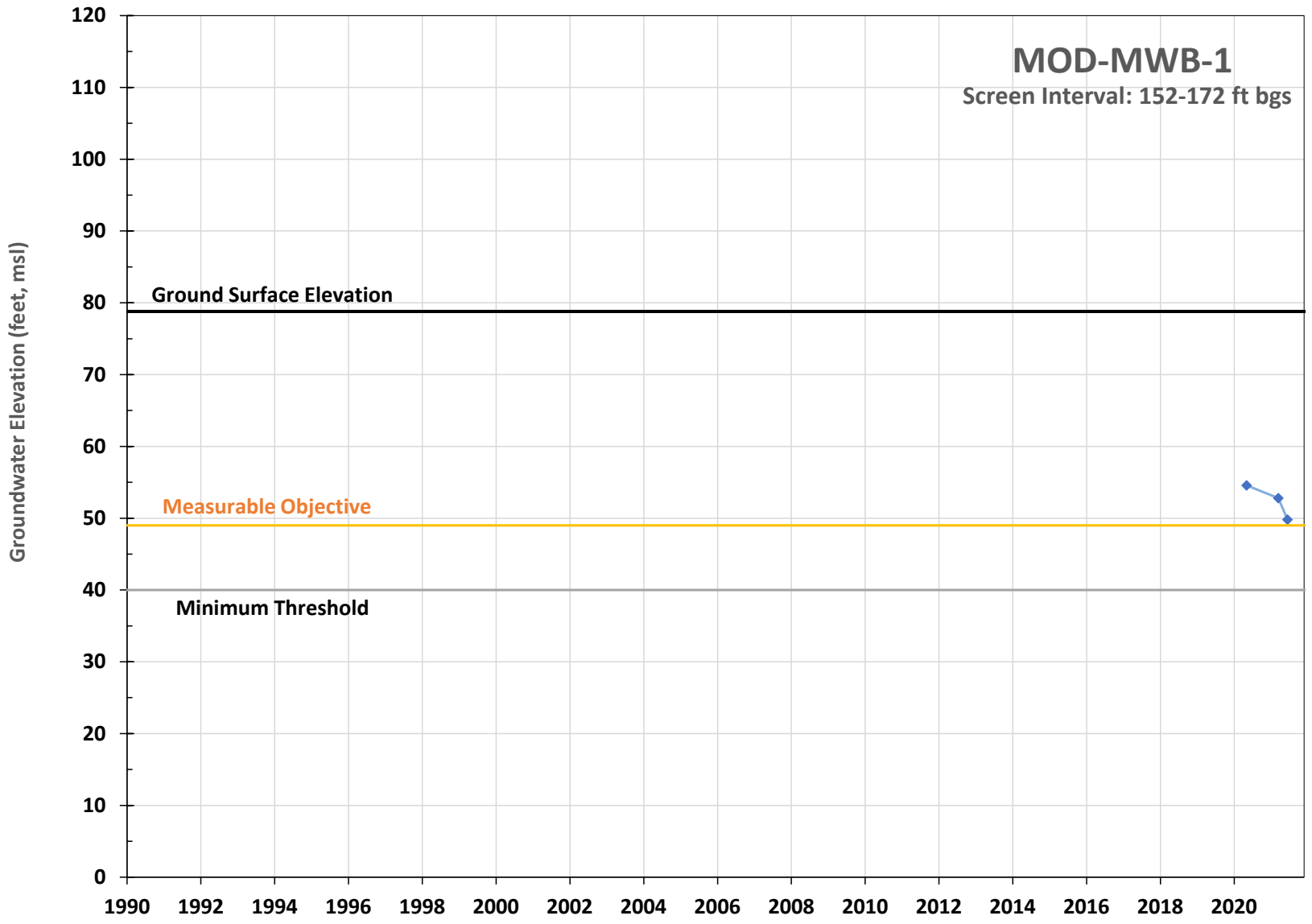

Warnock 46
Total Depth: 240 ft bgs
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

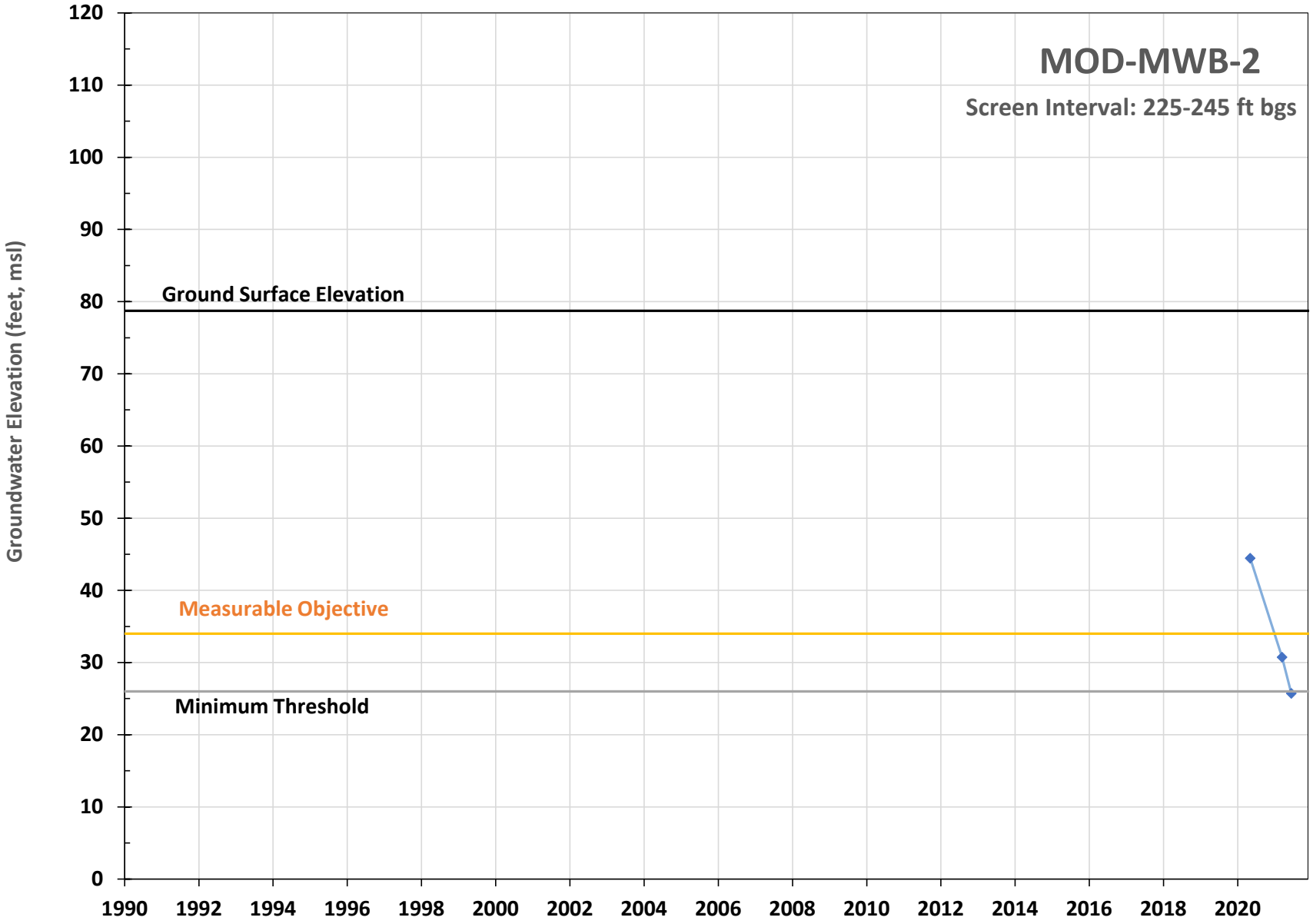

Wellsford 233
Screen Interval: 158-250 ft bgs
254-358 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

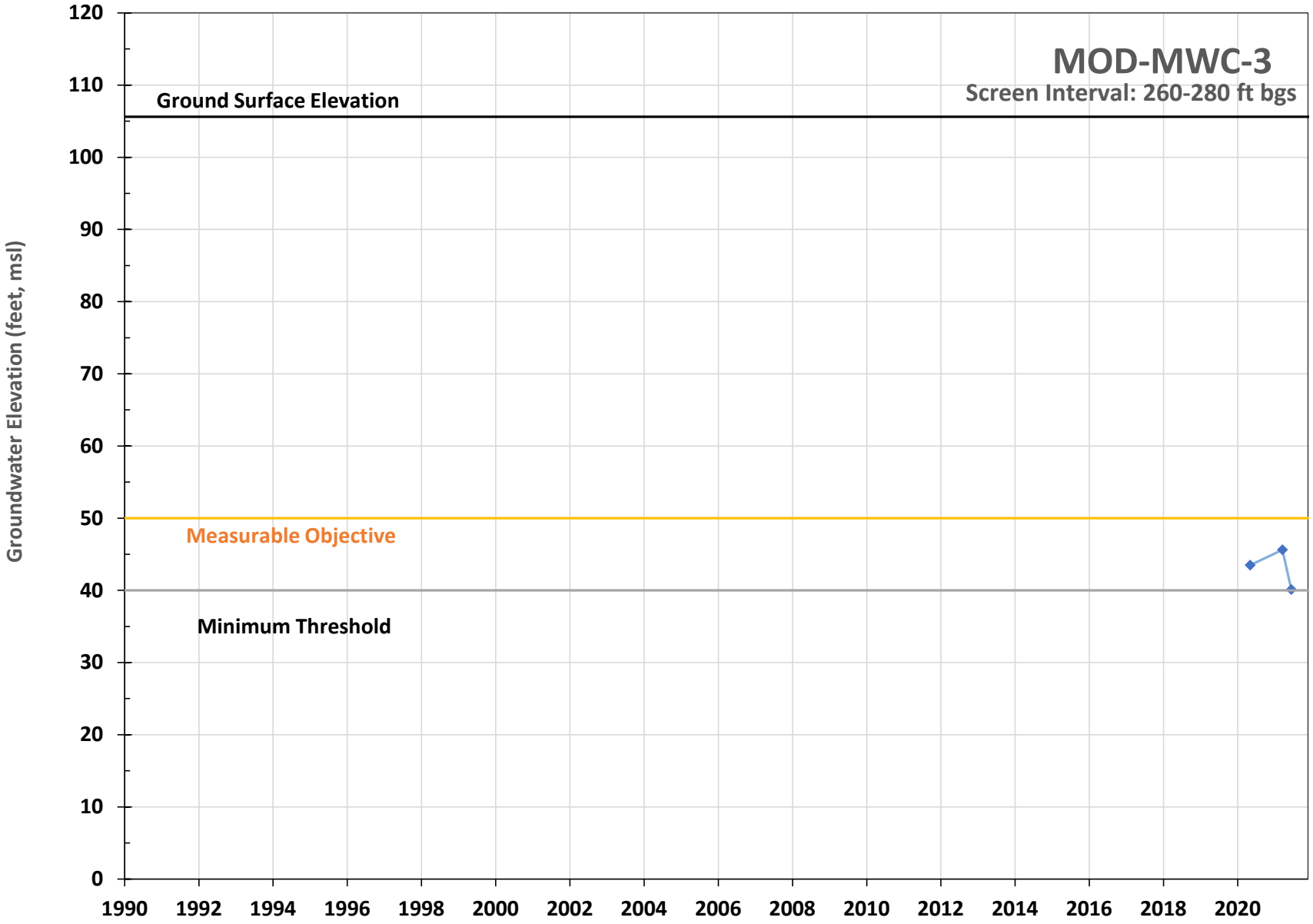

Wood 210
Ground Surface Elevation
Screen Interval: 87-187 ft bgs
244-298 ft bgs
316-370 ft bgs
388-409 ft bgs
430-547 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

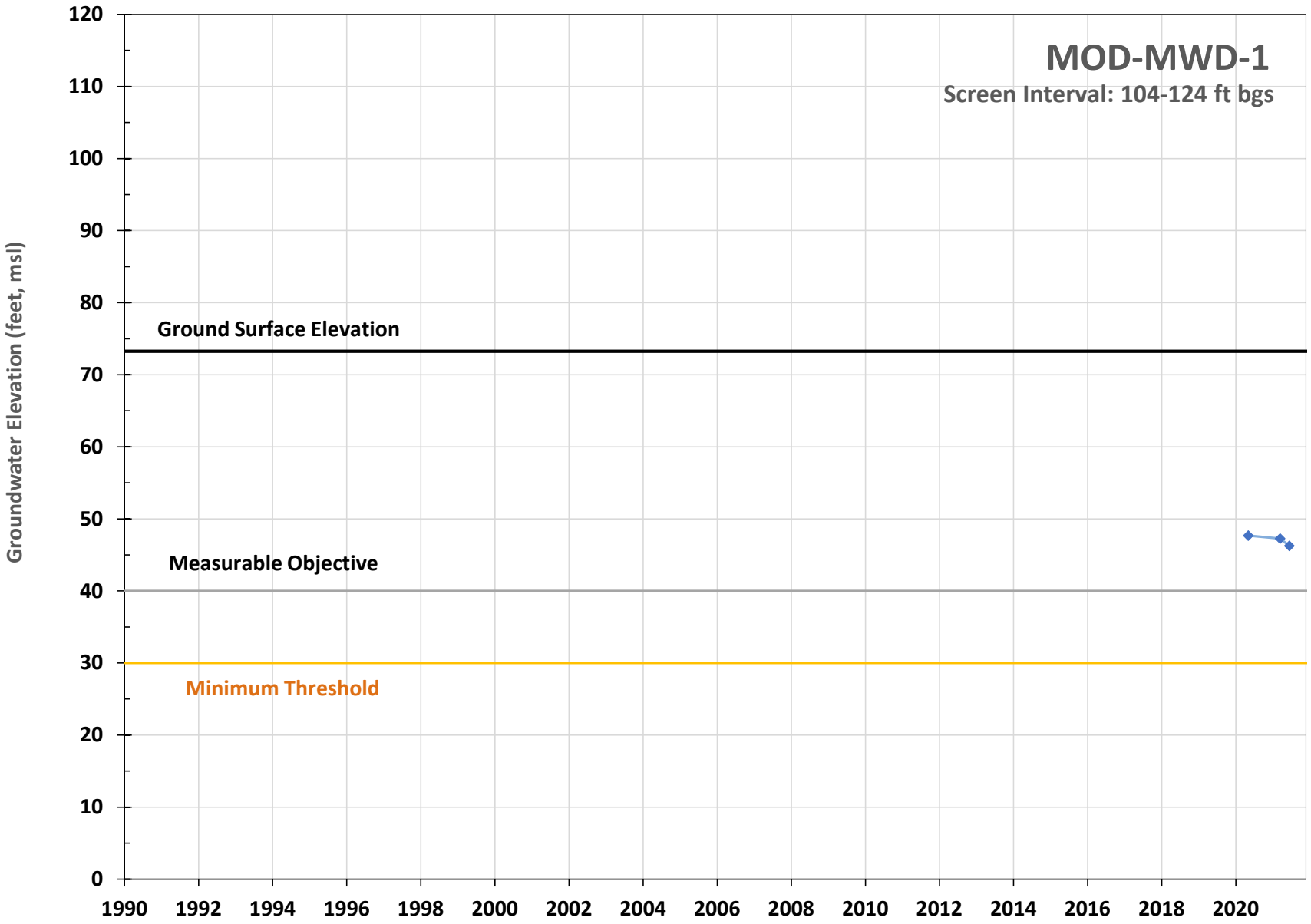

Young 76
Screen Interval: 12-152 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

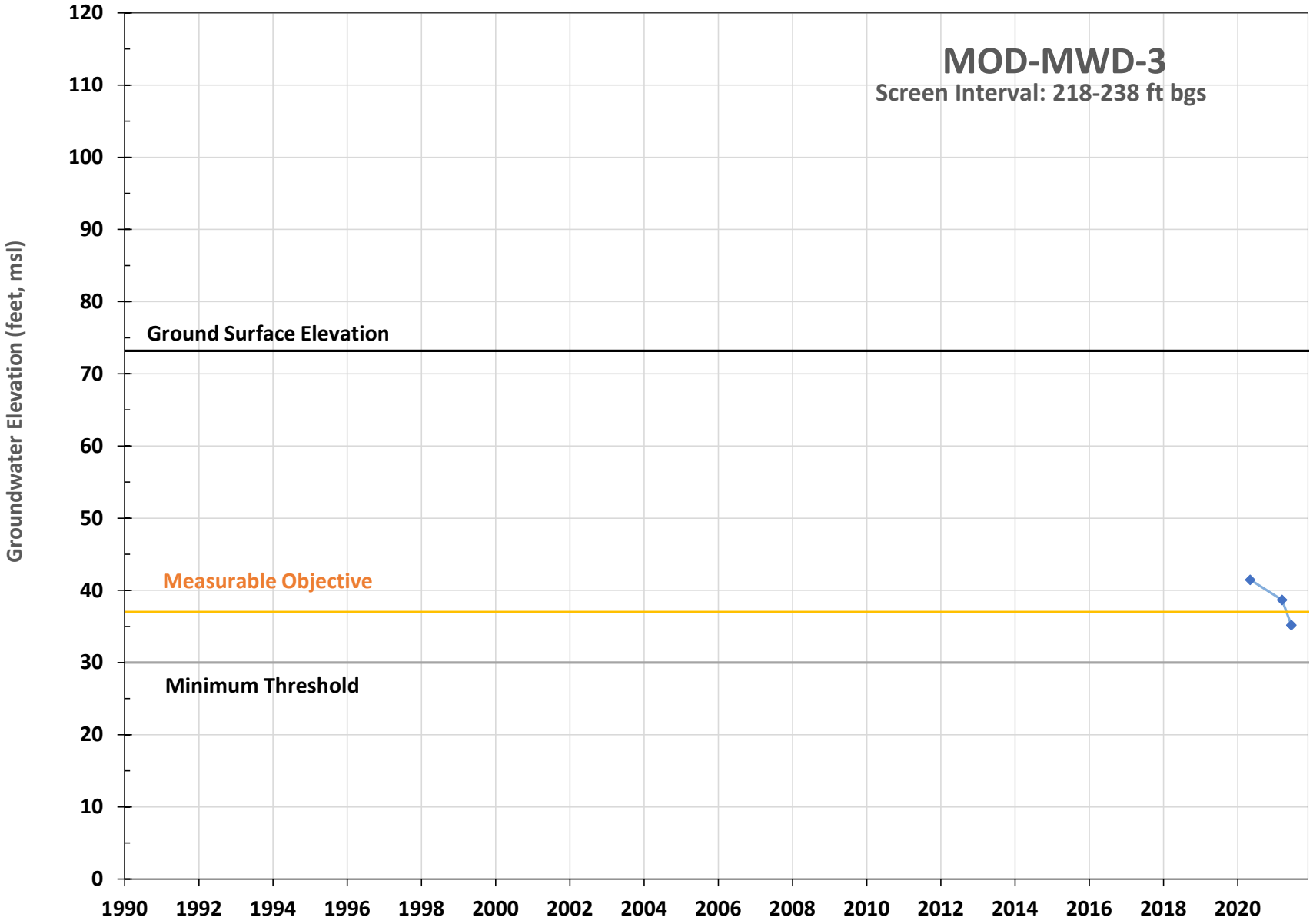

MOD-MWA-2
Screen Interval: 150-170 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

