DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		Recommendation: The Department encourages the GSA to consider implementing recharge projects that facilitate floodplain inundation. These projects offer multiple benefits including downstream flood attenuation, groundwater recharge, and ecosystem restoration. Managed floodplain inundation can recharge floodplain aquifers, which in turn slowly release stored water back to the stream during summer months. These projects also reconnect the stream channel with floodplain habitat, which can benefit juvenile salmonids by creating off-channel habitat characterized by slow water velocities, ample cover in the form of submerged vegetation, and high food availability. Additionally, these types of multi-benefit projects likely have more diverse grant funding opportunities that can lower their cost as compared to traditional off-channel recharge projects.	Stormwater capture and recharge projects will be assessed and site-specific investigations conducted. Managed floodplain inundation was added as a possible multibenefit project.
10/31/2021	Community Alliance with Family Farmers	Clear guidance for implementing sustainable groundwater management in land use policy, including prioritization of water for local food production. Land use is ine tricably tied to groundwater use and its sustainable management. The Plan needs to address not just water use of current activities and sectors, but of the e pansion of water use and water-intensive activities, such as housing development, winery development and e pansion, land conversion to new vineyards, and cannabis projects. Land use should be tied to meaningful measurements and projections of long-term water availability and be considered cumulatively, for the protection of all beneficial uses. Specifically, the plan should include Accounting and permitting of water hauling guidelines for the allowance of water hauling for food production, in particular ranches, should be developed. Permitting should be streamlined and cost-effective for defined emergency drought use.	Comment noted. Appendi 3-D describes the projections of future water demands associated with future growth and land use changes that have been incorporated into the GSP. These projections will be revisted during 5-year GSP updates. Consideration of permitting guidelines for water hauling is a policy options that has been included in the initial list of policy options that will be considered and prioritized by the GSA Board within the initial years of GSP implementation.
		Regarding policy options, all policy options listed in the Santa Rosa Plain GSP ES.6.1 should be prioritized and e pedited. Collaboration between the GSA Boards, local land use agencies, GSA member agencies, other Sonoma County GSAs, land use authorities and stakeholders is critical to achieving desired goals so must begin promptly. Several of these policies should be strengthened:	Comment noted.
		Mandatory water conservation plans for all sites which use groundwater as well as new development must be required. A good e ample is recent legislation in Nevada which prohibits decorative turf. Plans should include mandatory conservation within jurisdictions. Plans also must create water conservation requirements for new development, as well as education for e isting well owners, which has historically resulted in significant water savings.	Comment noted. Specifics regarding conservation plans for new development will be developed as part of the management action for assessing potential policy options.
		Every county Use Permit must require monitoring of wells associated with the project at least bi- annually (spring and fall) with annual reporting that is compiled to produce trend lines for groundwater levels. Permit Sonoma has data for projects that required monitoring so that data must be mined to determine impacts. There should also be required assessment of cumulative impacts of well uses when a new well is permitted.	Comment noted. Data provided to Permit Sonoma has been incorporated into the GSP and will continue to be included in monitoring conditions during GSP implementation.

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		Well permits must be required to show e plicit proof of sustained availability and to demonstrate NO cumulative impacts	Specifics regarding well permitting recomendations will be developed as part of the management action for assessing potential policy options. As the GSA does not have authority over well permitting, any policy options related to well permitting would be recommendations to the County, which has authorities regarding well permitting.
		Well construction and permitting must have requirements, not just recommendations, that comply with GSA goals.	As the GSA does not have authority over well permitting, any policy options related to well permitting would be recommendations to the County, which has authorities regarding well permitting.
		Accounting and permitting of water hauling guidelines for the allowance of water hauling for food production, in particular ranches, should be developed. Permitting should be streamlined and cost-effective for defined emergency drought use.	Specifics regarding water hauling recomendations will be developed as part of the management action for assessing potential policy options in coordination with the County and state regulators.
		Sonoma County s Chapter of CAFF requests to be included in these upcoming GSP activities: stakeholder input on the fee schedule to be levied on agricultural users Farm Plan assessments and any additional agricultural stakeholder meetings. Although agricultural stakeholder meetings have previously been held in the planning process, CAFF-- which represents the many small farms and ranches which supply our farmers markets, grocery stores, CSA bo es and some restaurants-- was noted in the focused working group.	Comment noted. CAFF representatives will be contacted to participate in the listed GSP activities.
COMMENTS RECEIVED PRIOR TO OCTOBER 1, 2021			
9/8/2021	Andy Rodgers	The draft section represents what the advisory committee has been talking about. The section is well organized and clearly written. The only addition that occurred to me after reading is to consider the GSA providing some basic well maintenance, management, and best practices education. This could be valuable to have the GSA host and promote on-going workshops with e perts and local drillers/pump companies to empower well owners to understand well construction, pump and storage practices, and water quality considerations and treatment options. Also could have Permit Sonoma discuss well and abandonment permitting overview etc.	Added language to Section 7 that indicates this would be included in outreach materials to stakeholders.
8/31/2021	Rebecca Ng	Missing acronyms for Sect 6 & 7: ECWRF, IRWM, LID, MGD, NBWRA, NBWRP, NCRW CB (add North Coast)	Added to references

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		6.2.2.4 .also other pages in the section: acronyms are not being identified when the term is first used. Some of the acronyms are not included in the list of acronyms and abbreviations. (See above) Some acronyms in section 6.2.2.4: DWR IRWM grant funding NBWRP NBWRA MGD. Also LID used on page 6.3. The section needs editting.	Acronyms are used after first reference in GSP (not each section). Master reference list included in Section 8.
9/9/2021	Chelsea Thompson	E isting wastewater treatment and recycled water production occur at the SVCSD WWTP in compliance with Order No. R2-2016-0014 (NPDES Permit No. CA0037810) issued by the San Francisco Bay RW CB. It is anticipated that future e pansion of recycled water deliveries would also occur under this or future revised or amended orders. **Has SVCSD been spelled out in document?**	Corrected references.
		6.2.2.4 Estimated Costs and Funding Plan The City is a member of North Bay Water Reuse Authority (NBWRA), a regional water recycling and management initiative which covers areas north of the San Francisco Bay. The NBWRP is comprised of member agency recycled water projects, including City of Petaluma projects. Through NBWRA, the City continuously pursues funding opportunities for its projects included in NBWRP Phase 2. The planned e pansion of the recycled water system is separated into three parts. **NBWRP to NBWRA**	Corrected
		6-10 first paragraph - weather conditions (i.e., the summer and fall seasons) or emergency situations. The Groundwater Banking Feasibility Study (GEI, 2013) provided an evaluation of the regional needs and benefits, source water availability and quality, regional hydrogeologic conditions, and alternatives for groundwater banking. Prior to implementing long-term ASR programs, pilot studies are recommended to verify location specific feasibility, including aquifer capacity for recharge and recovery operations and geochemical compatibility. Pilot testing involves injecting potable drinking water into the Basin s aquifers and recovering it to assess injection and recovery capacities and monitor potential water quality impacts to native groundwater resources. Information generated by pilot test evaluations will help inform the degree to which ASR is a feasible strategy to improve the reliability water supply, along with helping to evaluate whether or not an ASR project can be developed and operated in a manner that will achieve both supply reliability and groundwater sustainability benefits. In 2018 a successful pilot study project was completed in the nearby Sonoma Valley Subbasin which provides information that can inform future ASR planning within the Basin (GEI, 2020). **Reliability (of) water supply**	Corrected

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		The State Water Resources Control Board (SWRCB) has recognized **that it in the best** interest of the state to develop a comprehensive regulatory approach for ASR projects, and has adopted general waste discharge requirements for ASR projects that inject drinking water into groundwater (Order No. 2012-0010-DW or ASR General Order). The ASR General Order provides a consistent statewide regulatory framework for authorizing both pilot ASR testing and permanent ASR projects. Pilot tests and any future permanent ASR facility will be permitted under the ASR General Order. Oversight of these regulations is done through the Regional Water uality Control Boards (RW CBs) and will require project proponents to comply with the monitoring and reporting requirements of the ASR General Order. Any additional permits required for the construction and operation of an ASR facility will be obtained by the lead agency for each ASR project as needed. **CORRECT 'THAT IT (IS) IN THE BEST** 6.2.2.3 Public Noticing, Permitting and Regulatory Process: Public notice for aspects of the recycled water projects will be carried out by the lead agency, which is anticipated to be the City of Petaluma. For recycled water projects where the GSA is not the lead agency, the GSA will provide support for outreach activities to nearby well owners and the local community. As noted above, compliance with the California Environmental PVGSP Section 6 PMAs 6- 6 v08252021 uality Act (CE A) is incorporated into the e isting EIR for the Phase 2 North Bay Water Reuse Project. Any additional recycled water projects would be included in future CE A analysis, as 1 needed. E isting wastewater treatment and recycled water production occur at the SVCSD WWTP in compliance with Order No. R2-2016-0014 (NPDES Permit No. CA0037810) issued by the San Francisco Bay RW CB. It is anticipated that future e pansion of recycled water deliveries would also occur under this or future revised or amended orders. **UPDATE WITH: Ellis Creek Water Recycling Facility (ECWRF) and Order R2-2021-0008 (NPDES Permit No. CA0037810)**	Corrected Corrected
9/9/2021	Chelsea Thompson	6.2.2.5 Legal Authority: As described above, the **SVCSD** has the legal authority to treat wastewater and deliver recycled water for irrigation uses.	Corrected
9/21/2021	Jason Farnsworth (City of Petaluma)	6.2.2. Recycled water e pansion: As with all regulatory submittals I strongly recommend the City have this document reviewed by Legal for a regulatory and committal benchmark analysis. As a rule it is good to understand where the document falls on the regulatory spectrum of compliance. Is the City over committing, under committing or does the City have an adequate level of commitment?	Comment noted.

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		Recycled water is wastewater that enters into the wastewater collection system from within the service area of the City of Petaluma and is treated to tertiary standards at the Ellis Creek Water Recycling Facility (ECWRF). Recycled water has been and will continue to be an important source of irrigation water to offset the use of local groundwater and potable water supplies in the Petaluma Valley. Recycled water can be used in applications where potable water is often used (such as the irrigation of public parks and golf courses and for agriculture). In addition to allowing for potable water offsets, recycled water use may potentially facilitate in lieu groundwater recharge. For e ample, if a farm has historically used pumped well water for pasture or crop irrigation begins using recycled water instead, the groundwater aquifer beneath may potentially recover through reduced pumping and natural recharge. Recycled water is a sustainable water source and allows potable supplies to be reserved for the best and highest use. Additionally, utilizing recycled water for irrigation also means a decrease in discharge of treated wastewater to local water bodies such as the Petaluma River.	Made proposed edits
		The ECWRF opened in July 2009 and provides advanced secondary treatment, anaerobic digestion, and tertiary treatment of wastewater. The treatment facility treats domestic, commercial, and industrial wastewater generated in the City and in unincorporated Penngrove area. The facility treats on average 4.2 million gallons of wastewater each day and 1.5-1.8 billion gallons annually although not all influent wastewater is treated to tertiary standards. During the winter months ECWRF is permitted to discharge treated wastewater into the Petaluma River.	Made proposed edits
		Tertiary-treated recycled water, distributed through a system of pump stations and pipelines, provides irrigation for agriculture, golf courses, school yards, parks and other landscaped areas. Urban use of recycled water saves potable water and supplements the City s potable water supply.	Made proposed edits
		Agricultural use of recycled water reduces the amount of groundwater pumping for local farming, including dairy pastures and vineyards.	Made proposed edits
		Recent production and deliveries of recycled water from the ECWRF are appro imately 650 AFY within the City s service area and 1,115 AFY outside of the City s service area (primarily to agricultural customers). The City continues to plan for an e pansion of the urban recycled water system aimed at delivering recycled water to more parks and schools throughout the service area. The City also continues to plan for an e pansion to deliver recycled water to more agricultural customers further e tending City s service area. (Remove West Yost ref)	Made proposed edits
		6.2.2.1: Objectives for e panding recycled water deliveries are to help achieve measurable objectives . I am not sure what this means. What is/are the objectives. In addition to the unstated objectives we add an awkward comment related to chronic lowering of groundwater levels. Is this confirmed via a study or are we generalizing? We should be e plicit here and cite and sources. This appears to be template language and not Petaluma s related objectives	Measurable objectives are detailed in Section 4 (Sustainable Management Criteria)
		As described above, recycled water projects require permitting, environmental analysis and engineering design. Where is this described above?	Revised te t.