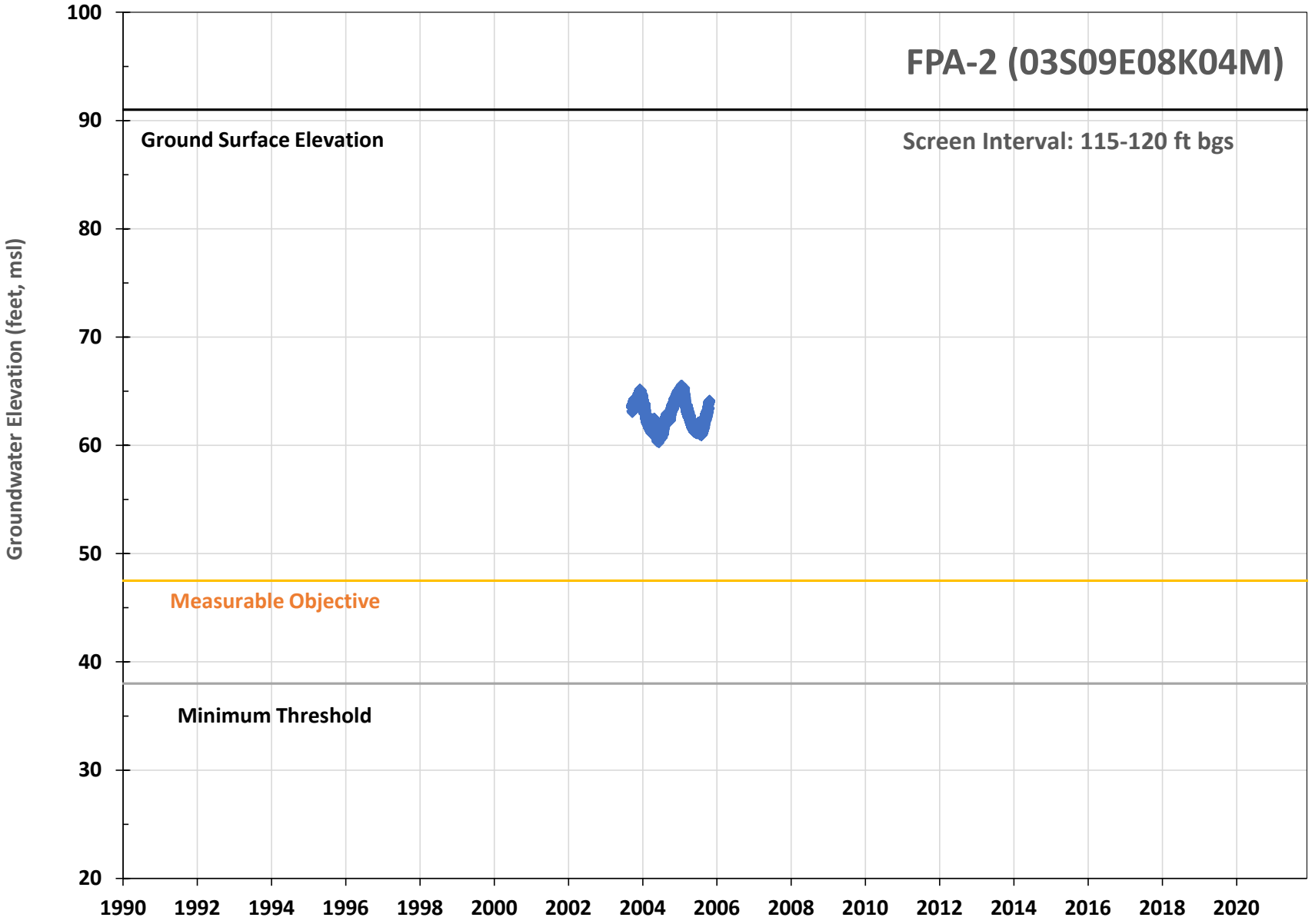

MOD-MWB-1
Screen Interval: 152-172 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

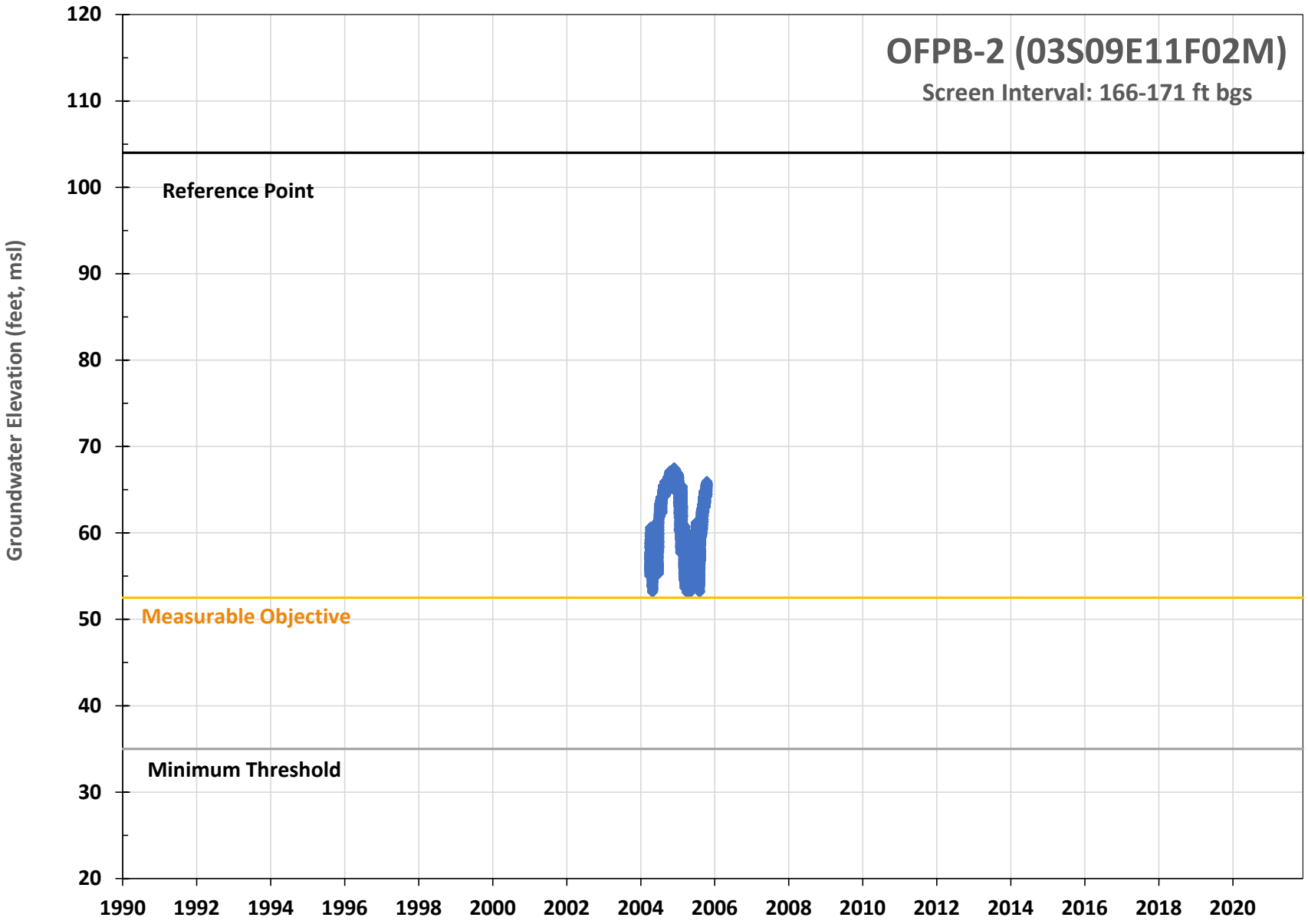

MOD-MWB-2
Screen Interval: 225-245 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

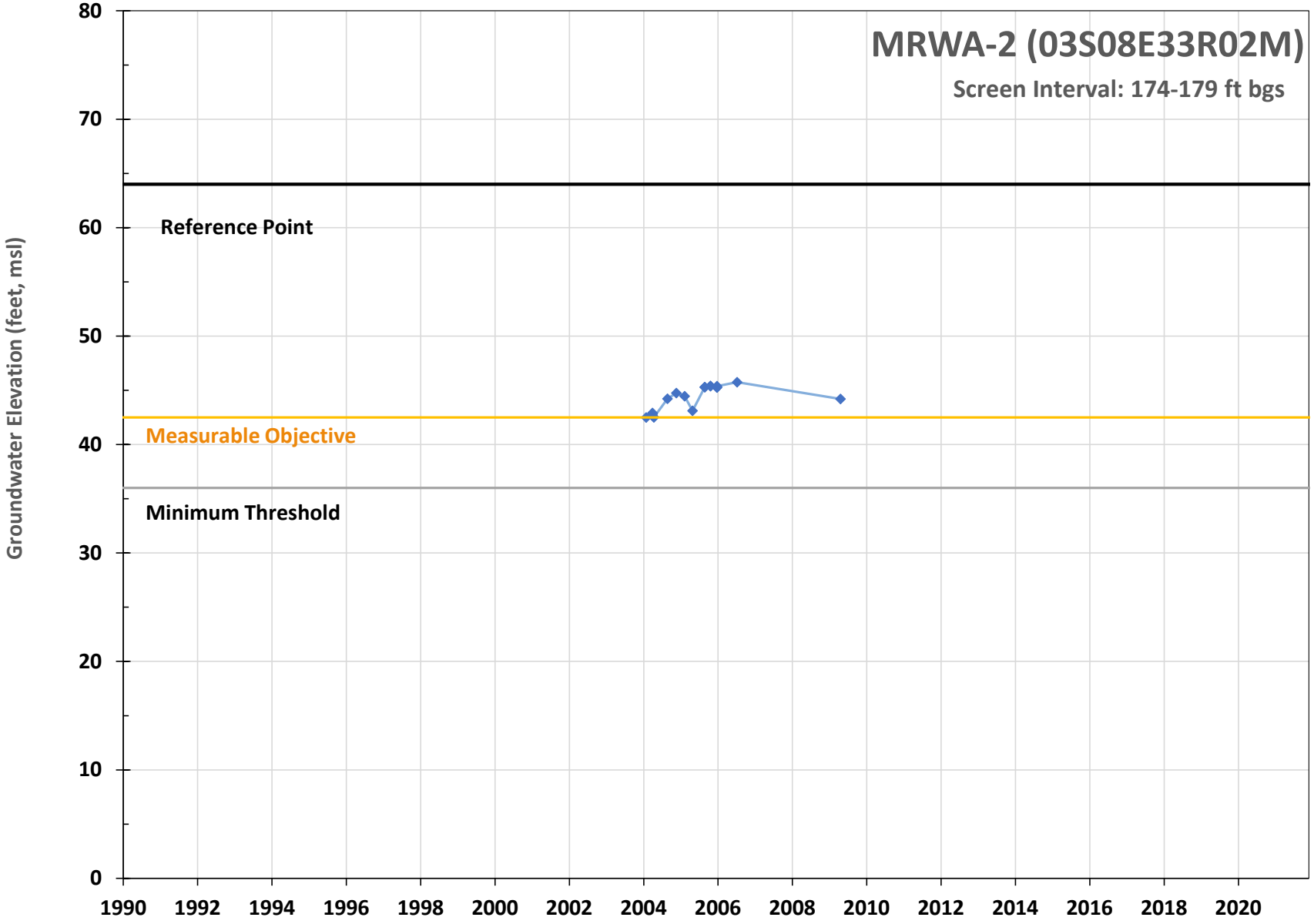

MOD-MWC-3
Screen Interval: 260-280 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

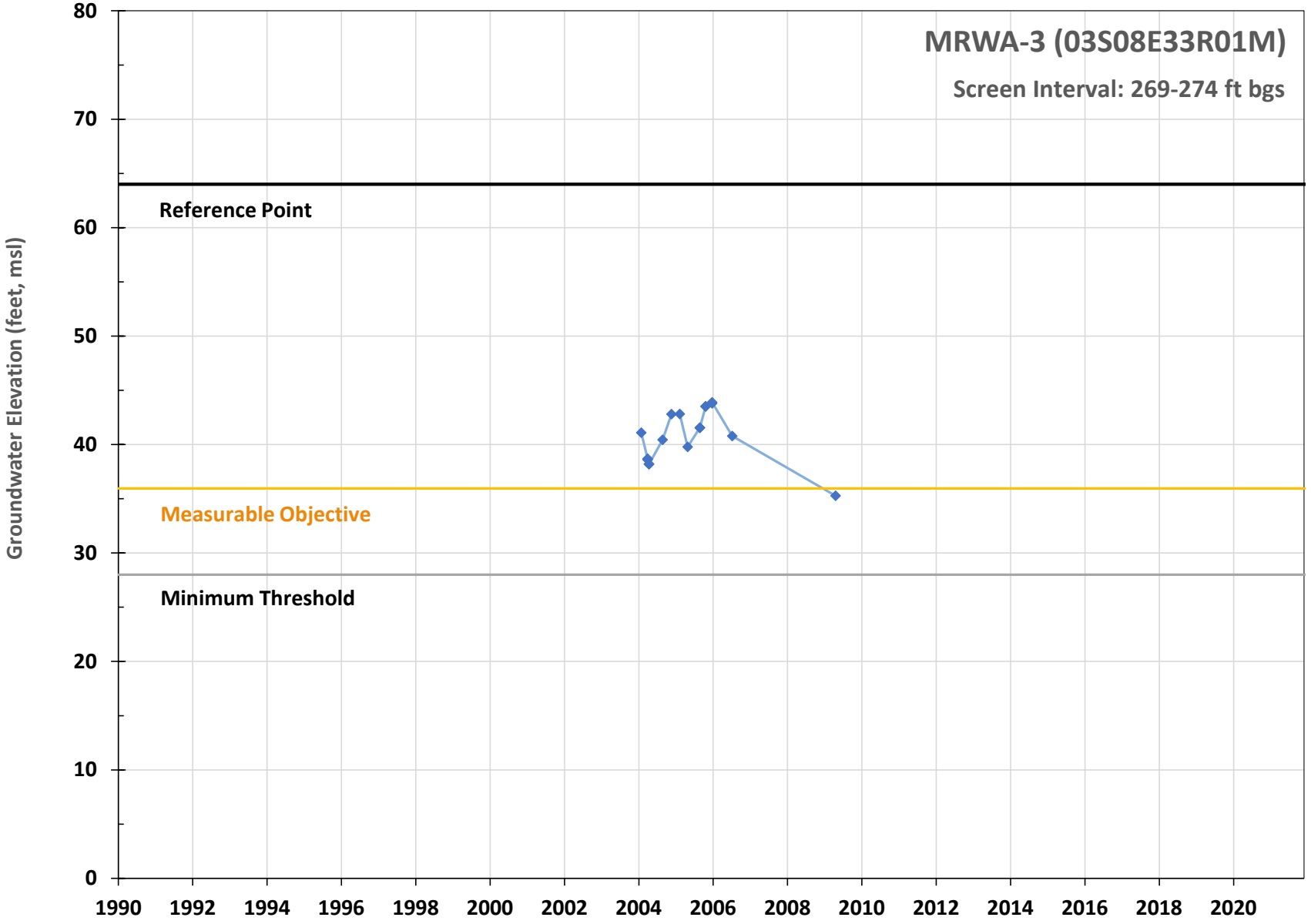

MOD-MWD-1
Screen Interval: 104-124 ft bgs
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

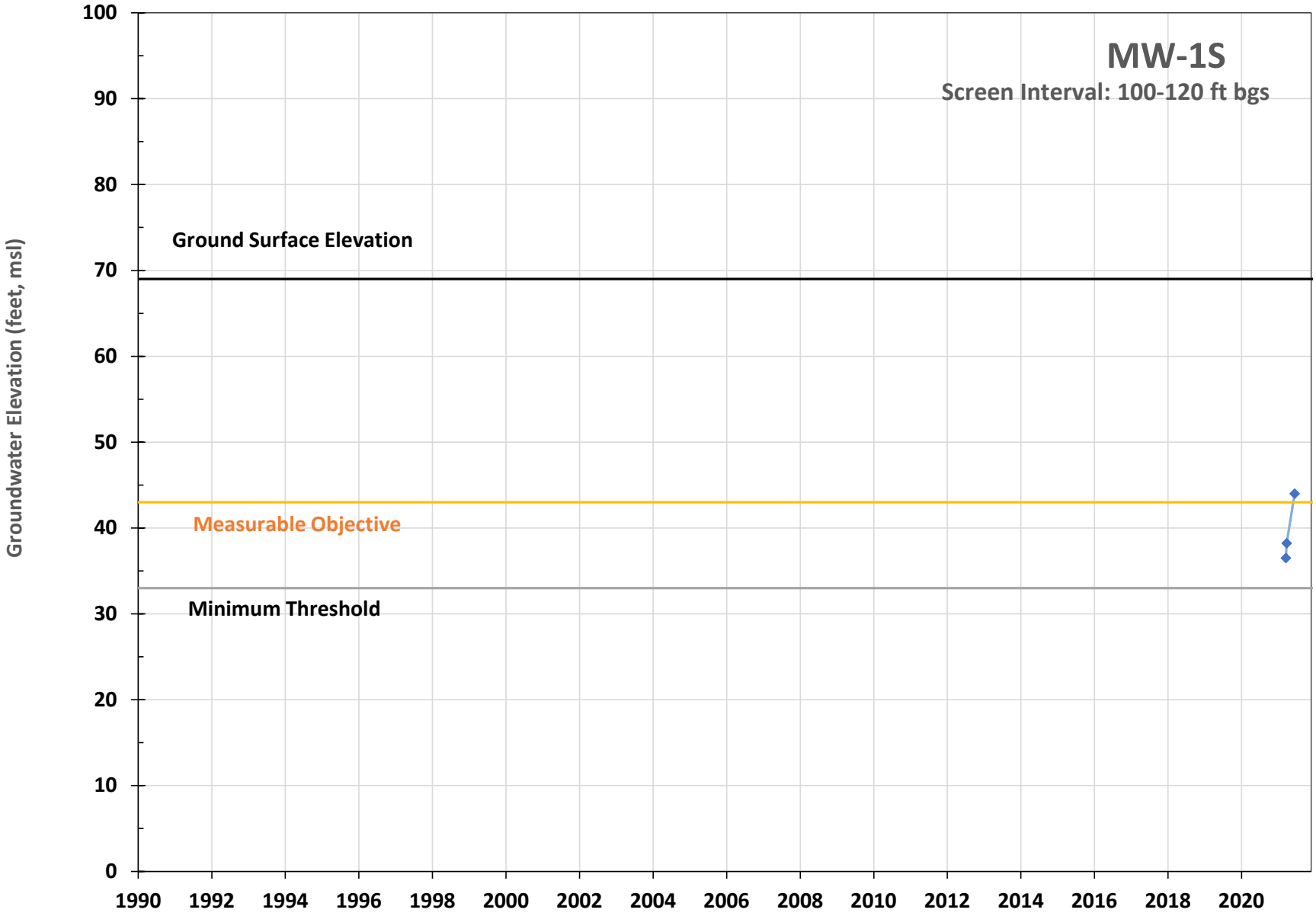

MOD-MWD-3
Screen Interval: 218-238 ft bgs
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

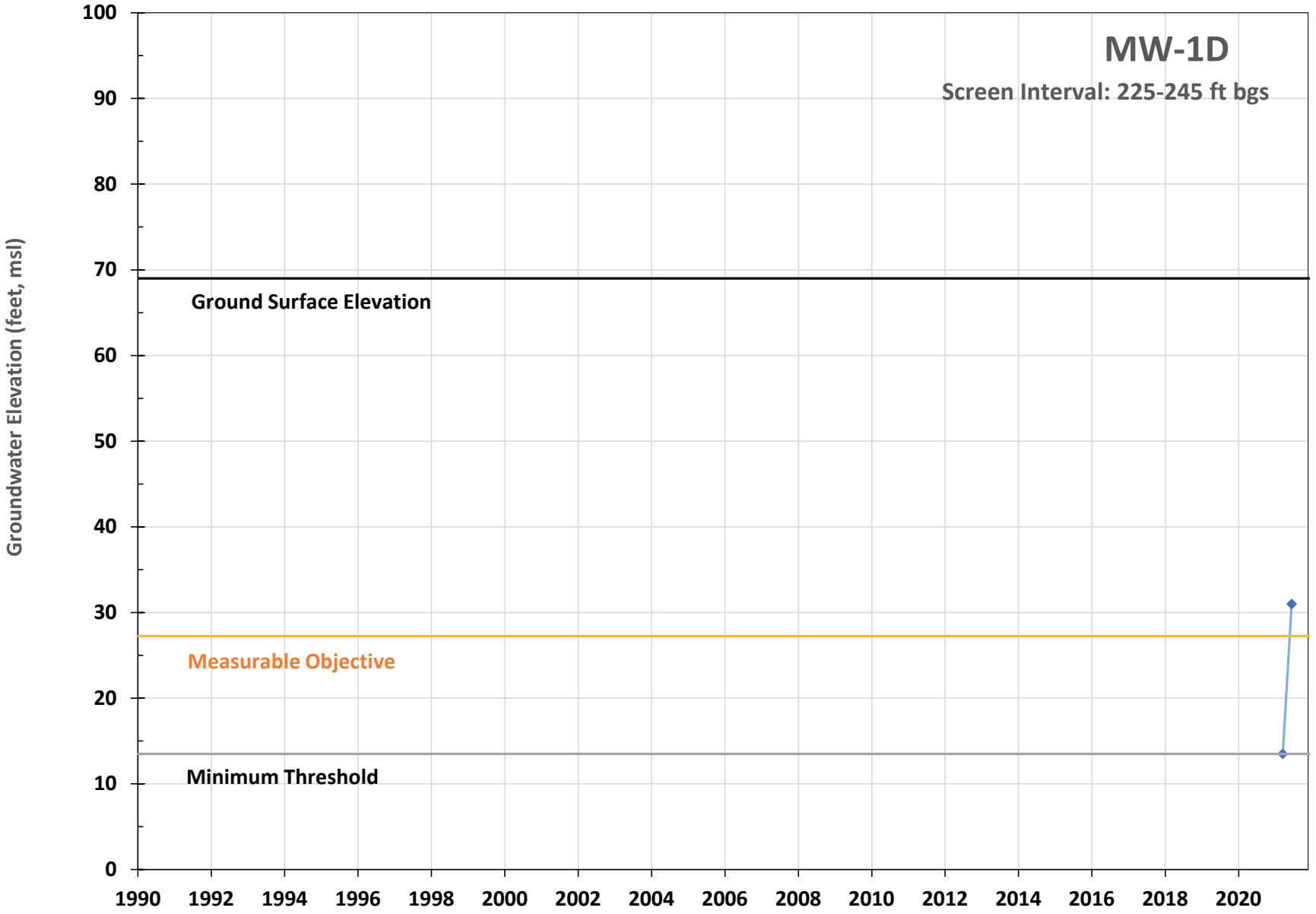

FPA-2 (03S09E08K04M)
Ground Surface Elevation
Screen Interval: 115-120 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