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		6.2.2.2: Potential benefits from implementation of recycled water projects is anticipated to include a reduction in groundwater pumping and localized increases in groundwater levels. Benefits from recycled water projects would primarily be evaluated using changes in measured groundwater levels and improvements to groundwater storage changes. This section infers a monitoring program e ists? Does one and if so why are we no citing it?	Monitoring program described in Section 5 (Monitoring Network)
		6.2.2.3: Public notice for aspects of the recycled water projects will be carried out by the lead agency, which is anticipated to be the City of Petaluma. Should we be e plicit was the public noticing requirements are in addition to who is responsible for carrying them out.	Revised te t.
		E isting wastewater treatment and recycled water production occur at the SVCSD WWTP in compliance with Order No. R2-2016-0014 (NPDES Permit No. CA0037810) issued by the San Francisco Bay RW CB . It is anticipated that future e pansion of recycled water deliveries would also occur under this or future revised or amended orders. Please confirm this agency, My memory recalls the State Water Board as the issuing agency. This paragraph appears out of conte t. Above we are discussing the City of Petaluma s system however here it appears to be a different agency without and real ties to the above information. Who and what is SVCDS please spell out the related agency prior to using the abbreviated name. If this agency is appropriate here they should also be added to the above discussion. Additionally Petaluma should be discussed here.	Corrected references.
		The City is a member of North Bay Water Reuse Authority (NBWRA), a regional water recycling and management initiative which covers areas north of the San Francisco Bay. The NBWRP is comprised of member agency recycled water projects, including City of Petaluma projects. Through NBWRA, the City continues to pursue funding opportunities for projects included in NBWRP Phase 2. Additionally, the City will update the 2004 Recycled Water Master Plan in the near term to allow for Council priorities and program growth alignment. The planned e pansion of the recycled water system is separated into three parts. Tertiary Treatment E pansion (TTE) This project will increase ECWRF tertiary treatment capacity by 2.12 MGD, providing a yield of 712 AFY. E isting capacity is 4.68 MGD for Title 22 disinfected tertiary. The TTE project will allow the City to meet increasing demands of both urban and agricultural irrigation sectors. The TTE project is currently under design, and recently received 3.6 million in DWR IRWM grant funding through NBWRP Phase 2. Overall project costs are projected to be 12,080,00. Agricultural Pipeline E pansion (AGP) E panded agricultural distribution pipeline system to provide 1,343 AFY of recycled water for irrigation. AGP costs are projected to be 10,200,000 and are anticipated to be funded through a combination of grant funding, public funding, and a cost share from project beneficiaries Urban Pipeline E pansion (UPE) E panded urban distribution pipeline system to provide 173 AFY of potable water offsets for primarily institutional irrigation. UPE Ccosts are projected to be 14,000,000 and are anticipated to be funded through a combination of grant funding, public funding, and cost share from project beneficiaries.	

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		A total of 25,000 is included in the GSA s initial five-year budget provided in Section 7.2 for the GSA to coordinate with the City of Petaluma to assess additional recycled water opportunities. It is anticipated that the assessment will include : Evaluation of e isting and future availability, delivery commitments and constraints Assessment of options for optimization of e isting and projected future available supplies Preliminary cost/benefit analysis for future prioritizing options Recycled water masterplan development Feasibility studies for potential recycled water storage locations Is this an annual budget allocation or a total over the five-year term? What about the above mentioned Agency SVCSD? Are they include here as well? 6.2.2.5: This seems incomplete or not applicable based on the above. The Section is related to Petaluma s program why then would SVCSD have legal authority over Petaluma s system. If SVCSD is appropriate here this section should also include Petaluma s info. This section should be e plicit and cite what authority is provided and how it is derived.	This section was revised per discussions with the City. Made edits to eliminate incorrect reference.
9/7/2021	Robert Pennington	Additional seasonal use of Russian River Water in place of groundwater use could be cost effective. I recommend a future assessment (similar to the proposed evaluation of recycled water) be specified	Such a scenario was not e amined because basin does not e pereince Undesirable Results.

PETALUMA VALLEY GSP SECTION 7 -- IMPLEMENTATION PLAN			
DATE RECEIVED	**NAME**	**COMMENTS**	**RESPONSE TO COMMENTS**
10/25/2021	Roy Smith	Recommended actions: The greatest scale of recharge at the lowest cost can be gained by engaging all land owners with parcels of 1 acres. Simple and durable land alterations can be employed to slow and sink available precipitation. However, land owners are not currently incentivized in this direction as the cost of implementation is born directly by them individually, but the benefit is conveyed to the public at large through the commons . It may be best to pursue County-wide groundwater recharge through education, credit schemes, easily replicable designs, and funding or grant schemes coordinated through other local, State, and Federal agencies.	Comment noted.
10/29/2021	Sebastian Bertsch	It is worrisome that no guidance from the Advisory Board or the public comment sessions is mentioned here. There was very clear community input calling for distinctions in fee structures that match the intent of SGMA to distinguish between domestic de-minimis water users and commercial/agricultural users of water, and place a greater burden of monitoring and fund sourcing on the latter.	Comment acknowledged. The fee study that is currently underway will include consideration of the intial fee study and will also address issues regarding fair-share distribution of the fee.
10/31/2021	Community Alliance with Family Farmers	We believe the following components should be included in every Groundwater Sustainability Plan (GSP):	
		Clear guidance for implementing sustainable groundwater management in land use policy, including prioritization of water for local food production. Land use is ine tricably tied to groundwater use and its sustainable management. The Plan needs to address not just water use of current activities and sectors, but of the e pansion of water use and water-intensive activities, such as housing development, winery development and e pansion, land conversion to new vineyards, and cannabis projects. Land use should be tied to meaningful measurements and projections of long-term water availability and be considered cumulatively, for the protection of all beneficial uses. Specifically, the Plan should include:	
		1. Coordination of water management and land use planning. In line with the objective of close coordination and collaboration with other entities and regulatory agencies that have a stake or role in groundwater management in the Subbasin, the GSP should provide clear mandates and guidelines to be incorporated by Permit Sonoma into Use Permits, and by other jurisdictions into their land use policies and permits. Permitting must not be in conflict with the GSP and should support achieving sustainability goals.	Additional te t had been added to Section 7.2.2 regarding coordination with land use agencies. Recommendations on policy options will addressed through the policy options management action.

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		2. Prioritization of water for food farming (fruit, vegetables, herbs, and livestock). As supply chain disruptions continue due to climate change and other impacts, we will increasingly rely on local food production, especially during emergencies. Given that local food security is likely to become an even more significant issue over the 50-year planning horizon, the Plan must distinguish agricultural water use by food vs. non-food crops. It may be argued that wine grapes are essential to our economy, but they can be dry farmed—whereas most fruits and vegetables, and all livestock, require water. According to annual Crop Reports there has been a glut of wine grapes on the market since 2018, yet more vineyards continue to be developed across the county. CAFF has been involved with providing resources and training on irrigation efficiency and assisting with vineyard transition to dry farming.	Comment noted.
		3. Preparation for large-scale, emergency groundwater reliance/ usage. Staff have e plained that long-term sustainability and adaptive management are central to groundwater sustainability planning, and that short-term shortages and drought are not intended to be included in this phase. Assuming that groundwater levels begin to significantly decline, it will be possible to create and implement necessary management actions in the future. We find this approach to be highly irresponsible and inadequate. Plans should contain proactive preparation for worst-case scenario groundwater e traction, such as if sudden or drastic shortages and/or disruptions to surface water supplies were to occur. Local agencies and municipalities should use this information to create or update contingency plans, which should also include equitable prioritization of uses. Worst case scenario planning provides necessary time to change course in advance of irreversible decline or degradation. We are concerned that the climate model showing normal and wetter than normal conditions for 2025-2050 could lead to severe water shortages - the opposite of sustainability.	Comment noted. Many of the implementation activities and planned projects and actions will build resiliency for groundwater users within the Subbasin.
		Sonoma County s Chapter of CAFF requests to be included in these upcoming GSP activities: stakeholder input on the fee schedule to be levied on agricultural users Farm Plan assessments and any additional agricultural stakeholder meetings. Although agricultural stakeholder meetings have previously been held in the planning process, CAFF-- which represents the many small farms and ranches which supply our farmers markets, grocery stores, CSA bo es and some restaurants-- was not included in the focused working group.	Comment noted. CAFF representatives will be contacted to participate in the listed GSP activities.
10/28/2021	California Dept of Fish & Wildlife	Comment: Management actions should include specifics on how and on what timeline adverse impacts will be reversed, if observed. The GSP should specify adaptive management strategies to account for lag impacts wherein groundwater responses to changes in management regimes are delayed due to aquifer characteristics. Projects and management actions should seek to ma imize multiple-benefit solutions, including habitat improvements.	

DATE RECEIVED	NAME	COMMENTS	RESPONSE TO COMMENTS
		Recommendation: The Department encourages the GSA to consider implementing recharge projects that facilitate floodplain inundation. These projects offer multiple benefits including downstream flood attenuation, groundwater recharge, and ecosystem restoration. Managed floodplain inundation can recharge floodplain aquifers, which in turn slowly release stored water back to the stream during summer months. These projects also reconnect the stream channel with floodplain habitat, which can benefit juvenile salmonids by creating off-channel habitat characterized by slow water velocities, ample cover in the form of submerged vegetation, and high food availability. Additionally, these types of multi-benefit projects likely have more diverse grant funding opportunities that can lower their cost as compared to traditional off-channel recharge projects.	Thank you for the recommendation. The GSA recognizes the importance of implementing recharge projects, and has outlined Projects and Management Actions to facilitate stormwater capture and recharge (**Section 6.2.4**).
COMMENTS RECEIVED BEFORE OCTOBER 1, 2021			
9/10/2021	Eugene Cammozi	7.2.8 (Estimate of 5-year implementation costs) I feel the budget is e cessive for the Petaluma Basin. There are only about 14 to16 monitoring wells to keep of, especially for a basin that has been in balance for the last 50 years, and is estimated to be so in the future. I feel the Board of Supervisors needs to look into this and ask some serious questions. In addition, it is unclear who will be paying for the budget, but my hope is that the cost is planned to be spilt three ways: among city, rural residential, and commercial agriculture.	Comment noted. The budget is a high-level assessment which will be refined as more information is available and as part of the fee study.
8/31/2021	Rebecca Ng	7.2.3: There is a reference to Section 7.1.4. There is no Section 7.1.4. 7.2.4.2: Interconnected Surface water subsection, 3rd bullet needs editing as it is incomplete. 7.3.2: It is stated that in August 2022, a consultant was engaged to conduct a fee study yet it is stated somewhere else that the fee will be in place by June 30, 2022.	Corrected.
9/7/2021	Robert Pennington	I do not see discussion of the GSA reviewing and responding to: General plan amendments other local policies related to groudnwater resources other public and private projects subject to CE A. Review and response to GP amendments is required per 65352.5(d). The report on anticipated effect could take a fair bit of GSA staff time, and it may be worth noting as a future task or administrative task.If the GSA wants to take an active role in reviewing private projects and requesting specific conditions of approval or mitigation measures, this would also take staff time and resources. Per the current CE A checklist includes the following Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? Lead agencies will look to the GSA staff to help answer this question, and determine suitable mitigation measures. Mitigation fees could also be a source of funding for GSA supported projects.	Added information on policy options, including those mentioned in Sections 6 and 7

Appendix 1-B
Resolution of the Board of Directors of the Petaluma Valley Groundwater Sustainability Agency Forming a Groundwater Sustainability Agency for the Petaluma Valley Basin and Joint Exercise of Powers Agreement

Resolution No. PV-17-001

RESOLUTION OF THE BOARD OF DIRECTORS OF THE PETALUMA VALLEY GROUNDWATER SUSTAINABILITY AGENCY FORMING A GROUNDWATER SUSTAINABILITY AGENCY FOR THE PETALUMA VALLEY BASIN

WHEREAS, the comprehensive groundwater legislation collectively enacted and referred to as the "Sustainable Groundwater Management Act" at California Water Code Section 10720 *et seq.* ("SGMA") initially became effective on January 1, 2015; and

WHEREAS, the stated purpose of SGMA, as set forth in California Water Code section 10720.1, is to provide for the sustainable management of groundwater basins at a local level by providing local groundwater agencies with the authority and technical and financial assistance necessary to sustainably manage groundwater; and

WHEREAS, SGMA requires the designation of Groundwater Sustainability Agencies ("GSAs") for the purpose of achieving groundwater sustainability through the adoption and implementation of Groundwater Sustainability Plans ("GSPs") for all medium and high priority basins as designated by the California Department of Water Resources; and

WHEREAS, SGMA authorizes a combination of local agencies, as defined by SGMA, to form a GSA by entering into a joint powers agreement; and

WHEREAS, the Petaluma Valley Groundwater Sustainability Agency ("Agency") was formed pursuant to a Joint Exercise of Powers Agreement entered into by the City of Petaluma, County of Sonoma, North Bay Water District, Sonoma County Water Agency, and Sonoma Resource Conservation District, each of which is a local agency as defined by SGMA, within the Petaluma Valley Basin ("Basin") which is designated basin number 2-1 in Department of Water Resources Bulletin No. 118 and which is designated as a medium priority basin; and

WHEREAS, the Agency's jurisdiction covers the full geographical area of the Basin; and

WHEREAS, the purpose of the Agency is to serve as the GSA for the Petaluma Valley Basin to comply with SGMA; and