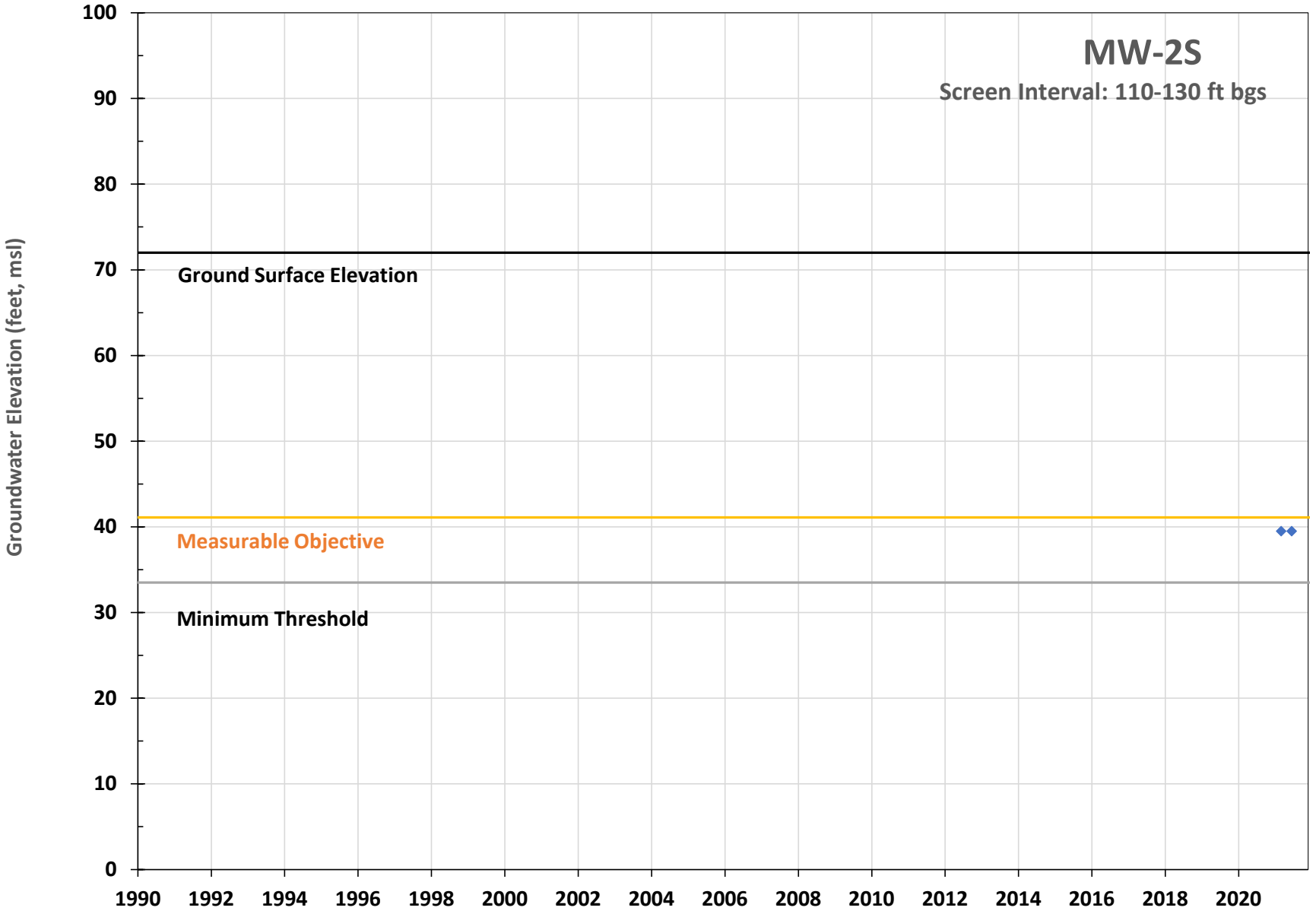

OFPB-2 (03S09E11F02M)
Screen Interval: 166-171 ft bgs
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
Reference Point
Measurable Objective
Minimum Threshold
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

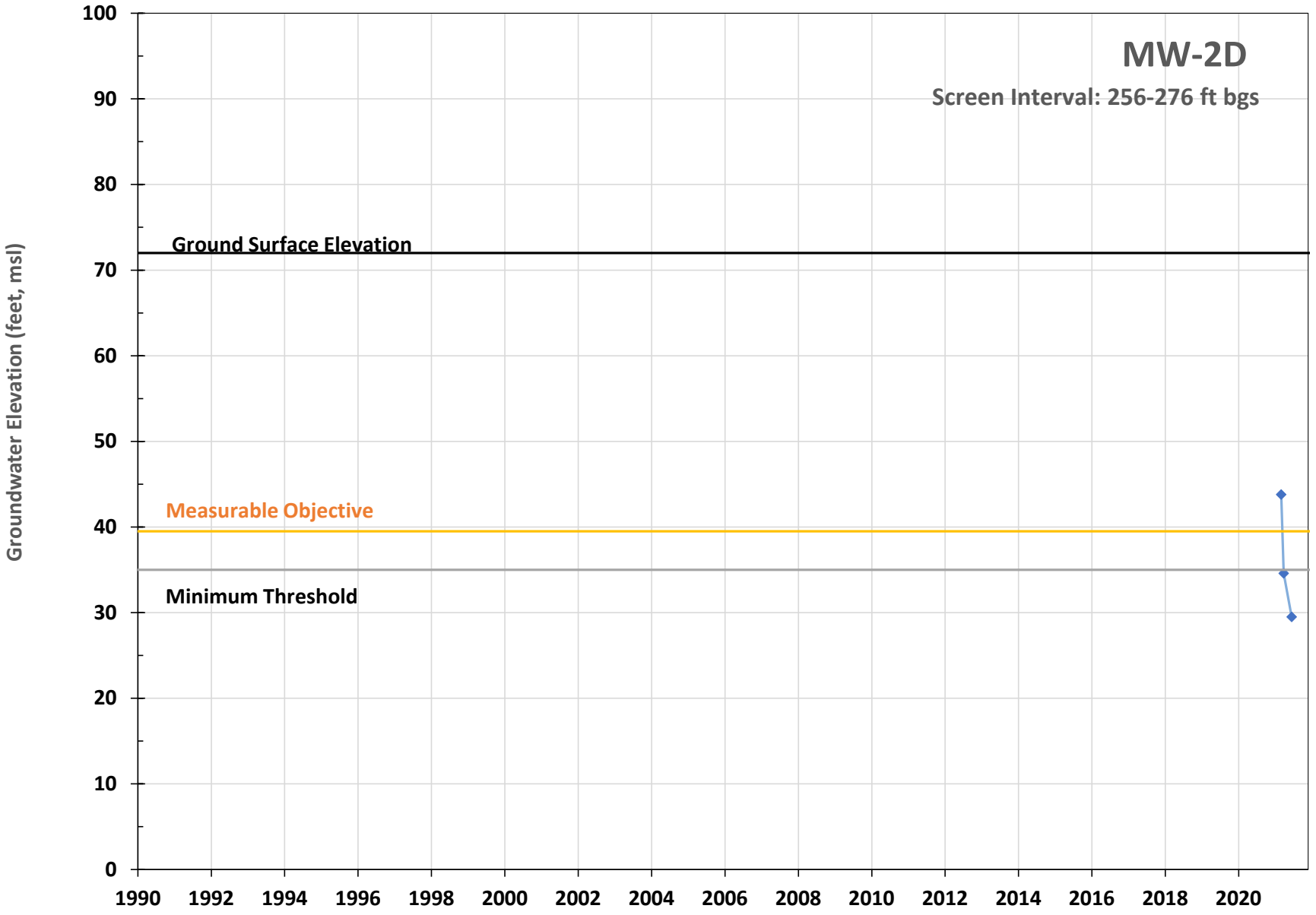

MRWA-2 (03S08E33R02M)
Screen Interval: 174-179 ft bgs
Groundwater Elevation (feet, msl)
Reference Point
Measurable Objective
Minimum Threshold
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


MRWA-3 (03S08E33R01M)
Screen Interval: 269-274 ft bgs
Groundwater Elevation (feet, msl)
Reference Point
Measurable Objective
Minimum Threshold
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


MW-1S
Screen Interval: 100-120 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


MW-1D
Screen Interval: 225-245 ft bgs
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


MW-2S
Screen Interval: 110-130 ft bgs
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


MW-2D
Screen Interval: 256-276 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
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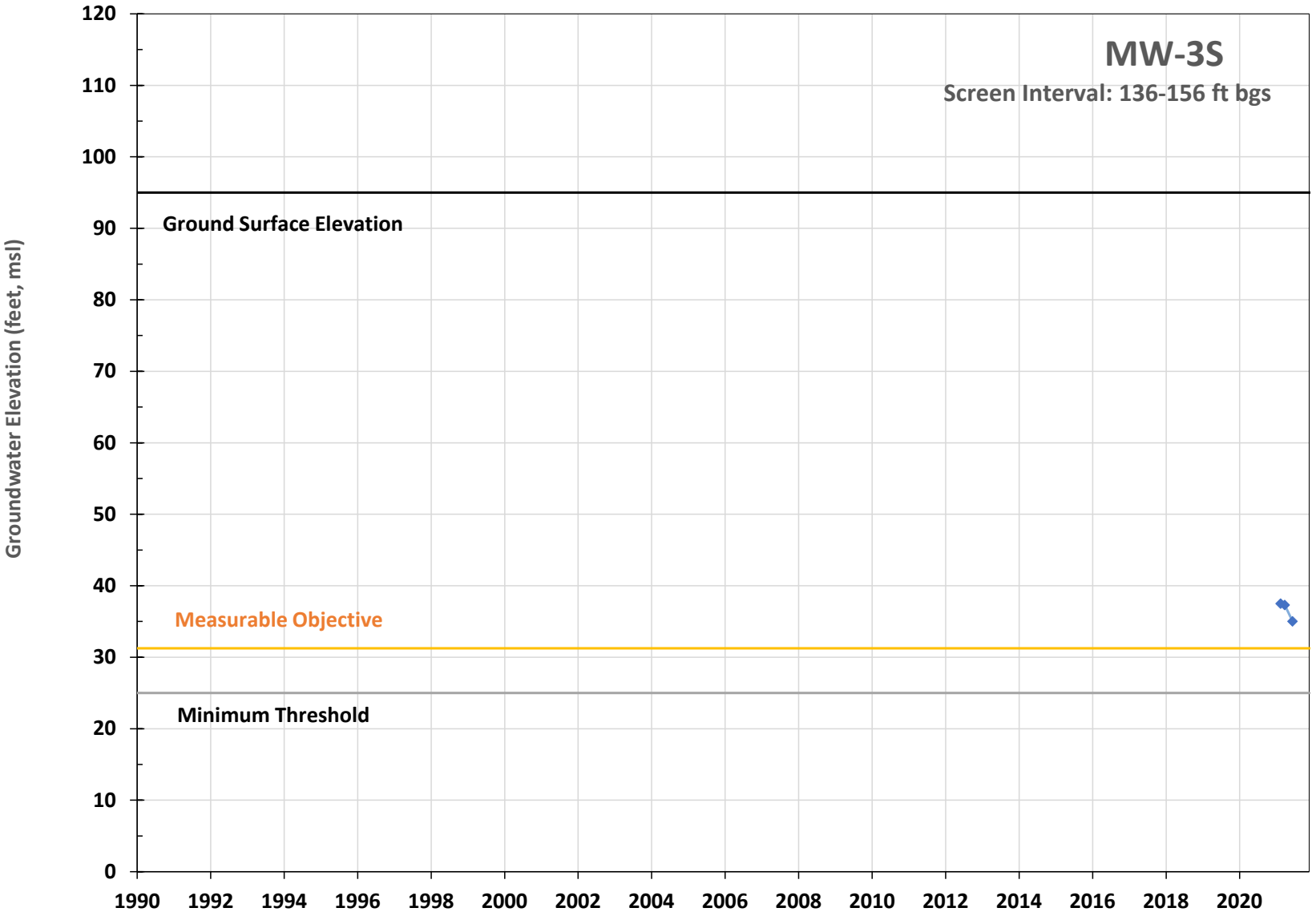
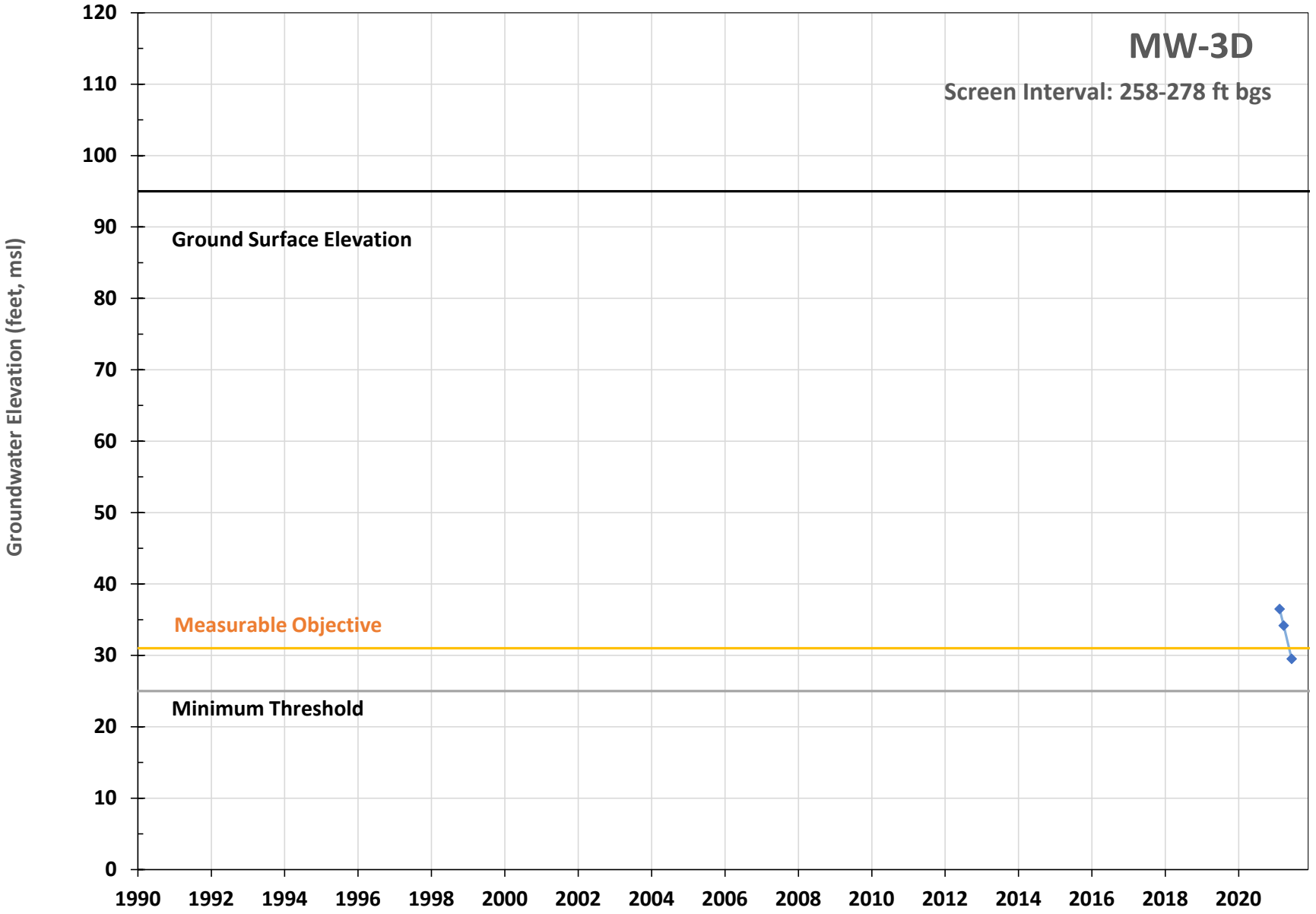
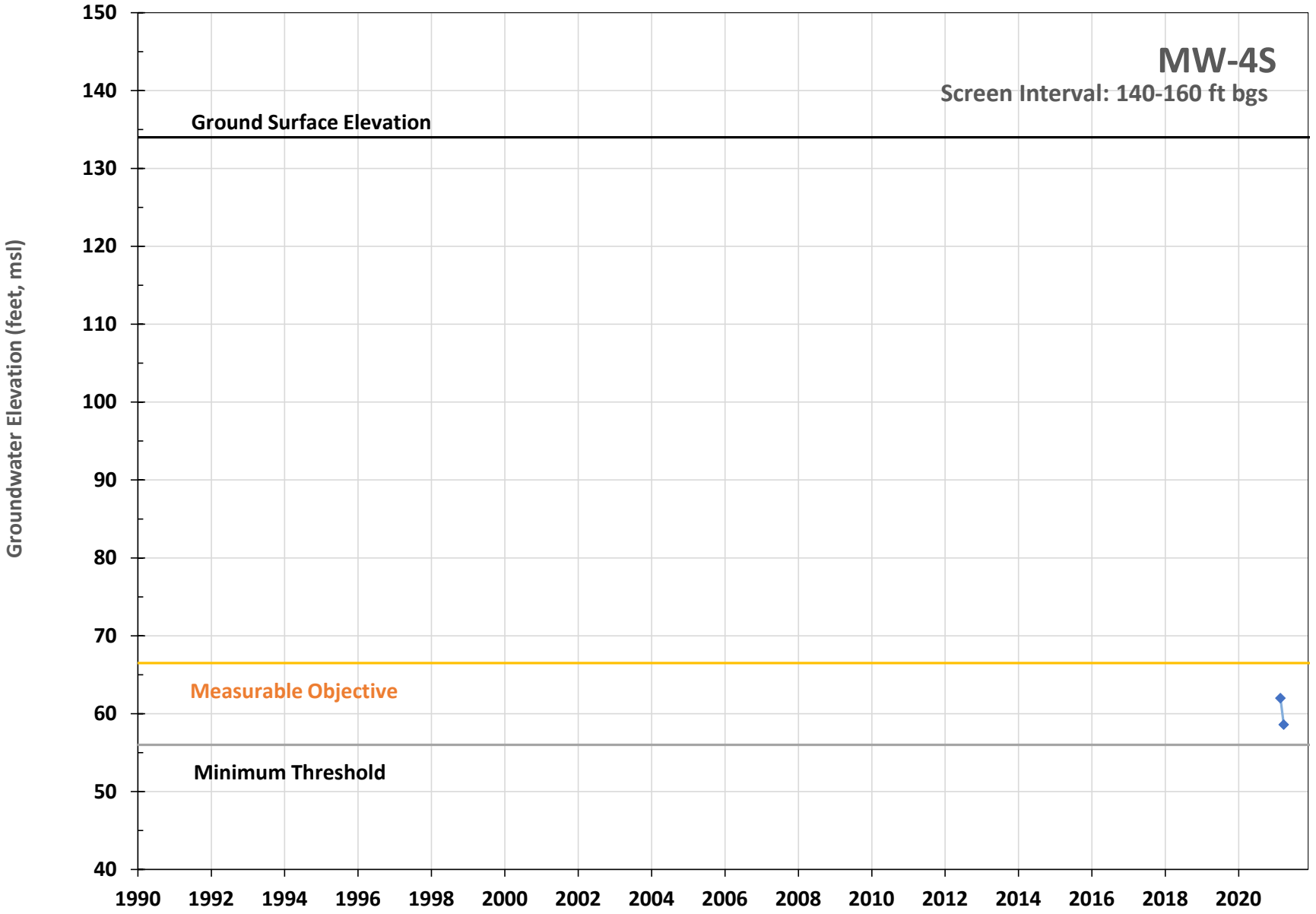
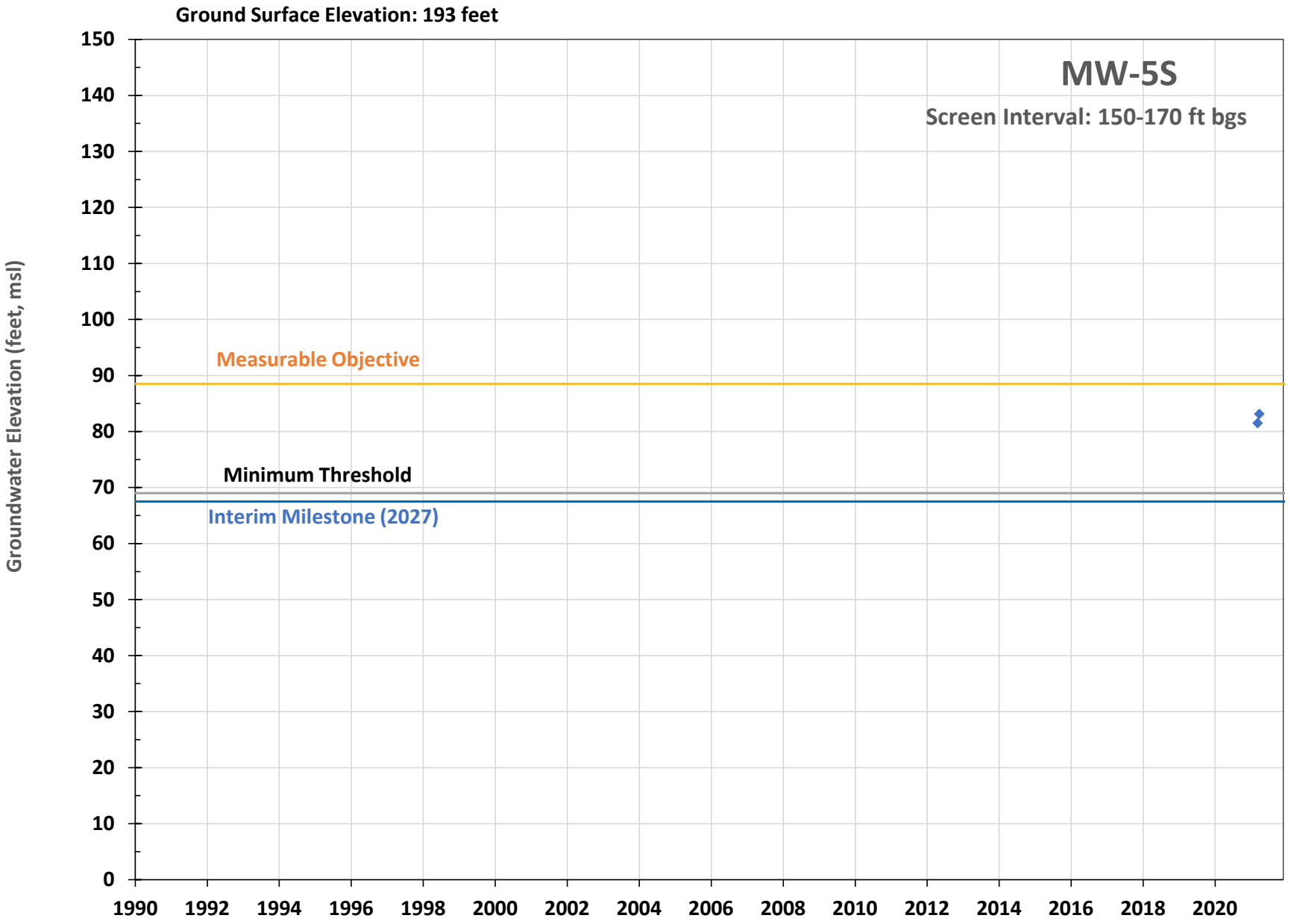
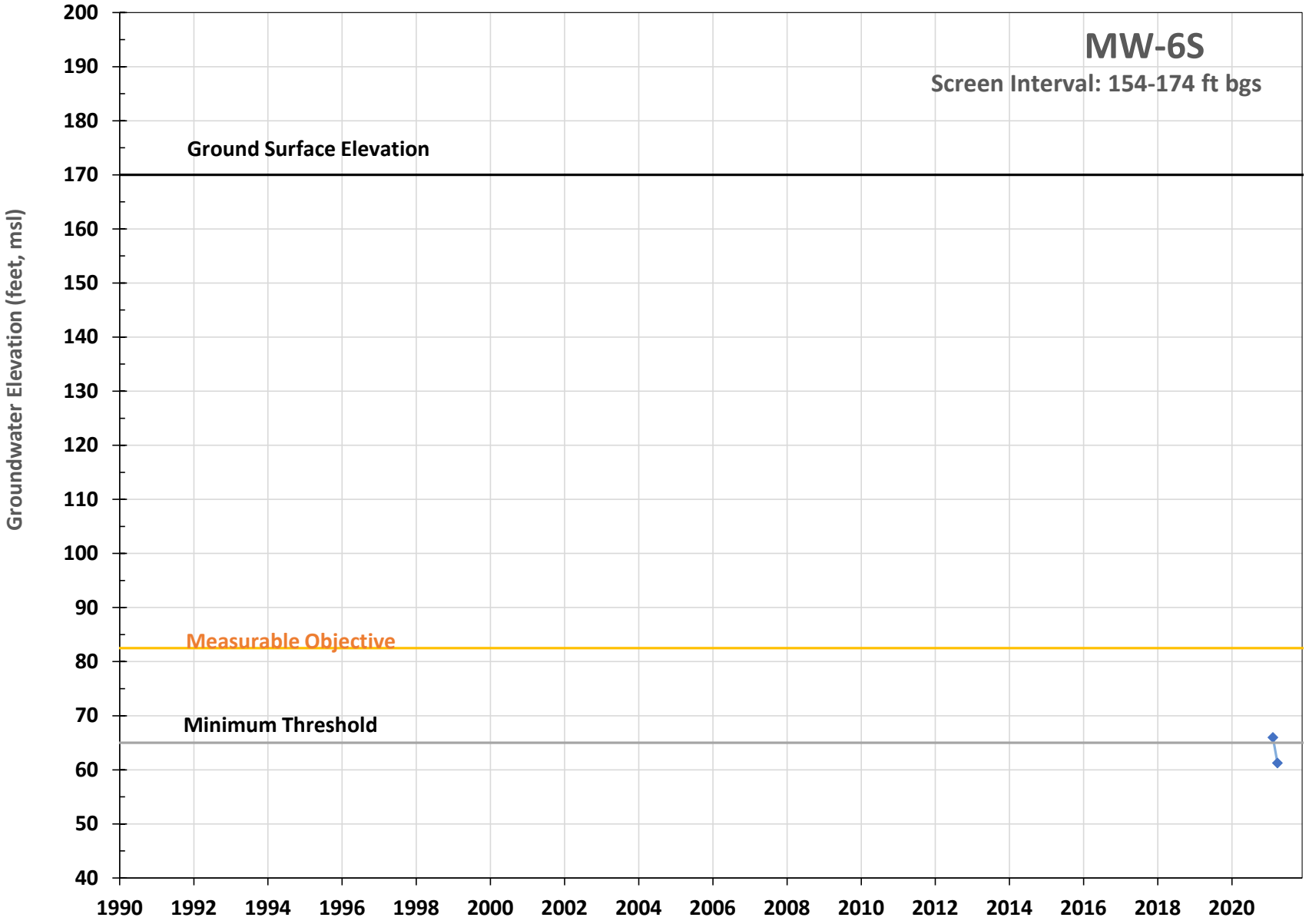
2006
2008
2010
2012
2014
2016
2018
2020