WHEREAS, SGMA requires that the Basin have a designated GSA by no later than June 30, 2017; and

WHEREAS, the Agency is committed to sustainable management of the Basin's groundwater resources; and

WHEREAS, notice of a public hearing on the Agency's decision to become a GSA for the Basin has been published in the Santa Rosa Press Democrat and the Petaluma Argus-Courier as required by Water Code section 10723 and Government Code section 6066; and

WHEREAS, on this day, the Agency held a public hearing to receive public comment and consider the decision to become the GSA for the Basin in accordance with Water Code section 10723; and

WHEREAS, it would be in the best interest of the Basin for the Agency to become the GSA for the Basin, and to begin the process of preparing a GSP for the Basin; and

WHEREAS, the Agency's process to develop the GSP for the Basin will include stakeholder outreach and input and will provide multiple opportunities for public involvement;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the PETALUMA VALLEY GROUNDWATER SUSTAINABILITY AGENCY, as follows:

1. All recitals are true and correct.

2. The Agency hereby elects to be the GSA for the Basin.

3. The Agency's Interim Administrator is directed file the GSA Formation Notification, along with required supporting documentation, with the California Department of Water Resources, no later than June 30, 2017.

PASSED, APPROVED AND ADOPTED this day, June 22, 2017, by the following vote:

DIRECTORS:

Healy: _____ Rabbitt: _____ Wasem: _____ Gorin: _____ Abelli-Amen: _____

Ayes: ____ Noes: ____ Absent: ____ Abstain: ____

By: _____
, Chairperson
Petaluma Valley Groundwater Sustainability Agency

Date: _____ Attested by: _____
Valerie Minton
Board Clerk

Appendix 1-C
Petaluma Valley Groundwater Sustainability Agency
Board and Advisory Committee Members

Petaluma Valley Groundwater Sustainability Agency
Board and Advisory Committee Members

Petaluma Valley GSA Board Members		
Name	**Represents**	**Time Served**
David Rabbitt, Chair	County of Sonoma	June 2017-Current
Bruce Abelli-Amen, Vice-Chair	Sonoma Resources Conservation District	June 2017-Current
Mike Healy	City of Petaluma	June 2017-Current
Susan Gorin	Sonoma County Water Agency	June 2017-Current
Carolyn Wasem	North Bay Water District	June 2017-Current

Petaluma Valley GSA Advisory Committee Members		
Name	**Represents**	**Time Served**
Heidi Bauer, Chair	City of Petaluma	Oct 2017-Current
Eugene Camozzi, Vice-Chair	North Bay Water District	Oct 2017-Current
Drew Buechley	Agricultural interests	June 2018-Current
Clayton Engstrom	Rural Residential Well Owners	Oct 2017-Current
Peter Kiel	Sonoma County Water Agency	Feb 2021-Current
Gary Mikelson	County of Sonoma	Oct 2017-Current
Rebecca Ng	At-Large Community Interests	Nov 2019 -Current
Andy Rodgers	Business Community Interests	Oct 2017-Current
John Shribbs	Environmental Interests	Oct 2017-Current
Lindsey Strain	Sonoma Resource Conservation District	Oct 2017-Current
Past Advisory Committee Members		
Russ Ahlgrim	Agricultural Interests	Oct 2017-Nov 2017
Martha Murphy	Sonoma County Water Agency	Oct 2017-Oct 2020
Scott Tweten	At-Large Community Interests	Oct 2017-Jan 2019

Appendix 1-D
Petaluma Valley Groundwater Sustainability Agency
Advisory Committee Charter

Petaluma Valley Groundwater Sustainability Agency
Advisory Committee Charter

Adopted November, 2017

Charge

The Advisory Committee purpose is to advise the Petaluma Valley Groundwater Sustainability Agency ("PVGSA" or "Agency") Board of Directors ("Board") on groundwater sustainability plan development and implementation, and on Agency policies. The intent of the Committee is to provide community perspective and participation to the Agency. The Committee will make recommendations that the PVGSA Board will consider in its decision-making.

The Advisory Committee may review or provide recommendations to the Board on groundwater-related issues:

- Development, adoption, or amendment of the groundwater sustainability plan
- Sustainability goals and objectives
- Technical and reporting standards, including best management practices, data management and reporting
- Monitoring programs
- Annual work plans and reports (including mandatory 5-year milestone reports)
- Modeling scenarios
- Inter-basin coordination activities
- Project and management actions to achieve sustainability
- Grant funding proposals
- Community outreach
- Local regulations to implement SGMA
- Fee proposals
- General advisory in response to Board inquiries

The Advisory Committee will not be involved in Agency budgets or day-to-day operations, such as personnel staffing or contracting.

Brown Act, Open Process, and Conflicts of Interest

All meetings of the Advisory Committee are open to the public. The Agency will announce Committee meetings on its web site and through its regular communication channels.

Advisory Committee meetings are subject to the Brown Act. The Advisory Committee shall adopt a schedule and location for regular meetings, and meeting agendas shall be posted in accordance with the Brown Act.

All Advisory Committee meetings shall provide for public comment in accordance with the Brown Act, including non-agenda public comment and public comment on individual agenda items. Speakers will generally be limited to 2 minutes, but time may be adjusted based upon meeting circumstances. As needed, time limits may be placed on public comments to ensure the Advisory Committee is reasonably able to address all agenda items during the course of the meeting. Special and emergency meetings need not provide for non-agenda public comment, but such comment may be allowed in the Advisory Committee's discretion. Members of the Advisory Committee are subject to all applicable conflict of

interest laws including Government Code section 1090 and the California Political Reform Act. The Board shall adopt a conflict of interest code for the Advisory Committee.

Roles and Responsibilities

Agency Board of Directors

The Board commits to the value of the Advisory Committee and will consider Advisory Committee recommendations when making its policy decisions.

Advisory Committee

The role and responsibility of the Advisory Committee is to solicit and incorporate community and stakeholder interests into recommendations on SGMA implementation in the Petaluma Valley Groundwater Basin for the Board to consider in its decision-making process.

Advisory Committee members ("members") reflect the diverse interests of local public agencies and groundwater users. The criteria for Advisory Committee members are to:

- Serve as a strong, effective advocate for the interest group represented
- Work collaboratively with others
- Commit time needed for ongoing discussions
- Collectively reflect diversity of interests

As part of membership, members agree to:

- Arrive at each meeting fully prepared to discuss the issues on the agenda. Preparation may include reviewing meeting summaries, technical information, and draft documents distributed in advance of each meeting.
- Present their constituent members' views on the issues being discussed and be willing to engage in respectful, constructive dialogue with other members of the group.
- Develop a problem-solving approach in which they consider the interests and viewpoints of all group members, in addition to their own.
- Keep their constituencies informed about the deliberations and actively seek their constituents' input.