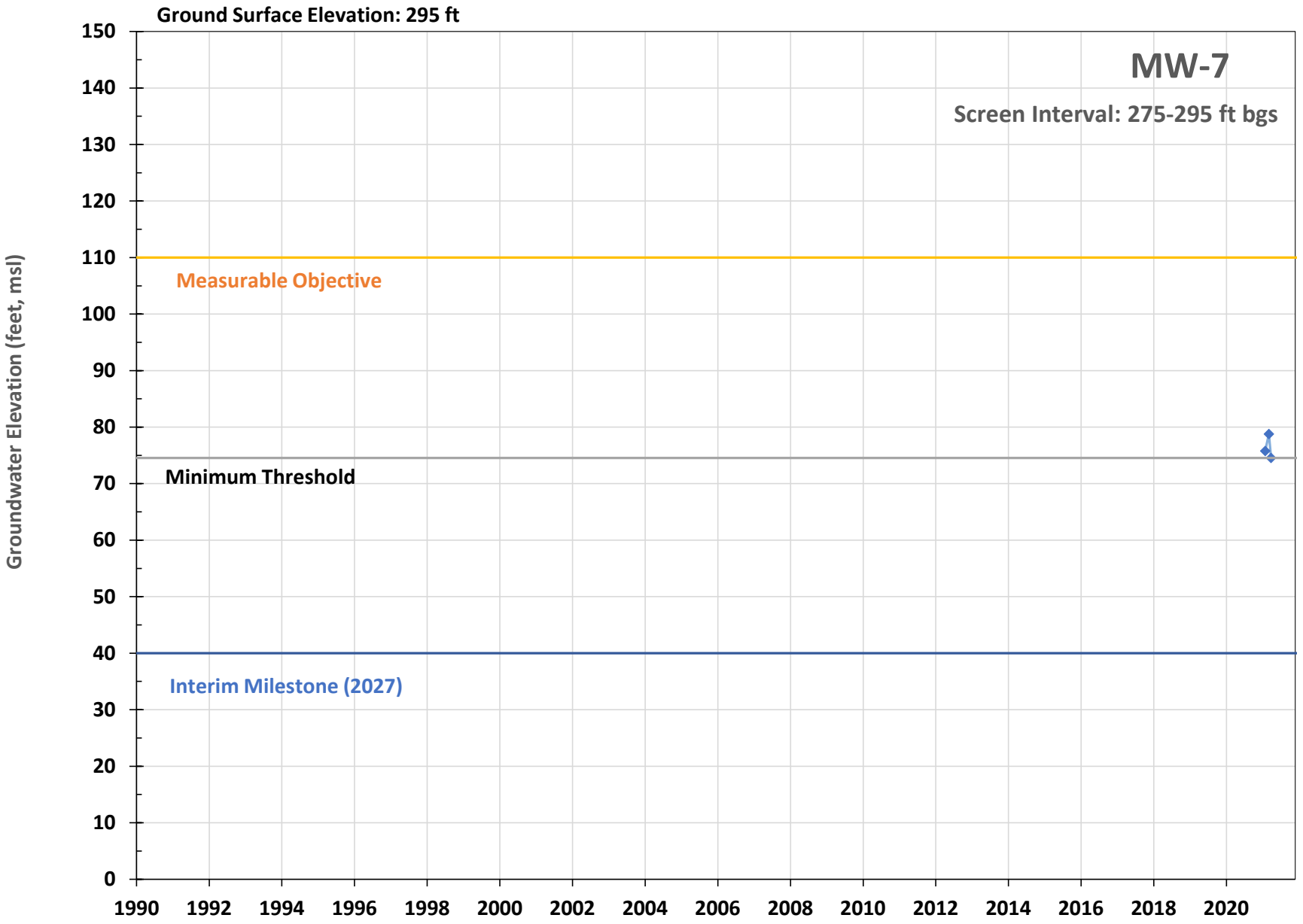

MW-3S
Screen Interval: 136-156 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

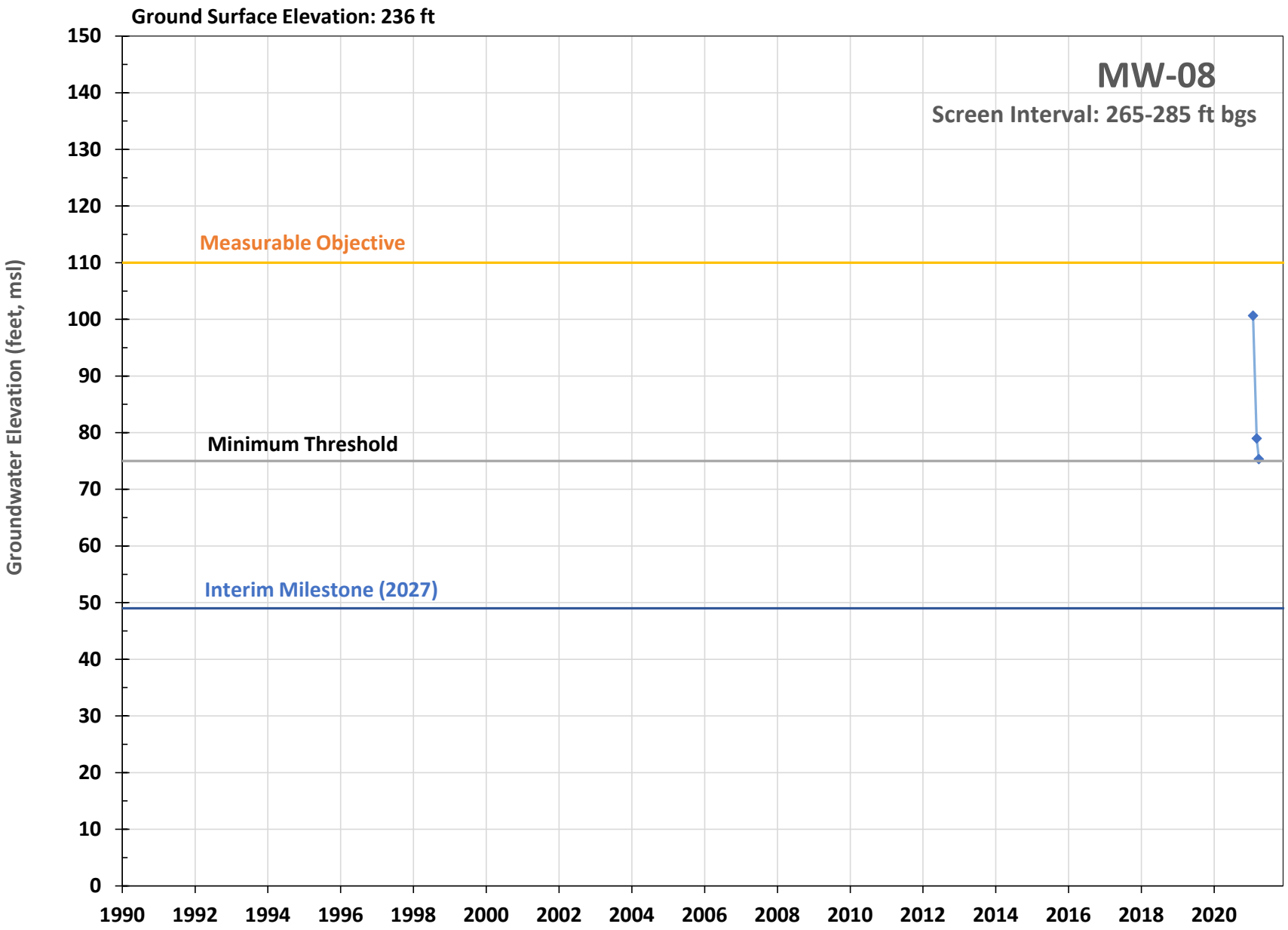

MW-3D
Screen Interval: 258-278 ft bgs
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

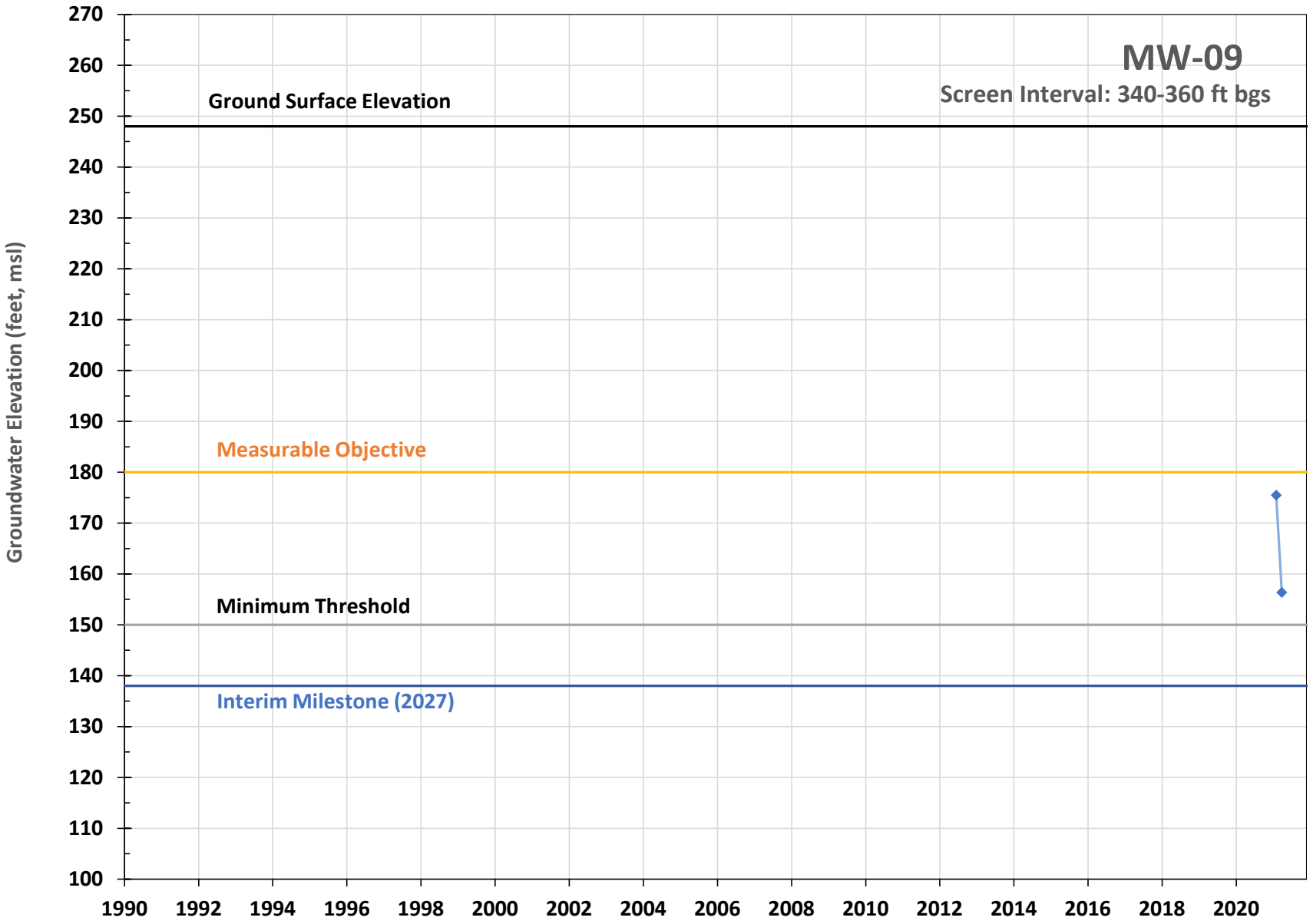

MW-4S
Screen Interval: 140-160 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

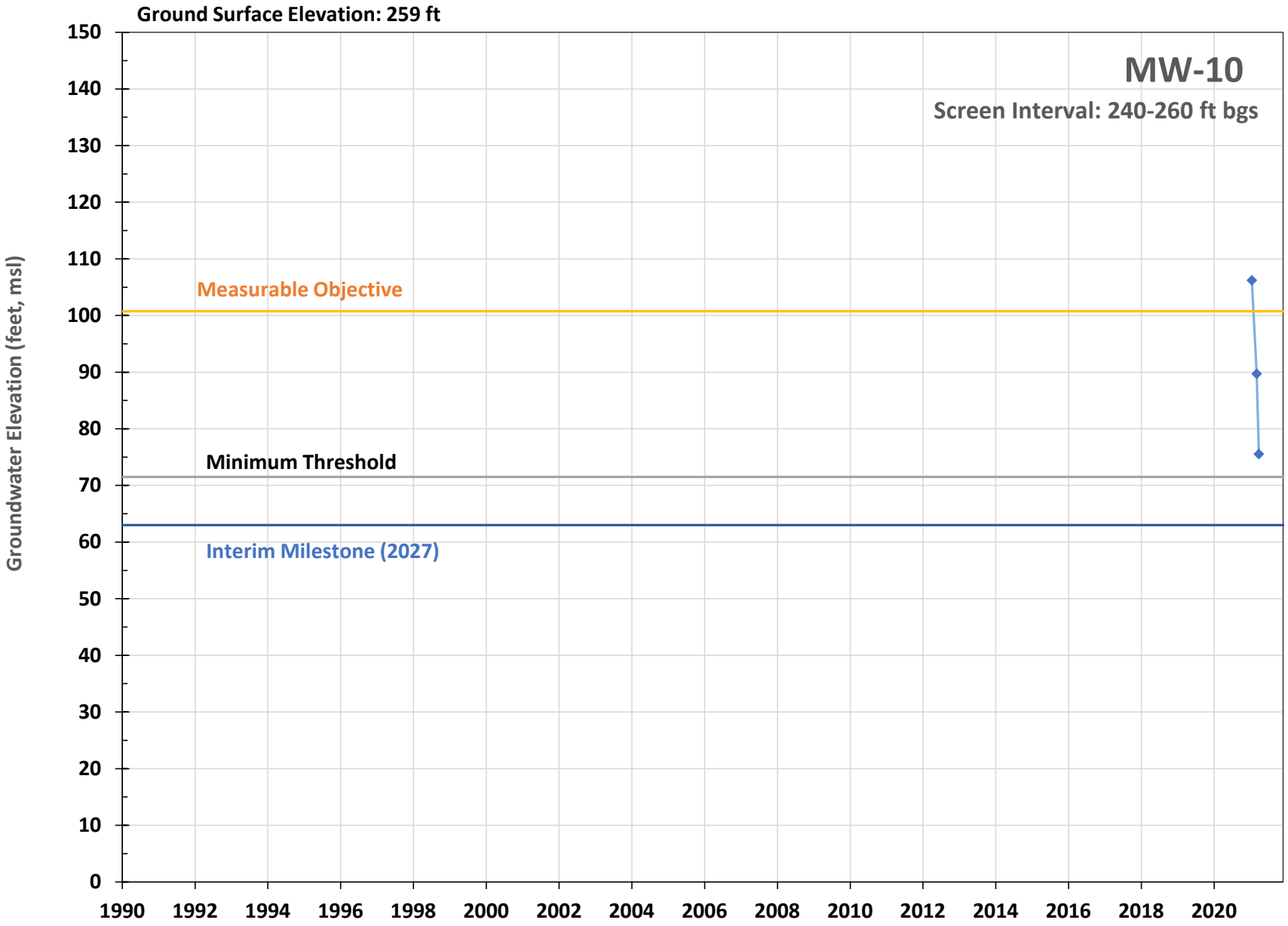

Ground Surface Elevation: 193 feet
MW-5S
Screen Interval: 150-170 ft bgs
Groundwater Elevation (feet, msl)
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

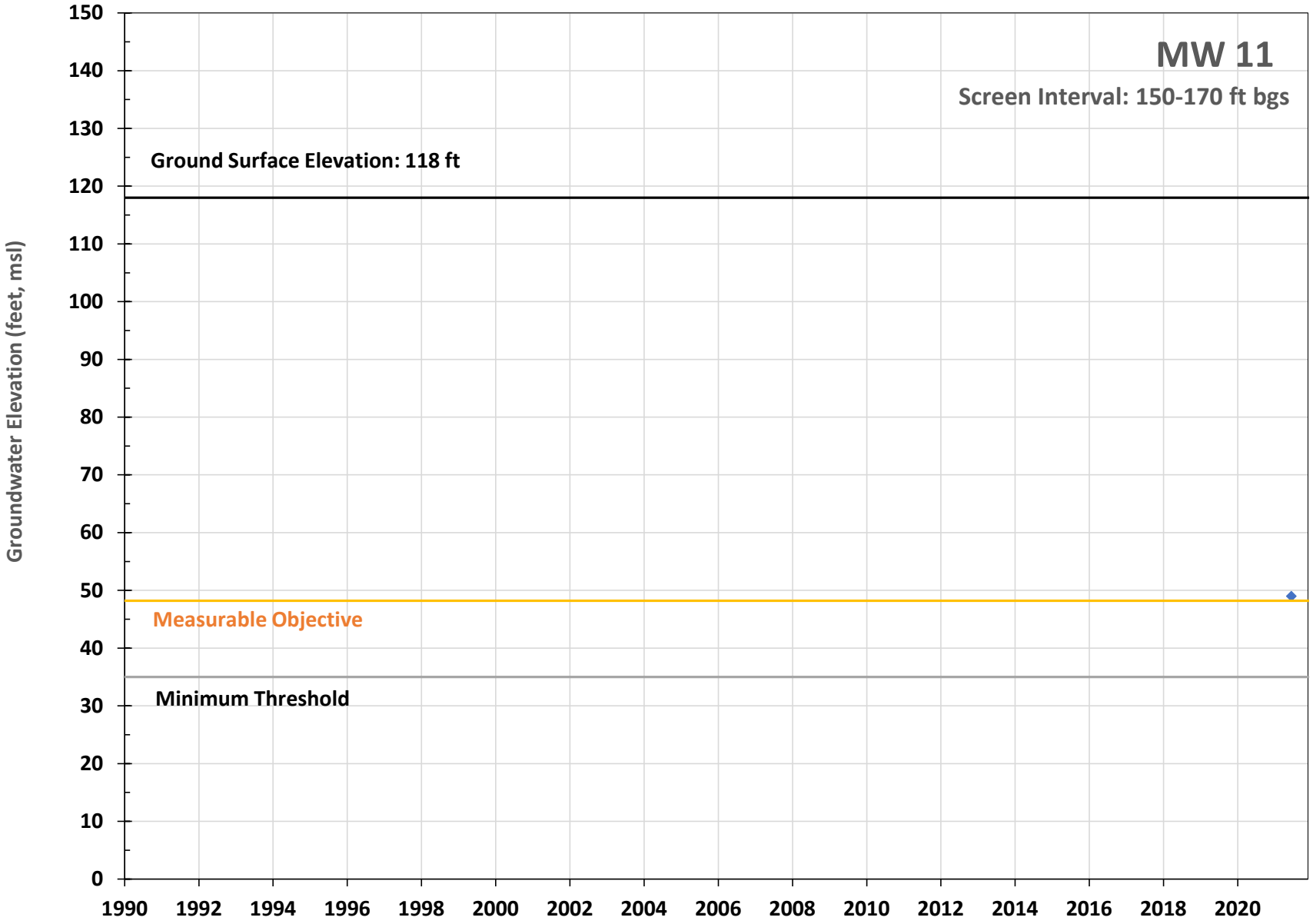

MW-6S
Screen Interval: 154-174 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


Ground Surface Elevation: 295 ft
MW-7
Screen Interval: 275-295 ft bgs
Groundwater Elevation (feet, msl)
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


Ground Surface Elevation: 236 ft
MW-08
Screen Interval: 265-285 ft bgs
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

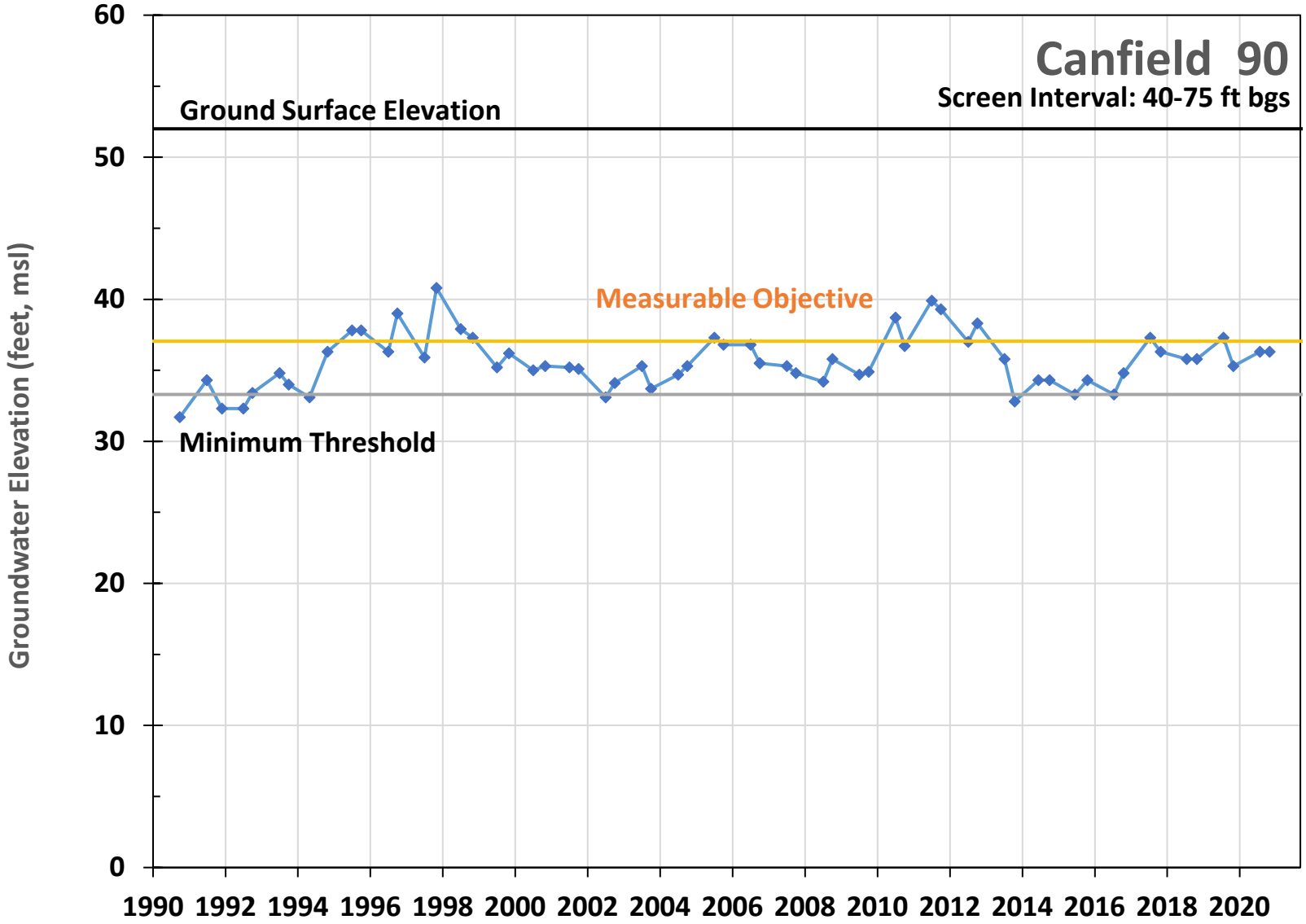

MW-09
Screen Interval: 340-360 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

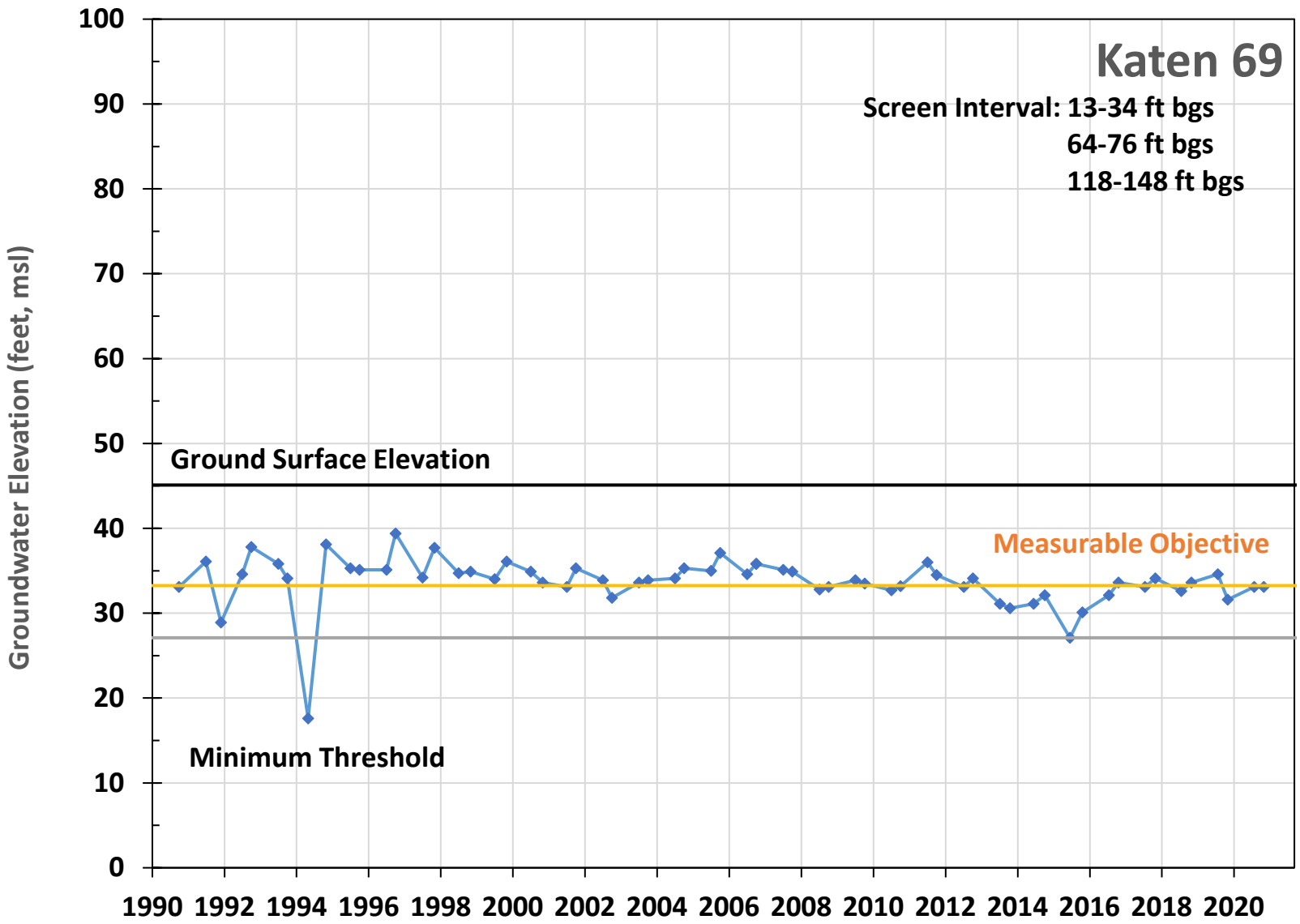

Ground Surface Elevation: 259 ft
MW-10
Screen Interval: 240-260 ft bgs
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

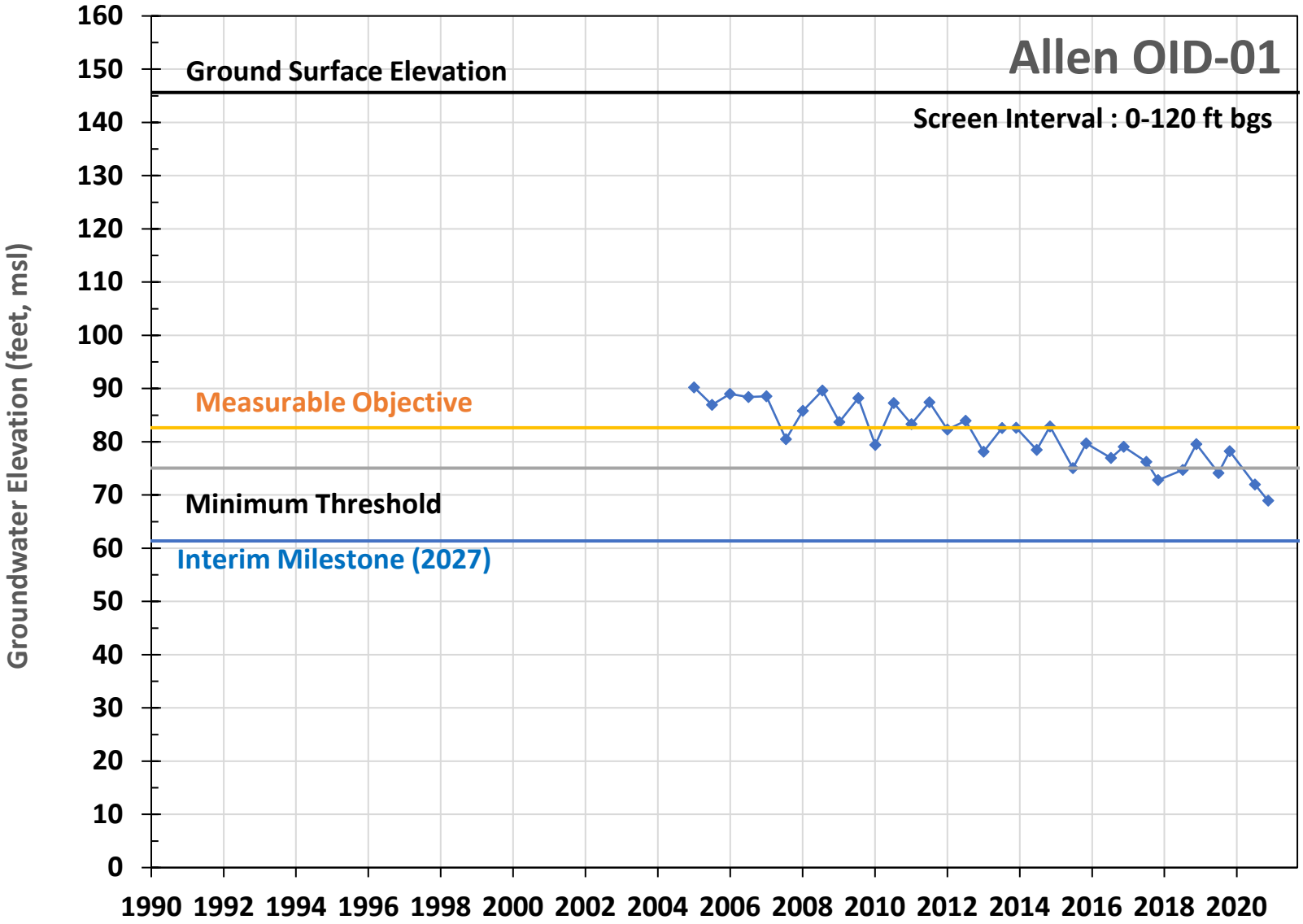

MW 11
Screen Interval: 150-170 ft bgs
Ground Surface Elevation: 118 ft
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

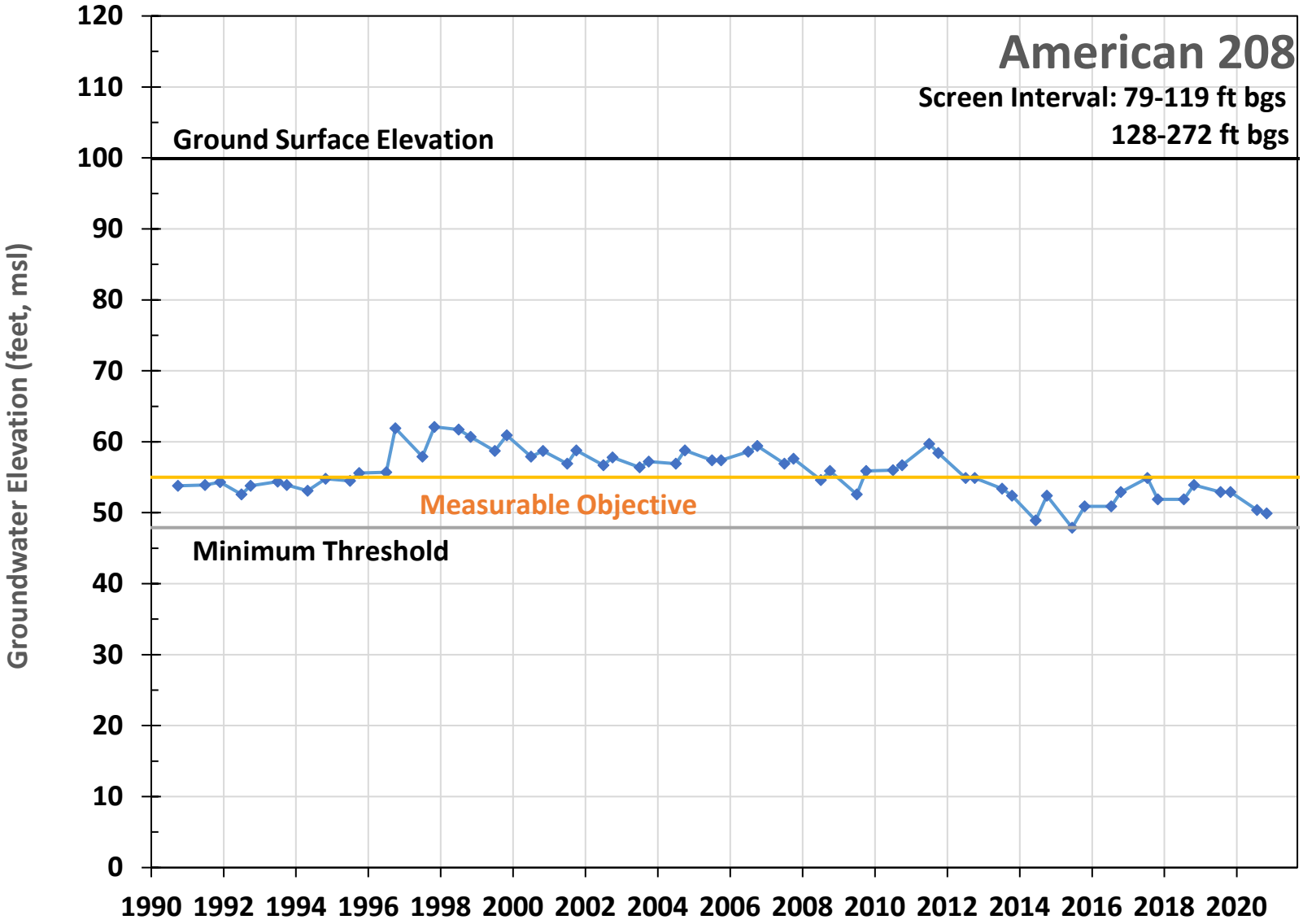
Hydrographs for Wells in the Monitoring Network for Depletions of Interconnected Surface Water