Chair

The Advisory Committee will appoint a chair and vice-chair. The chair for the Advisory Committee agrees to:

- Work with the Agency administrator and facilitator to develop the agenda for all Committee meetings.
- Assist in framing issues so members are able to have a productive conversation and develop recommendations.
- Brief the Board on the nature and progress of the Committee at key milestones, and on recommendations from the Committee.
- Serve as the Advisory Committee media spokesperson in cooperation with the Agency communications lead.

Administrator

- Maintain a current roster of Committee members.
- Work with GSA Board to fill Committee vacancies, as needed.
- In coordination with the Facilitator and Committee Chair, prepare agendas for Advisory

Committee meetings.
- Notice all meetings in accordance with the Brown Act.
- Staff all meetings, record minutes and develop and distribute meeting summaries.
- Work with Committee and GSA Board to develop annual workplan and schedule for Advisory Committee meetings.
- Facilitate the process of incorporating Committee recommendations into Board packets.
- Provide options and ensure records for AC 1234 Ethics Training and Brown Act Training for Advisory Committee members.

Facilitator

As resources allow, a third-party facilitator will provide impartial facilitation services for Advisory Committee meetings. The facilitator's primary responsibility is to ensure an open process where all member interests are heard and thoughtfully considered. To this end, the facilitator works on behalf of the process and the members contributing to Advisory Committee efforts. Specific responsibilities include:

- Support the Agency Administrator and Advisory Committee Chair and/or Vice Chair in developing and distributing Committee agendas and relevant materials.
- Advocate for a fair, effective, and credible process, but remain impartial with respect to the outcome of the deliberations.
- Apply collaborative, interest-based negotiation methods that foster openness and identify areas of preliminary and final consensus agreement for advice and recommendations to the Board.
- In the absence of consensus, help identify areas of agreement and disagreement.
- Check in with members as needed to ensure all issues are identified and explored.
- Coordinate with the Agency administrator and Chair or Vice Chair to ensure accurate, impartial documentation of meetings and agreements (i.e. meeting summaries and recommendation reports).
- Ensure all members uphold the tenets of the charter.

Decision-Making

To inform PVGSA Board decision-making, the Advisory Committee will provide written recommendations in reports that reflect the outcome of Committee discussions. The recommendation reports will identify areas of agreement and disagreement. The Committee may request that one or more Committee members present its recommendations to the Board, including areas of agreement and disagreement, consistent with Committee deliberations. The PVGSA Board will consider Advisory Committee recommendations when making decisions. If the Board does not agree with the recommendations of the Advisory Committee, the Board shall state the reasons for its final decision.

The Advisory Committee will strive for consensus (agreement among all members) in all of its decision-making. Working toward consensus is a fundamental principle. Consensus means that all Advisory Committee members either fully support or can live with a recommendation. In reaching consensus, some Committee members may strongly endorse a particular proposal while others may accept it as "workable." Others may be only able to "live with it." Still others may choose to "stand aside" by verbally noting a disagreement, yet allowing all other members of the group to reach a consensus without them if the recommendation does not affect them or compromise their interests. Any of these actions constitutes consensus.

Any Advisory Committee member or members that disagree with a recommendation should provide an

alternative that attempts to meet his/her interests while also meeting the interests of other members. The Committee will strive for consensus, but shall not limit itself to strict consensus if 100% agreement among all participants cannot be reached after all interests and options have been thoroughly identified, explored, and discussed. Less-than-consensus recommendation-making shall not be undertaken lightly. When unable to reach consensus on advice or recommendations, the Committee will outline the areas in which it does not agree, providing some explanation to inform Board decision-making.

In order to conduct business (e.g. make and advance a recommendation to the Board), a quorum of the Advisory Committee must be present.

Options for how to define a quorum:
A simple majority of the total number of Advisory Committee members constitutes a quorum.

A super-majority of the total number of Advisory Committee members constitutes a quorum. (Advisory Committee to define what constitutes a supermajority)

Subcommittees

The Advisory Committee can form ad hoc subcommittees or workgroups as needed to assist with its work advising the PVGSA Board on groundwater sustainability plan development and implementation, and on Agency policies. Subcommittee composition should be representative of diverse groundwater interests. Subcommittees will develop proposals or recommendations for full Advisory Committee consideration. Any established subcommittee will operate in accordance with the Brown Act.

Membership

Composition of the Advisory Committee is intended to reflect the beneficial uses and users of groundwater in the Petaluma Valley. Established by the Board, the Advisory Committee consists of ten members that represent the following member agency designations and interest groups:

- Five at-large members, one appointed by each PVGSA member agency.
- Five interest-based appointees appointed by the PVGSA Board:
    1. Environmental representative
    2. Rural residential well owner
    3. Business community
    4. Agricultural interest (surface water or groundwater user)
    5. At-large community representative (preference for disadvantaged community interest)

Advisory Committee members may not serve concurrently on the PVGSA governing board.

Members must live or work within or represent an organization with a presence in the Petaluma Valley Groundwater Basin, identified by the Department of Water Resources current Bulletin 118. The Board will determine if alternates are necessary, and if so, the appointment process.

Advisory Committee members serve without compensation.

Selection and Appointment Process
The Board maintains an interested parties list, develops and oversees an application process, and make appointments to the Advisory Committee following member terms outlined below.

At-Large Seats
Each PVGSA member agency's governing body will appoint its at-large seat.
Interest-Based Seats
Interested individuals from the community or local organizations may apply to the Board, designating in the application the seat that the applicant would intend to fill. The PVGSA Board encourages interest groups to work together to recommend a single candidate to fill that interest's seat. The Board will give strong consideration to appointing candidates that have the backing of multiple organizations or individuals within that interest group and familiarity with groundwater and its management. The Board will also give preference to applicants with experience working with diverse community-based groups.

For the at-large community representatives, the Board will give strong preference to representatives who live or work within a Disadvantaged Community (as defined in SGMA) and will in any case give preference to appointees that can represent the interests of disadvantaged populations or interests that are otherwise under-represented on the Advisory Committee.

The Board may modify by supermajority vote the composition and number of Advisory Committee members. The Board can remove an interest-based committee member by majority vote if the member is not performing his or her responsibilities.

Terms
The initial Advisory Committee appointments will include five seats with three-year terms (interest-based categories) ending in December 2020 and five two-year terms (at-large) ending in December 2019. Following initial Committee appointment, all terms will be two years and end in December. Appointees are not term-limited; however, members must apply for each term. If a vacancy occurs for an interest-based seat before the end of the term, the Board will appoint a new individual to complete the term. The appointing Member shall fill at-large vacancies.