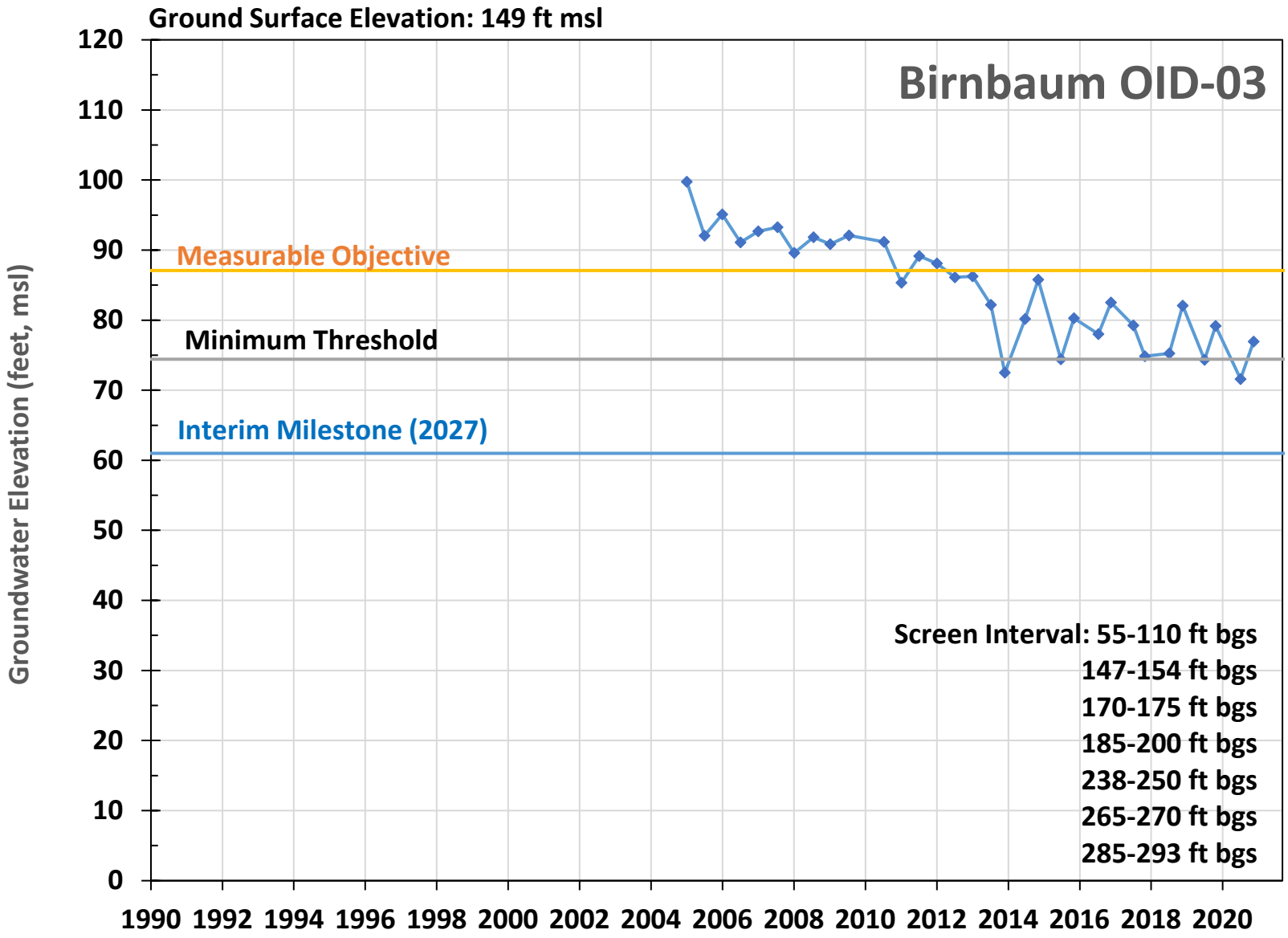
(in the order as they appear on Table 7-2)

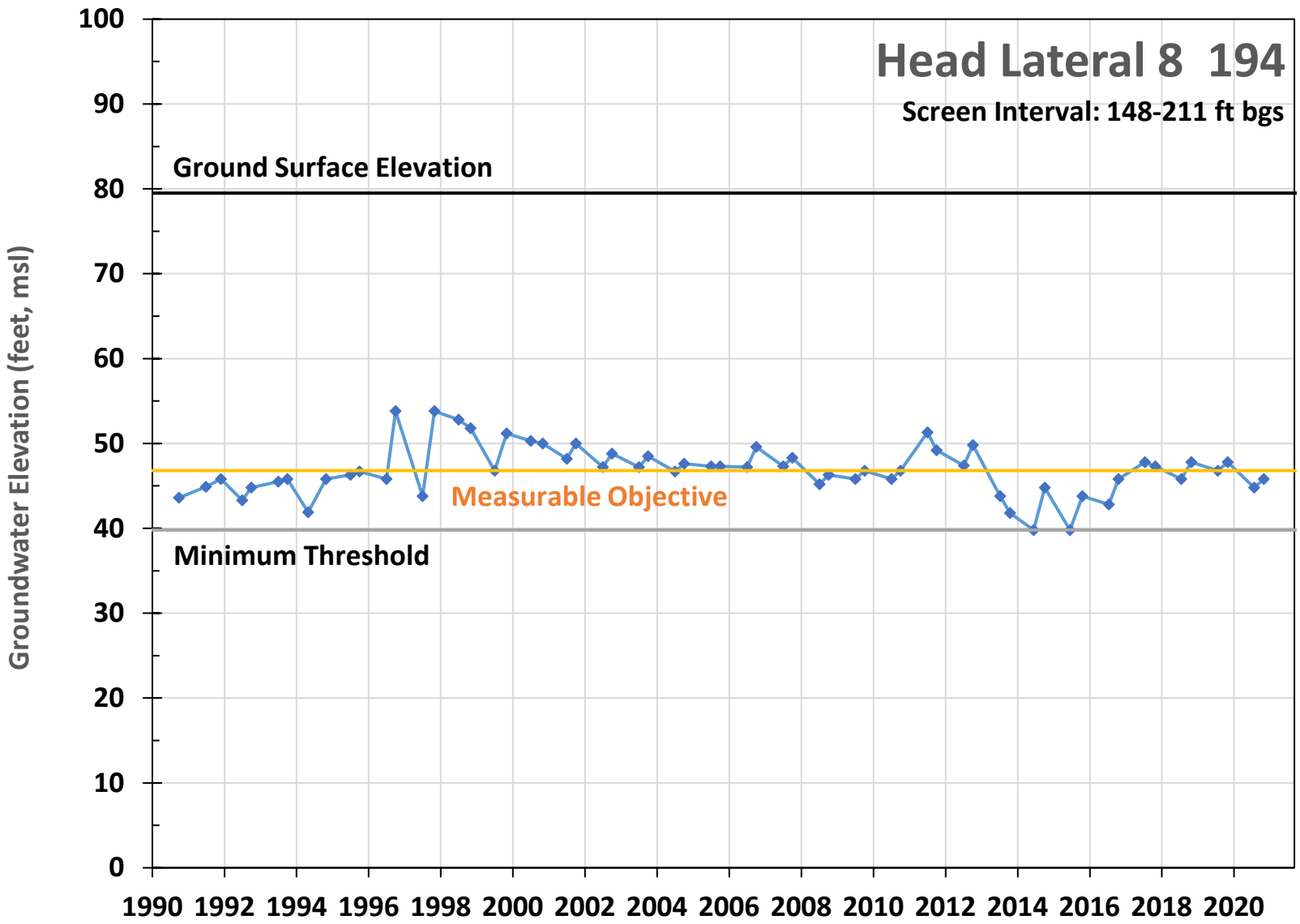

Canfield 90
Screen Interval: 40-75 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

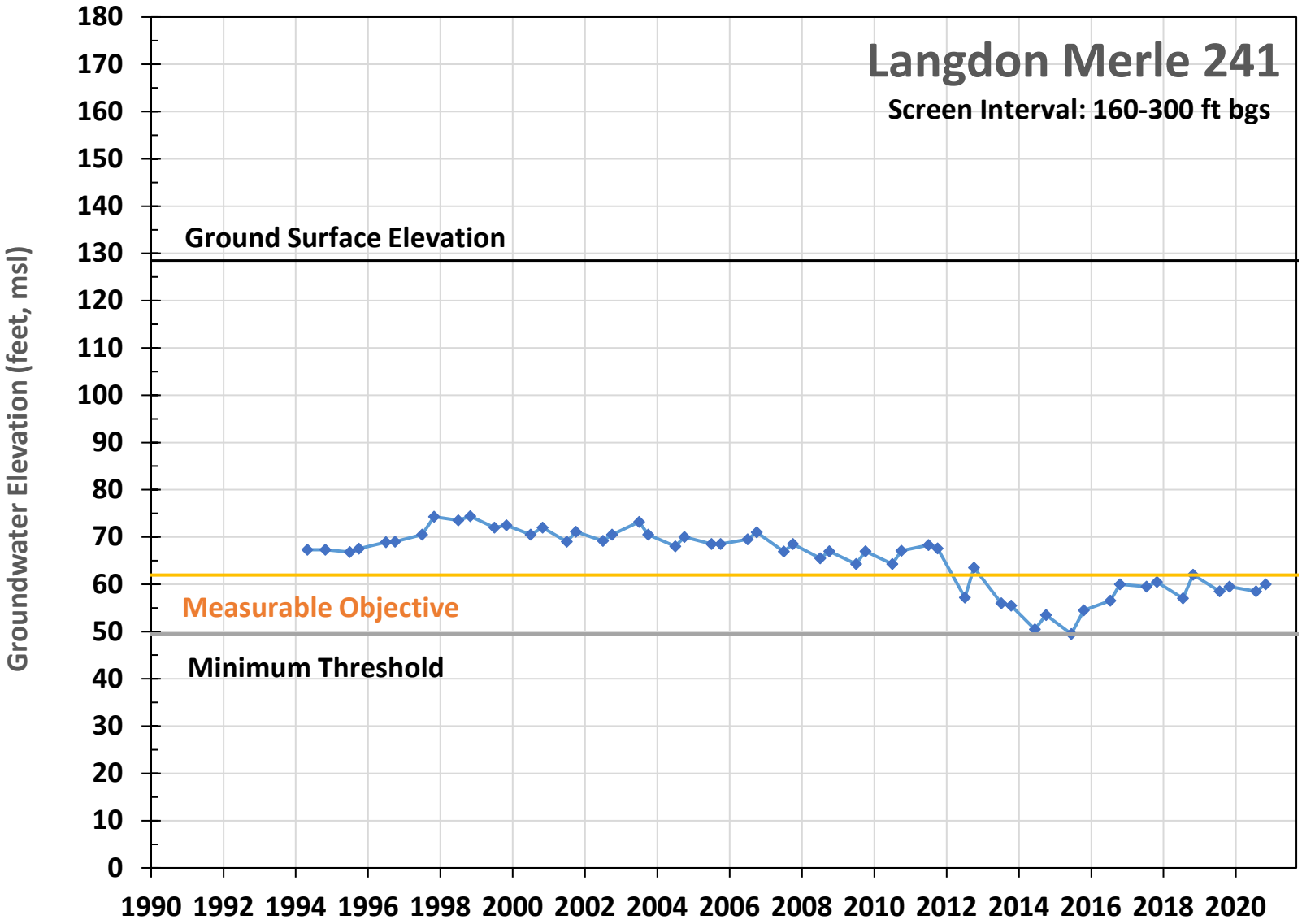

Katen 69
Screen Interval: 13-34 ft bgs
64-76 ft bgs
118-148 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

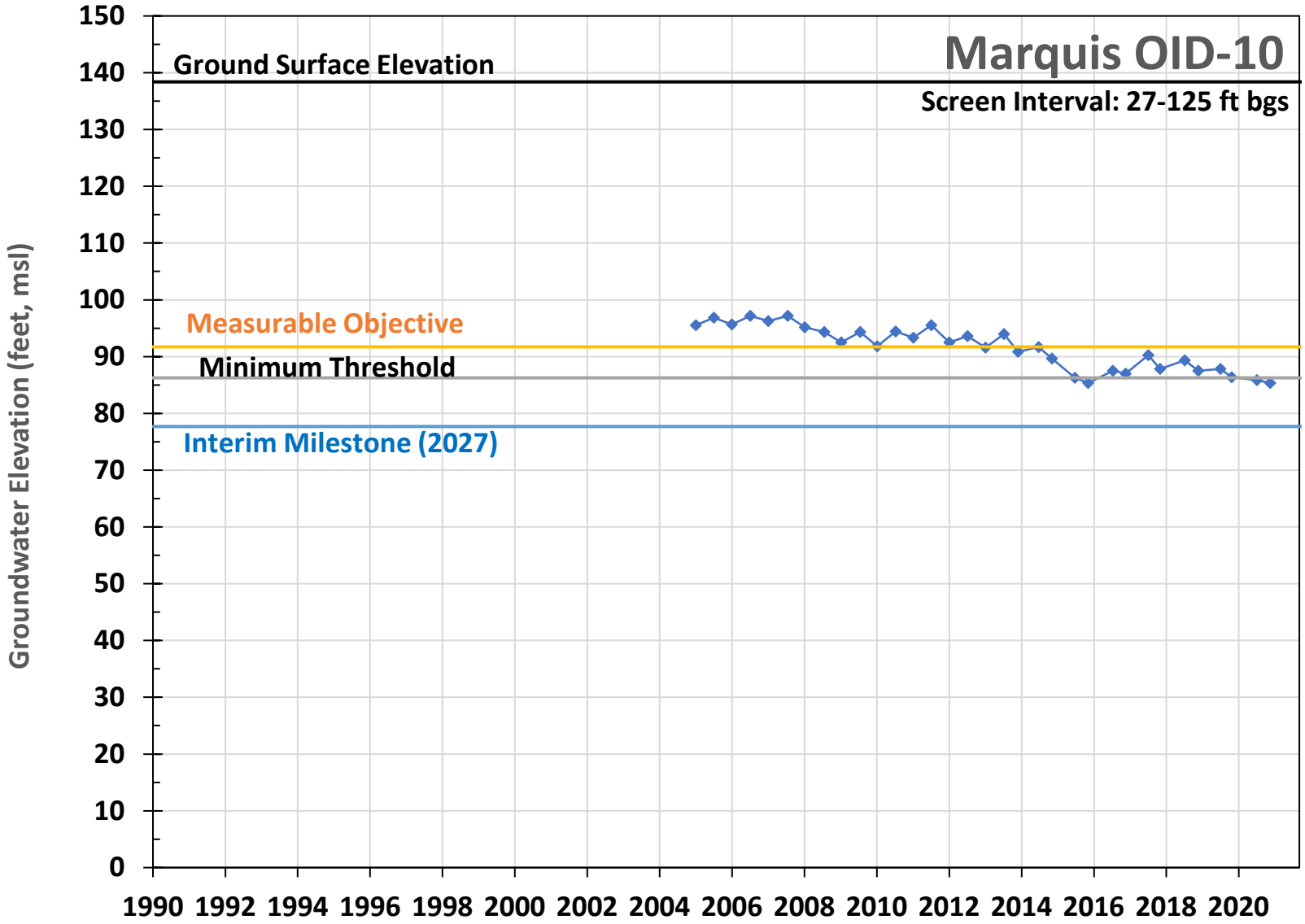

Allen OID-01
Screen Interval : 0-120 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

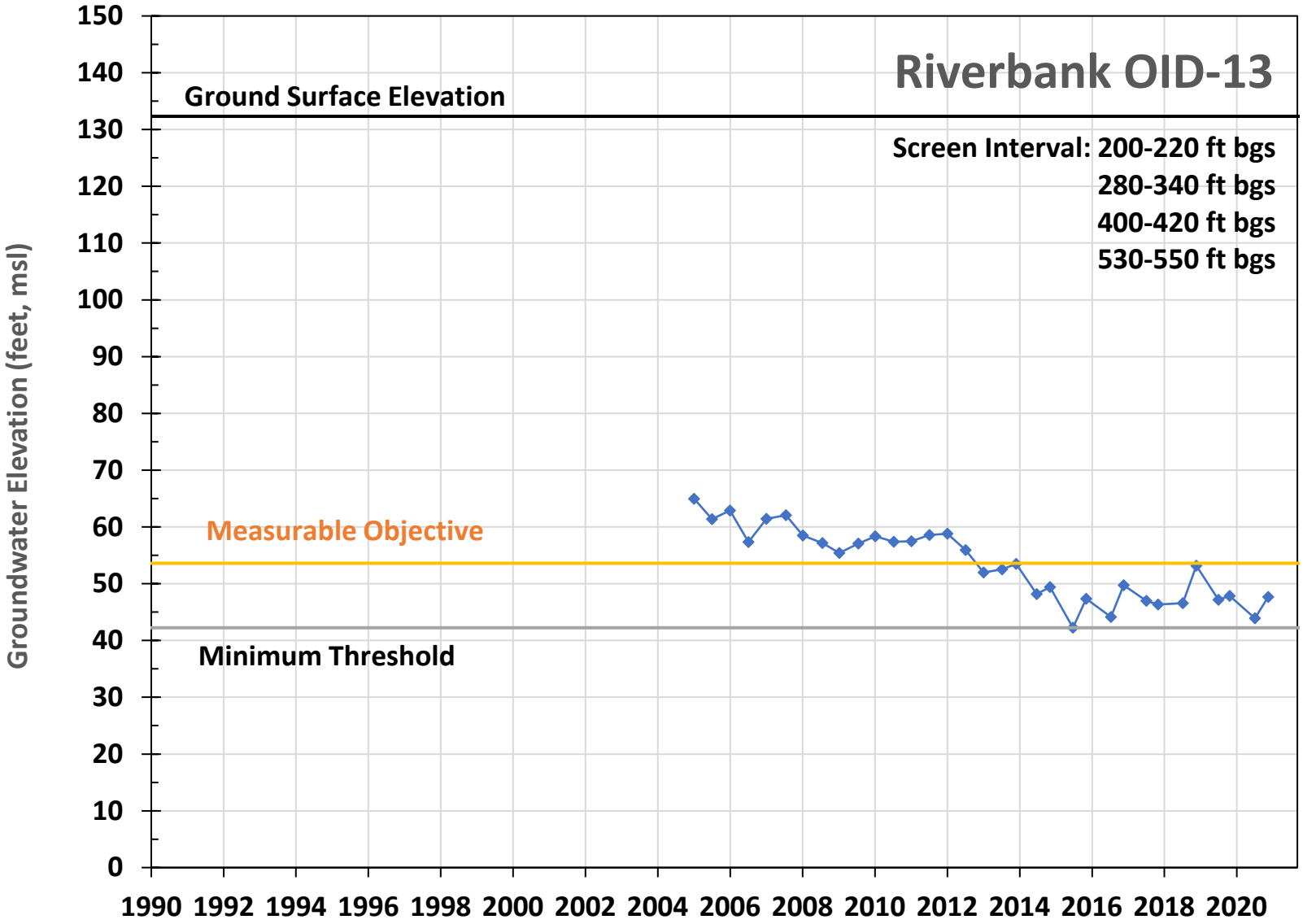

American 208
Screen Interval: 79-119 ft bgs
128-272 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

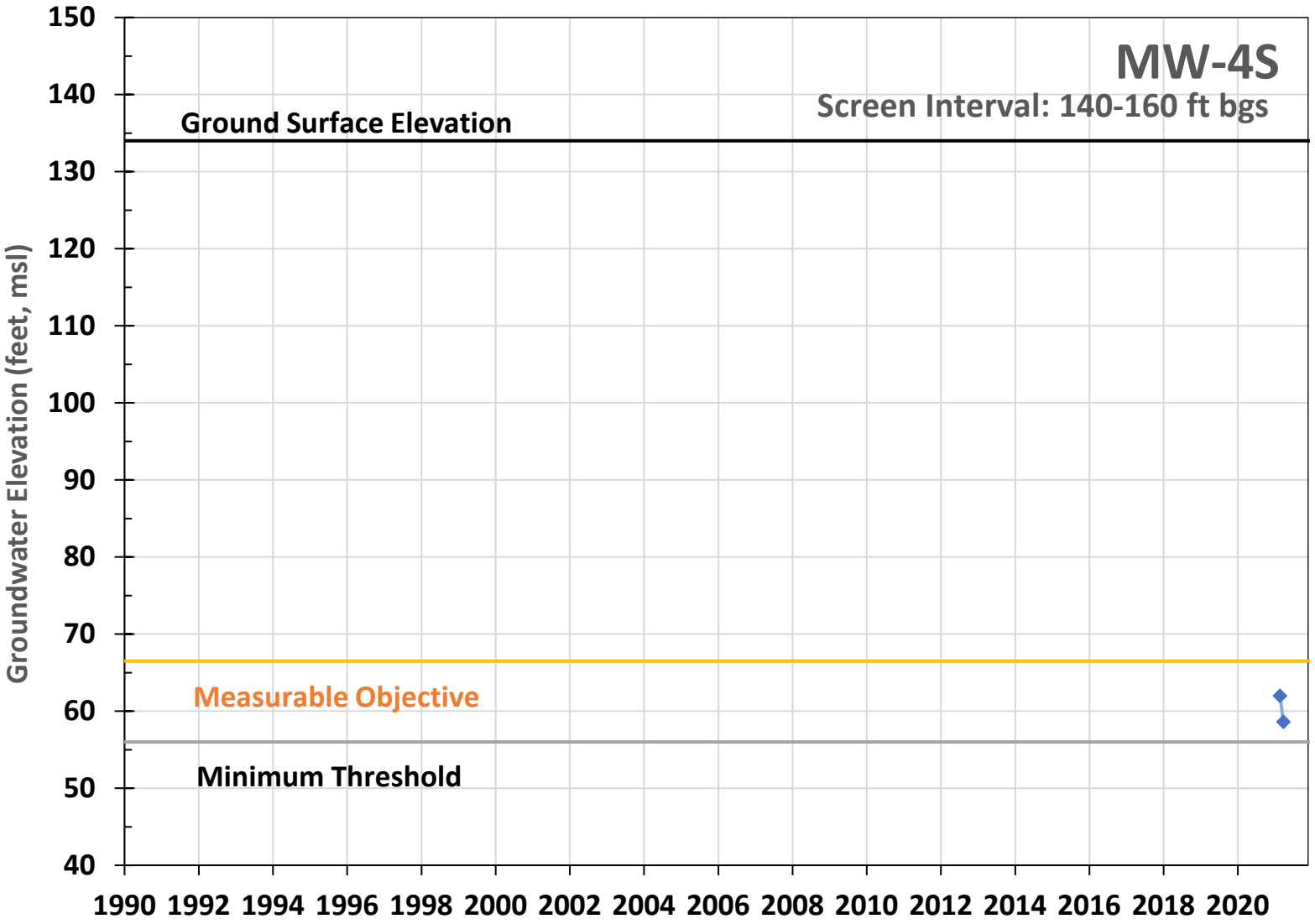

Ground Surface Elevation: 149 ft msl
Birnbaum OID-03
Groundwater Elevation (feet, msl)
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Screen Interval: 55-110 ft bgs
147-154 ft bgs
170-175 ft bgs
185-200 ft bgs
238-250 ft bgs
265-270 ft bgs
285-293 ft bgs
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

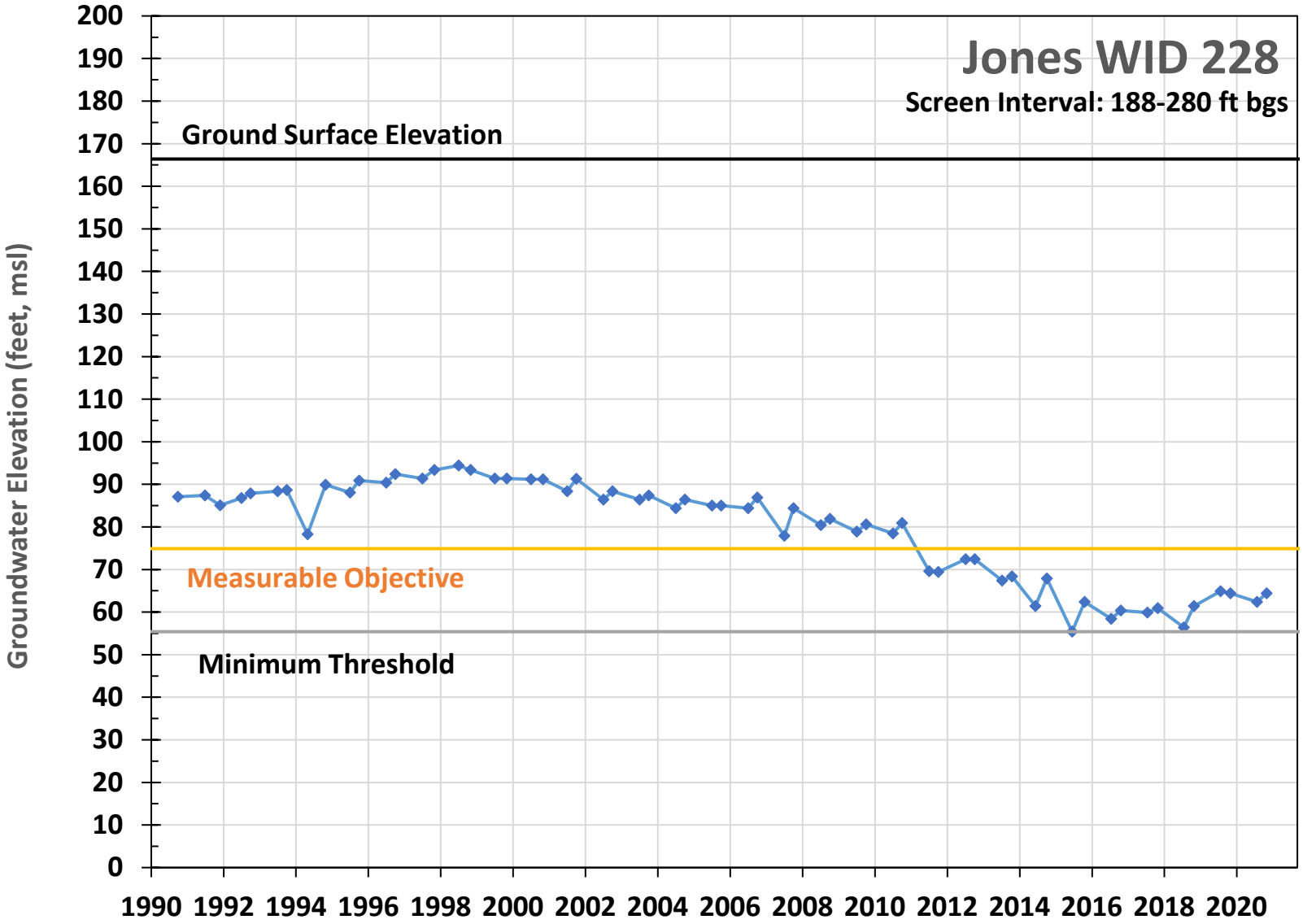

Head Lateral 8 194
Screen Interval: 148-211 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

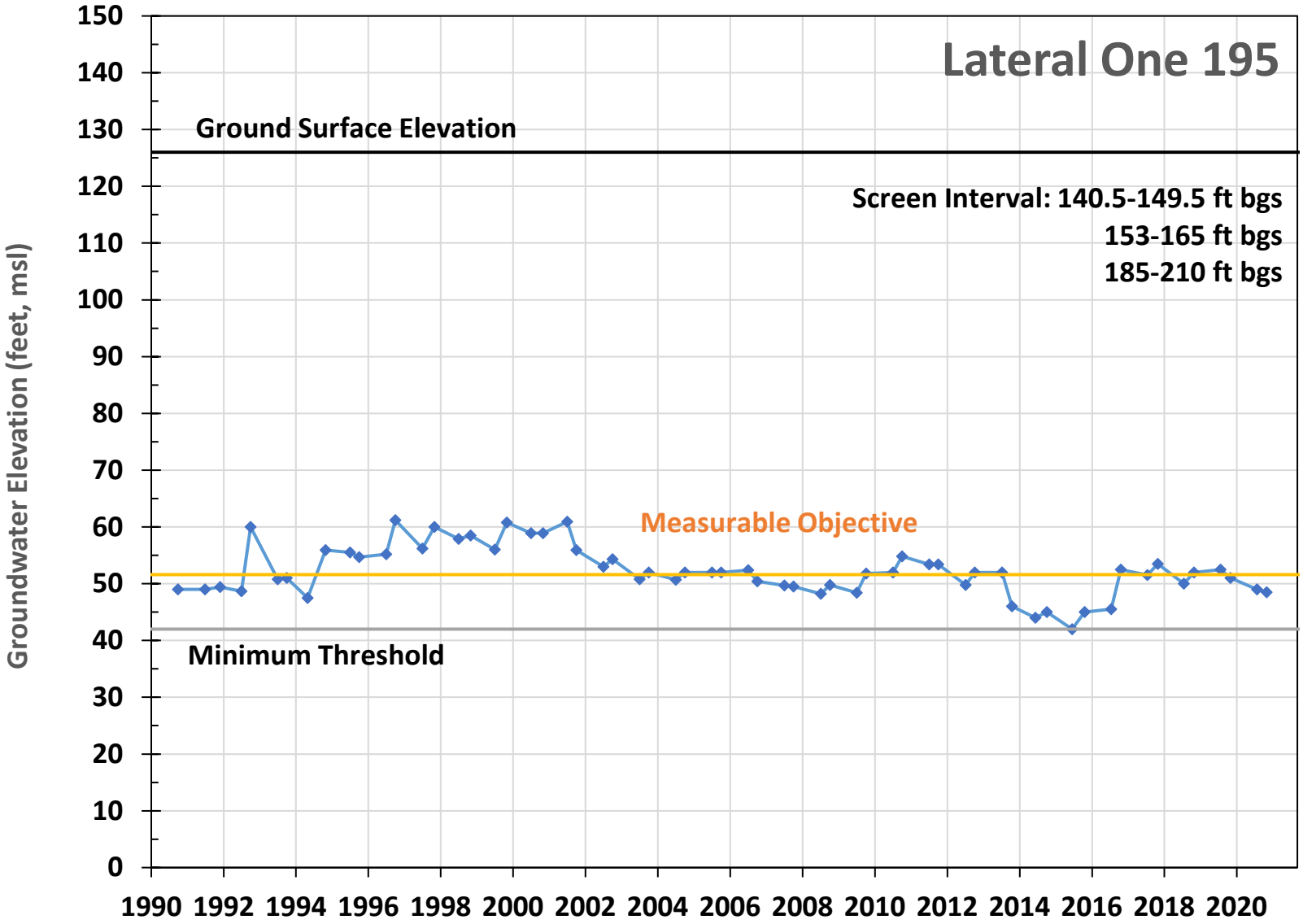

Langdon Merle 241
Screen Interval: 160-300 ft bgs
Groundwater Elevation (feet, msl)
Ground Surface Elevation
Measurable Objective
Minimum Threshold
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

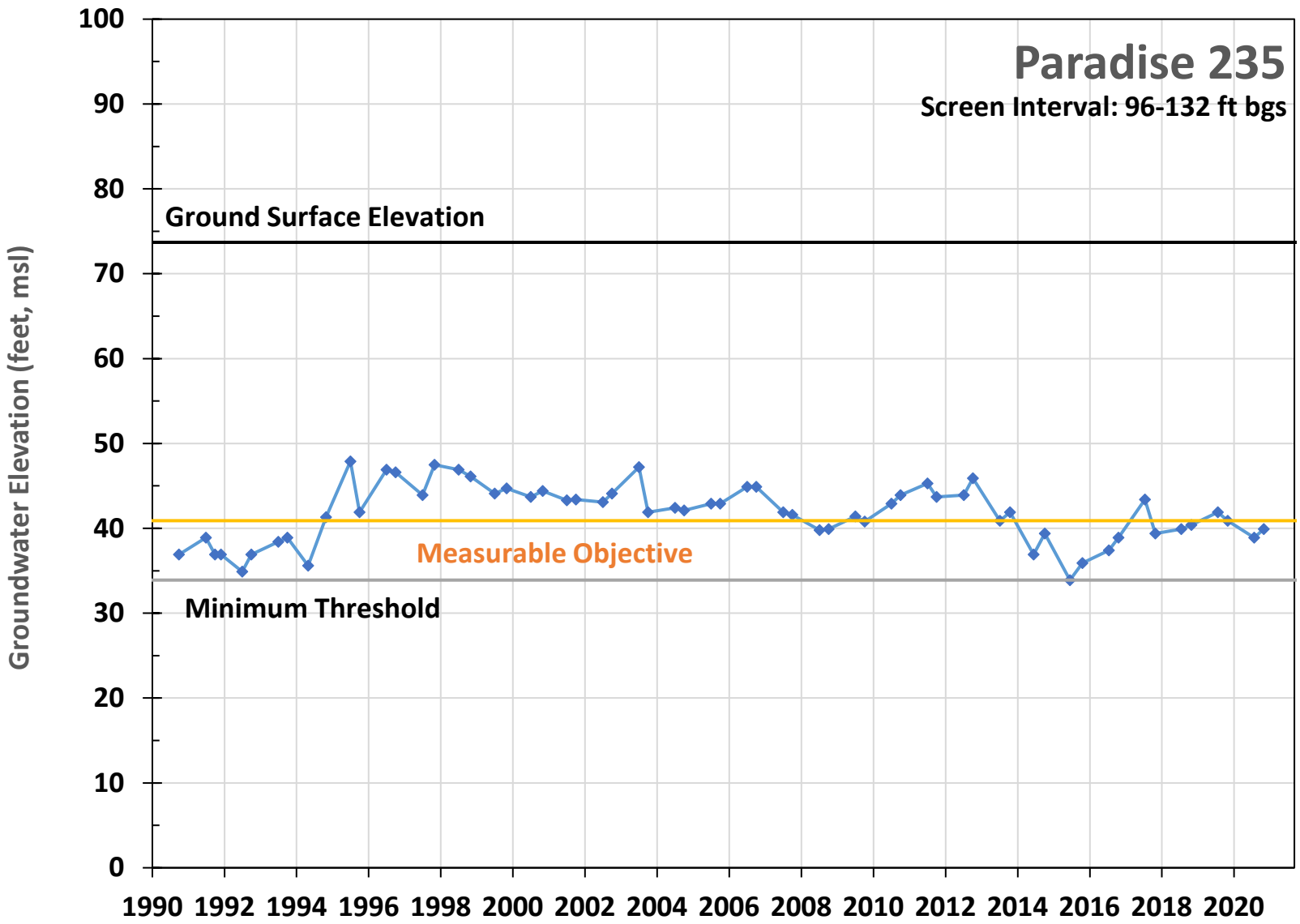

Marquis OID-10
Screen Interval: 27-125 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

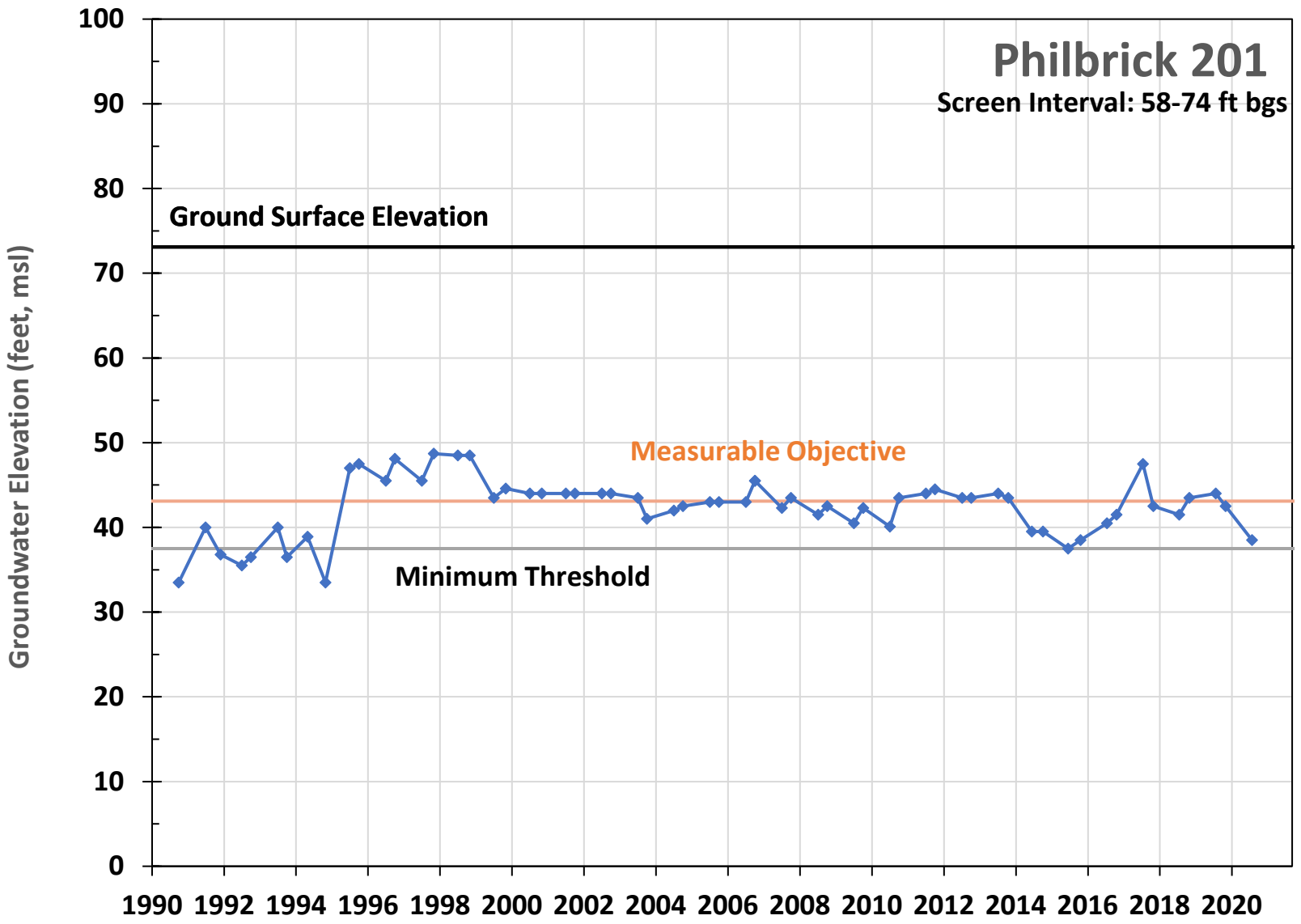

Riverbank OID-13
Ground Surface Elevation
Screen Interval: 200-220 ft bgs
280-340 ft bgs
400-420 ft bgs
530-550 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

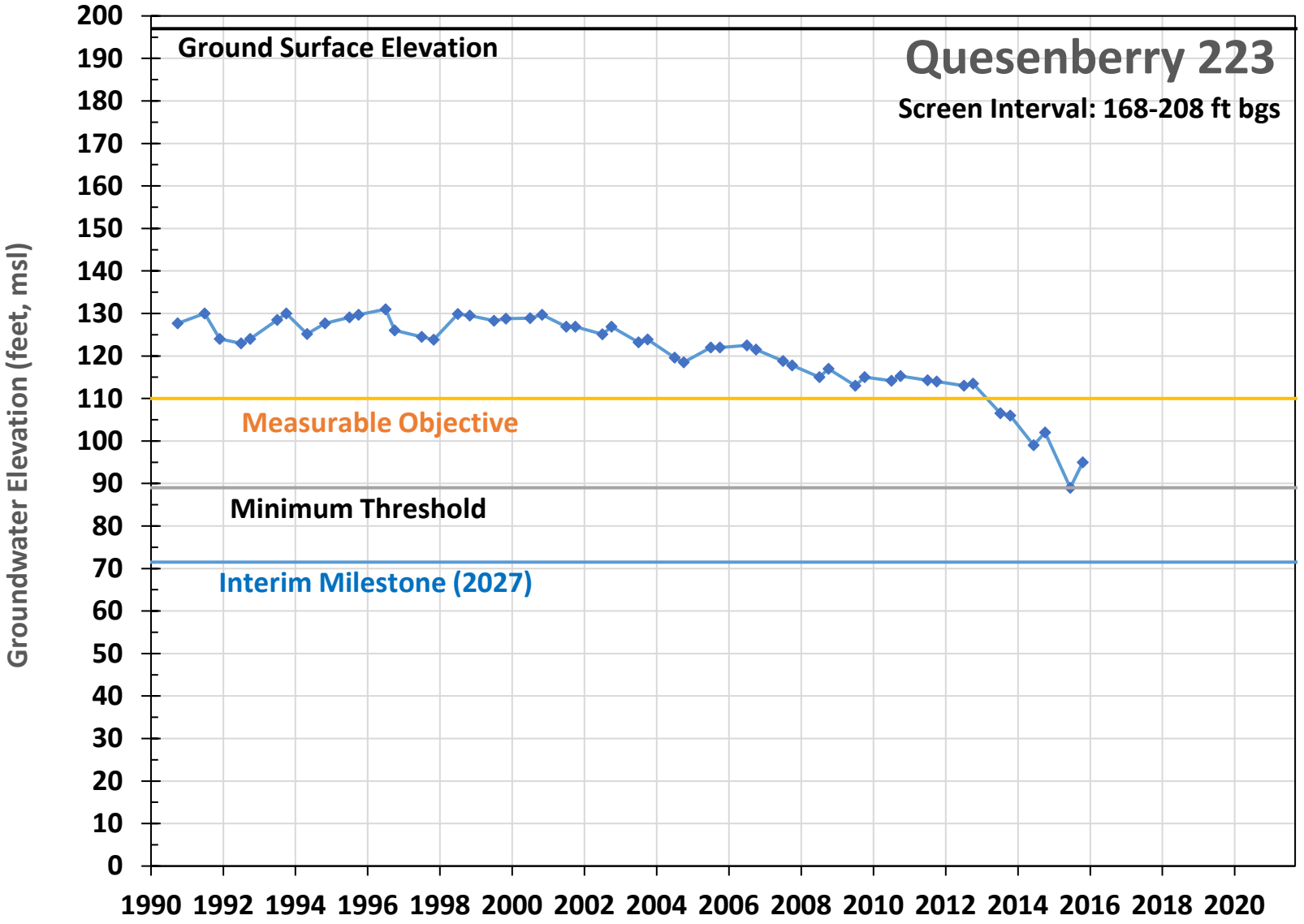

MW-4S
Screen Interval: 140-160 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