Process Agreements and Ground Rules
To conduct a successful collaborative process, the facilitator and all Advisory Committee members will work together to create a constructive, problem solving environment. To this end, all members agree to the following process agreements which the Committee will use, and to ground rules which will guide individual and group behavior.

Process Agreements
- ✓ **Everyone agrees to negotiate in good faith.** All participants agree to participate in decision making, to act in good faith in all aspects of this effort and to communicate their interests during meetings. Good faith also requires that members not make commitments they do not intend to follow through with, and that members act consistently in the meetings and in other forums where the issues under discussion in these meetings are also being discussed.

- ✓ **Everyone agrees to address the issues and concerns of the participants.** Everyone who is joining in the Advisory Committee is doing so because s/he has a stake in the issue at hand. For the process to be successful, all the members agree to validate the issues and concerns of the other members and strive to reach an agreement that takes all the issues under consideration. Disagreements will be viewed as problems to be solved, rather than battles to be won.

- ✓ **Everyone agrees to inform and seek input from their constituents about the outcome of the facilitated discussions.** To the extent possible, scheduling will allow for members to inform and seek input from their constituents, scientific advisors, and others about discussions.

- ✓ **Everyone agrees that members can meet with other organizational or interest group members.** Advisory Committee members may find it helpful to meet with other organizations or interest group members and to consult with constituents outside of the meeting so the member is better able to communicate community concerns on the issues at hand.

- ✓ **Everyone agrees to attend all the meetings to the extent possible.** Continuity of the conversations and building trust are critical to the success of the Advisory Committee. Members are encouraged to turn off cell phones and focus on the issue at hand. Agency staff or the facilitator will coordinate the meeting schedule.

Ground Rules

Use Common Conversational Courtesy
Treat each other with mutual respect as you discuss and deliberate groundwater issues.

All Ideas and Points of View Have Value
All ideas have value in this setting. We are looking for innovative ideas. The goal is to achieve understanding. Simply listen, you do not have to agree. If you hear something you do not agree with or you think is "silly" or "wrong," please remember that the purpose of the forum is to share ideas.

Be Honest, Fair, and as Candid as Possible
Put your interests forward, help others understand you and listen actively in order to understand others.

Avoid Editorials
It will be tempting to analyze the motives of others or offer editorial comments. Please talk about *your own* ideas and thoughts. Avoid commenting on why you believe another participant thinks something.

Honor Time, Be Concise and Share the Air
Help ensure an inclusive discussion by being cognizant of time constraints, stating your views clearly and concisely, and sharing the air so others can participate as well.

Think Innovatively and Welcome New Ideas
Creative thinking and problem solving are essential to success. “Climb out of the box” and attempt to think about the problem in a new way.

Invite Humor and Good Will
Don’t hesitate to bring levity and humor to the process when warranted, as this often helps collaborative discussions.

Be Comfortable
Please feel help yourself to refreshments or take personal breaks. If you have other needs please inform the facilitator.

Communication

Media
Members are asked to speak only for their organization or themselves when asked by external parties, including the media, about the Advisory Committee's progress, unless there has been a formal adoption of a statement, concepts, or recommendations by the Advisory Committee. Members will refer media inquiries to the Agency communications lead and reserve freedom to express their own opinions to media representatives. Members should be careful to present only their own views and not those of other participants. The temptation to discuss someone else's statements or position should be avoided. The Agency communications lead may refer media to the Advisory Committee Chair to speak on behalf of the Committee as needed.

Amendments

The Advisory Committee can recommend future changes to the charter. The Board may amend the charter when needed using its decision-making procedure.

Appendix 1-E
Petaluma Valley Groundwater Sustainability Agency
Advisory Committee Meetings 2017-2021

Petaluma Valley Groundwater Sustainability Agency Meetings 2017-2021

http://petalumavalleygroundwater.org/meetings/

PETALUMA VALLEY BOARD MEETINGS	PETALUMA VALLEY ADVISORY COMMITTEE MEETINGS
June 22, 2017	October 24, 2017
August 31, 2017	November 21, 2017
October 26, 2017	January 10, 2018
January 25, 2018	February 7, 2018
March 22, 2018	April 11, 2018
June 21, 2018	May 9, 2018
August 23, 2018	June 13, 2018
October 25, 2018	September 12, 2018
	November 14, 2018
February 28, 2019	January 9, 2019
April 25, 2019	March 13, 2019
June 27, 2019	May 8, 2019
August 22, 2019	September 11, 2019
October 24, 2019	November 13, 2019
February 27, 2020	January 8, 2020
April 23, 2020	March 11, 2020
June 25, 2020	May 13, 2020
August 27, 2020	June 10, 2020
October 22, 2020	August 12, 2020
December 17, 2020	September 9, 2020
January 28, 2021	October 14, 2020
February 25, 2021	December 9, 2020
March 25, 2021	January 13, 2021
April 22, 2021	February 10, 2021
July 22, 2021	March 10, 2021
September 23, 2021	April 14, 2021
October 28, 2021	May 12, 2021
December 8, 2021	July 14, 2021
	September 8, 2021
	November 10, 2021

All meetings in which the Groundwater Sustainability Plan was discussed.

Appendix 1-F
Community Engagement Plan for Development and Adoption of a Groundwater Sustainability Plan
Petaluma Valley Groundwater Sustainability Agency

Community Engagement Plan

for the Development and Adoption of a Groundwater Sustainability Plan

Petaluma Valley, Sonoma County

January 2018

Purpose, Outcomes & Goals

The purpose of the Sustainable Groundwater Management Act (SGMA), signed by Governor Brown in 2014, is to ensure local sustainable groundwater management in medium- and high-priority groundwater basins statewide. **California's Department of Water Resources has determined that Sonoma County has three medium priority basins that are subject to SGMA Implementation:**

- Petaluma Valley basin
- Santa Rosa Plain subbasin
- Sonoma Valley subbasin

This draft Community Engagement Plan applies only to the Petaluma Valley Groundwater Sustainability Agency, although many outreach activities will be coordinated with efforts taking place in the other two Sonoma County basins.

SGMA Milestones: The Petaluma Valley basin achieved the first SGMA milestone by creating Groundwater Sustainability Agencies (GSAs) by June 30, 2017. The Petaluma Valley GSA Board and Advisory Committee that have been created are described later in this document.