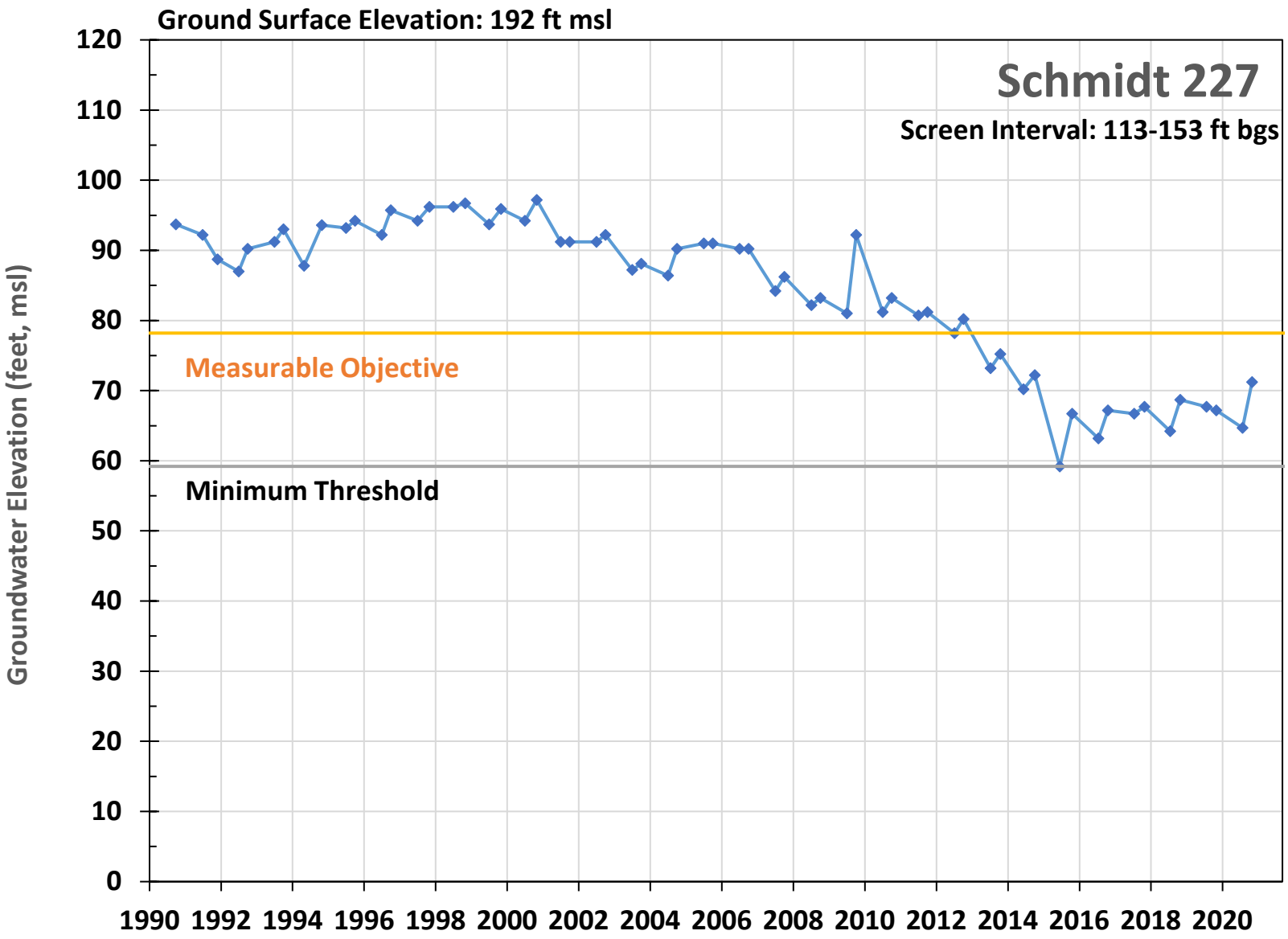

Jones WID 228
Screen Interval: 188-280 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

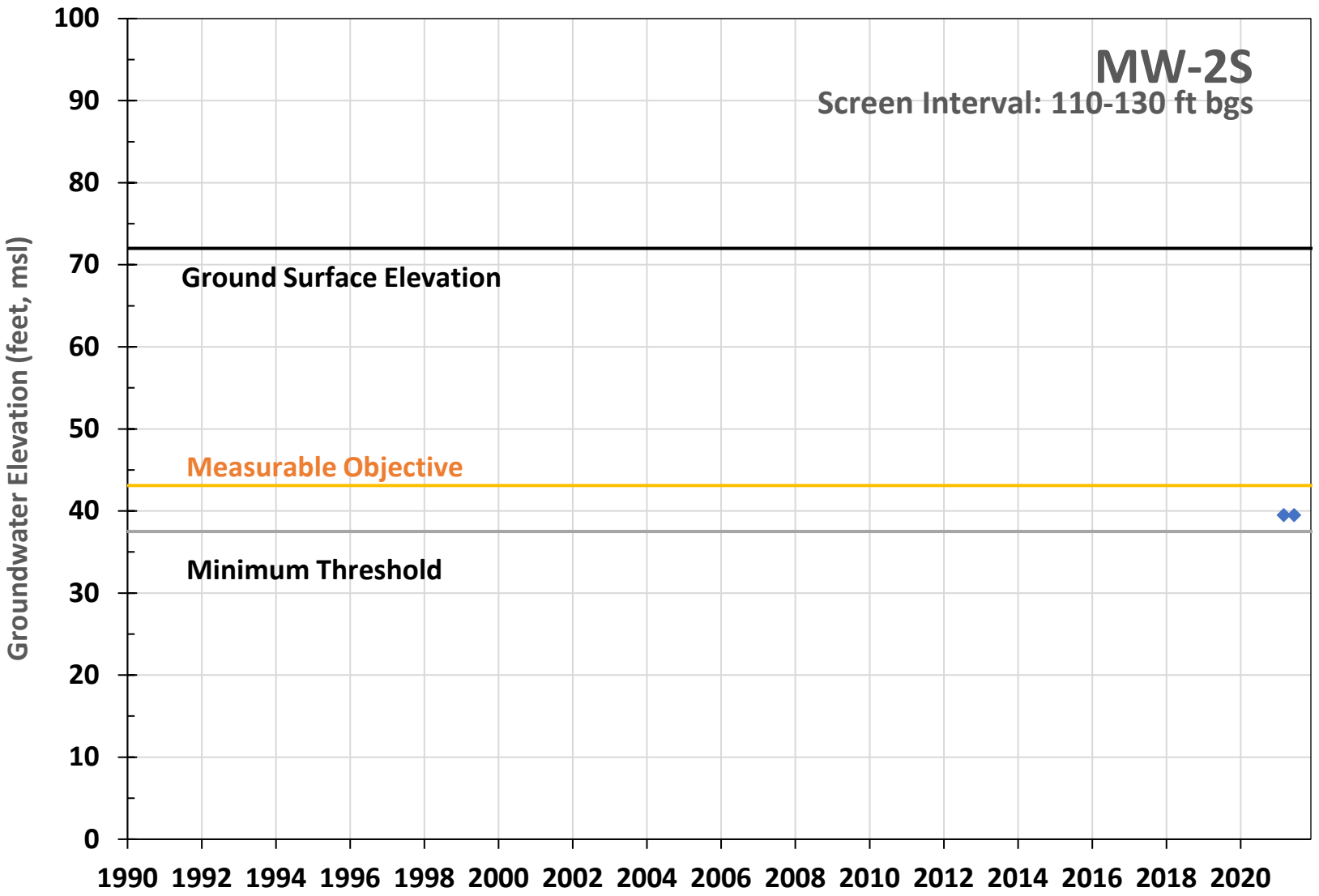

Lateral One 195
Ground Surface Elevation
Screen Interval: 140.5-149.5 ft bgs
153-165 ft bgs
185-210 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

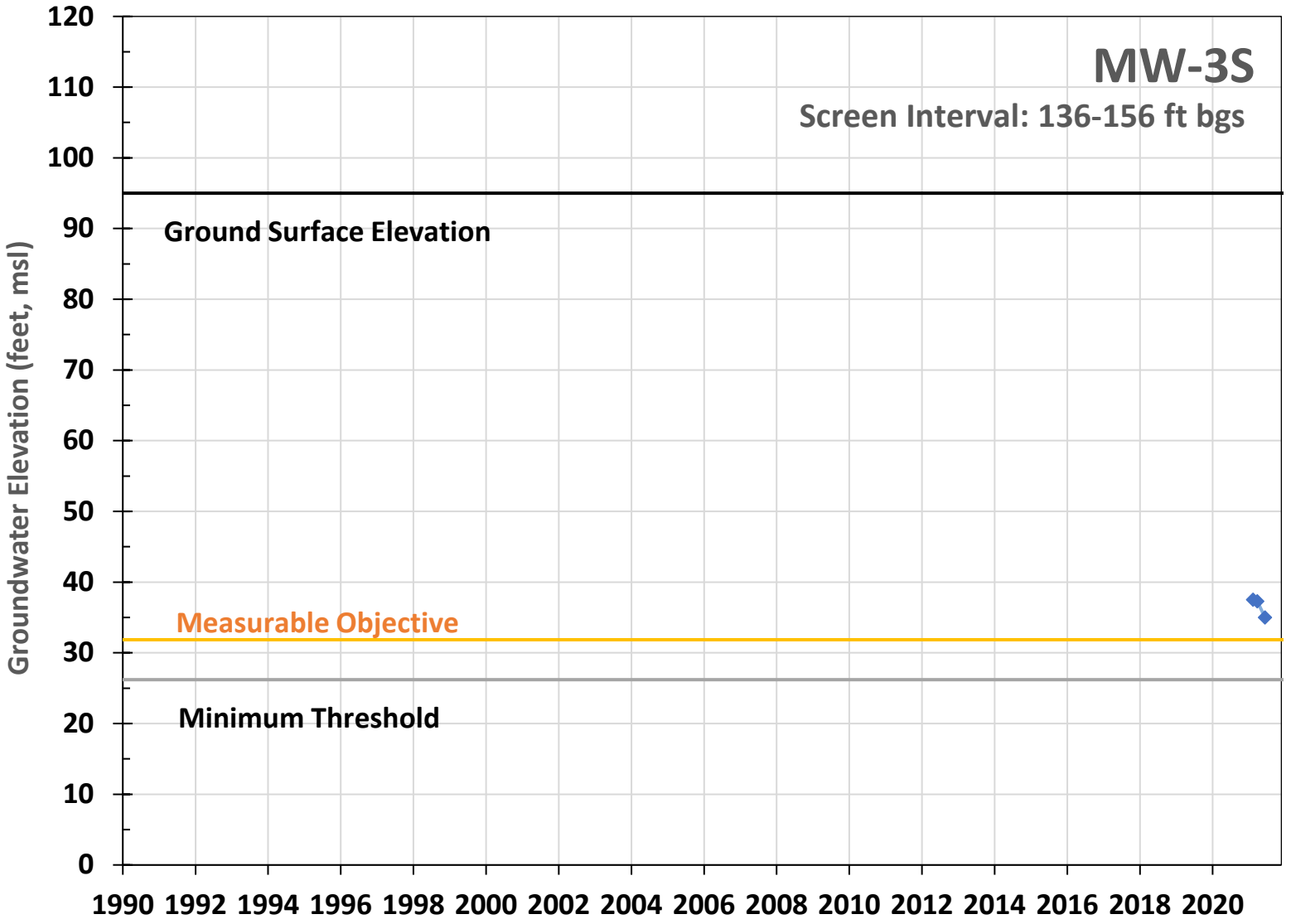

Paradise 235
Screen Interval: 96-132 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

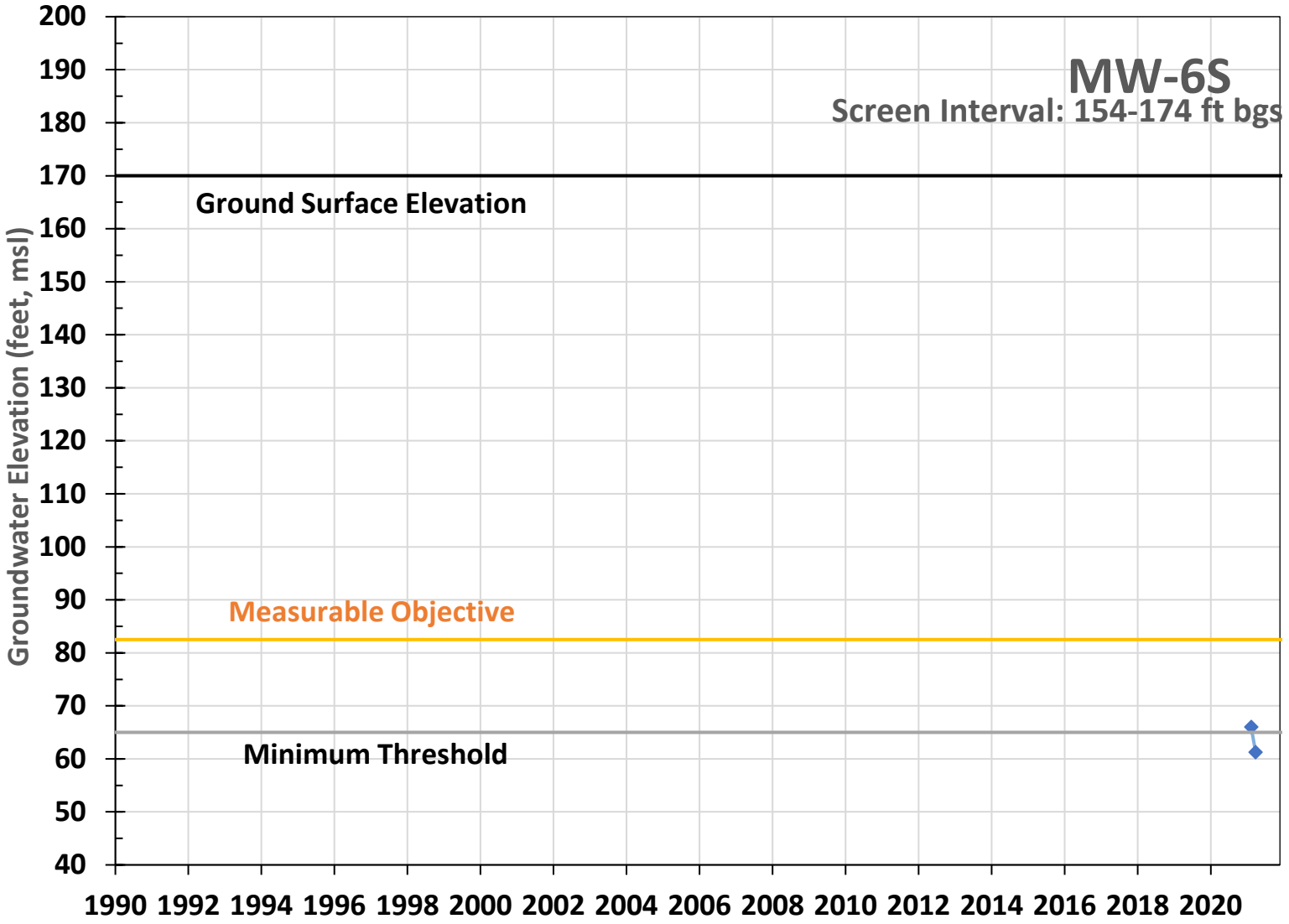

Philbrick 201
Screen Interval: 58-74 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

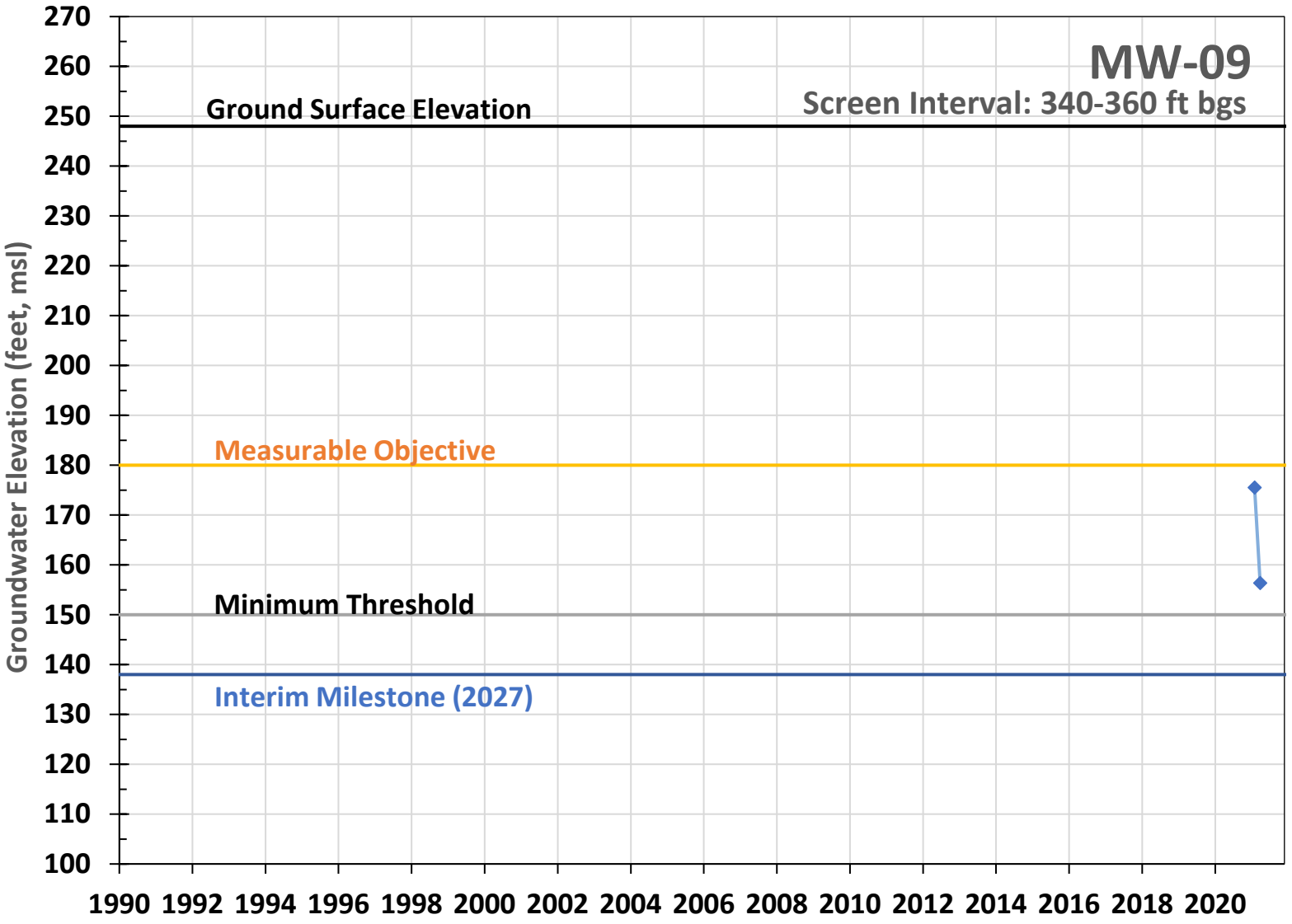

Quesenberry 223
Screen Interval: 168-208 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020


Ground Surface Elevation: 192 ft msl
Schmidt 227
Screen Interval: 113-153 ft bgs
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020


MW-2S
Screen Interval: 110-130 ft bgs
Groundwater Elevation (feet, msl)
100
90
80
70
60
50
40
30
20
10
0
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


MW-3S
Screen Interval: 136-156 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Groundwater Elevation (feet, msl)
120
110
100
90
80
70
60
50
40
30
20
10
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020


MW-6S
Screen Interval: 154-174 ft bgs
Groundwater Elevation (feet, msl)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
Ground Surface Elevation
Measurable Objective
Minimum Threshold
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020


MW-09
Screen Interval: 340-360 ft bgs
Ground Surface Elevation
Measurable Objective
Minimum Threshold
Interim Milestone (2027)
Groundwater Elevation (feet, msl)
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020