The second major SGMA milestone will be the adoption of a Groundwater Sustainability Plan (GSP) by January 30, 2022. The GSP is prescribed by SGMA and contains many required elements. The third milestone will be to achieve sustainability by 2042.

Several key steps must be taken to ensure that Milestone Two (adoption of the GSP) is achieved, including:

- Adoption and implementation of a financing plan that will allow the Petaluma Valley GSA to be financially independent;
- Development, drafting and vetting of specific elements within the GSP;
- Compilation, vetting and final drafting of the GSP as a whole.

Outcomes: The desired outcome for this Community Engagement Plan is to achieve Milestone 2 by incorporating input from stakeholders in the greater Petaluma Valley area that considers Sonoma County's diverse people, economy and interdependent ecosystems. As the GSA gets closer to completion of the GSP, a new community engagement plan will be developed to address implementation issues.

Plan Goals: During GSP preparation and implementation, SGMA requires the GSA to consider the interests of all beneficial uses and users of groundwater, and encourage involvement of diverse social, cultural, and economic elements of the population within the Basin.
The goals of the Community Engagement Plan are to:

- Enhance understanding and inform the public about water and groundwater resources in the Petaluma Valley and the purpose and need for the GSP.
- Engage a diverse group of interested parties and promote informed community feedback throughout the GSP preparation and implementation process.
- Coordinate communication and involvement between the GSA and other local agencies (including other GSAs), elected and appointed officials, and the general public.
- Employ a variety of outreach methods that make public participation easy and accessible. Hold meetings at times and venues that encourage broad participation.
- Respond to public concerns and provide accurate and up-to-date information.
- Manage the community engagement program in a manner that provides maximum value to the public and an efficient use of GSA and local agency resources.

Time Period: The Community Engagement Plan is intended to cover communication and outreach for the time period between January 2018 and January 2022, when the GSP is due to be submitted to California Department of Water Resources. Because this is a multi-year project and plan, the key activities needed to achieve these goals will be broken down into annual work plans. The Year One work plan is included as Attachment A, and the work plans for future years will be released annually and posted on the website.

Interested Parties and other stakeholders: SGMA lists interested parties who the GSA must consider when developing and implementing the GSP, including:

- Agricultural users of water
- Domestic well owners
- Municipal well operators
- Public water systems
- Land use planning agencies
- Environmental users of groundwater
- Surface water users
- The federal government
- California Native American tribes
- Disadvantaged communities (including those served by private domestic wells or small community water systems).

Appendix A includes a list of interested parties in Petaluma Valley. Representatives of most of the interested parties are included on the GSA Board or Advisory Committee: sonomacountygroundwater.org.

Many stakeholders have interests that can be affected by decisions made by the GSA, including businesses, schools, land stewardship organizations, and state government agencies. See Appendix B for a listing of additional stakeholders.

Outreach Roles

The **GSA Board**, which is comprised of elected and appointed officials, will make the ultimate decision on financing options and on the GSP. As required by the Joint Powers Authority agreement that created the GSA, the GSA Board will consider the recommendations of the Advisory Committee.

In regard to outreach, the Board is responsible for:

- Adopting and overseeing the implementation of the Community Engagement Plan
- Receiving public comments made in writing and at Board meetings;
- Considering the recommendations of the Advisory Committee.

In addition, the Board may choose to play a more active role in outreach through communication with the public, stakeholder groups and the entities it represents.

The **Advisory Committee,** which is comprised of members appointed by the GSA Board and entities that comprise the GSA, will become familiar with financing options and issues related to the GSP. The Advisory Committee is charged with actively engaging with the public for input and feedback. This charge can be carried out through various mediums and a variety of activities, but generally includes:

- Advising staff in the drafting of the Community Engagement Plan;
- Actively engage, educate and seek input from the represented stakeholder groups on issues before the GSA;
- Sharing input and feedback with the full Advisory Committee meeting; and
- Making recommendations to the Board.

The Petaluma Valley GSA Board, the Petaluma Valley GSA Advisory Committee and GSA staff are committed to keeping the **public informed**, providing the public with **balanced and objective information** to assist the public in understanding SGMA, available options and recommendations. The Board, Advisory Committee and staff will **listen and consider public input** when evaluating the options and making decisions. Input can be made during public comment periods at Advisory Committee and Board meetings, and in writing. Comments made in writing can be submitted to vminton@sonomarcd.org.

True engagement requires policymakers and the public to not only talk, but to also listen. The Sonoma Valley GSA asks all participants – whatever their role – to follow these rules of engagement:

- Be a good listener. Listen to what is being said, find out why it is being said.
- Be respectful to all participants

Community Engagement Plan

To truly engage the public in development of a GSP that is science-based, complex and technical, the GSA will strive to meet these overall objectives:

- Educate the public in compelling ways. Communicate what may often be complex concepts in simple and compelling ways with graphics and examples.
- Manage expectations. Avoid "anything goes" meetings that might pursue unrealistic and unpractical approaches.
- Show how the input received has been incorporated into the plan or process. Demonstrating to the public how their ideas have been reflected in the plan or planning process is an important piece to the puzzle.
- Remain focused on results. Understand objectives of each public meeting and facilitate the achievement of those objectives.

The Community Engagement Plan is comprised of two categories of activities a: Ongoing and project- or program-specific.

Ongoing activities are the "housekeeping" tasks of the GSA outreach, including website maintenance and updates, monthly blogs to the interested parties list, updating fact sheets and FAQs, posting Board and AC meetings and materials and issuing press releases about meetings.

Project or program-specific engagement activities are developed to meet the outreach goals of each project or program.

In Year One (July 1, 2017- June 30, 2018), the GSA Board must hire legal counsel (completed); hire rate/fee consultants (completed); apply for Proposition 1 GSP funding grant (underway); adopt various documents including bylaws and a Community Engagement Plan; initiate the first steps in developing the GSP; determine whether to request basin boundary modifications; and determine a short-term mechanism for funding the GSA. The initiation of the GSP and the rate/fee study are projects that require robust community engagement, using the tools described in the Communication Forums and Tools section, below. Attachment A provides a detailed table of Year One engagement activities, including timeframes and key roles.

In Years Two through Five (July 1, 2018-January 31, 2022), program specific engagement activities will be focused on development of GSP plan elements. The GSP will be prepared iteratively and in a logical progression, building on previously developed technical and policy information. Throughout the process of preparing the GSP, background materials along with draft text, figures and tables for each section will be provided to the GSA member agency staff, Advisory Committee, the GSA Board and the public in advance of meetings for input and comment. The Advisory Committee, public and Board will have opportunities to comment on each element, before the element is ultimately adopted by the Board.

It is anticipated that the GSP will be developed in six phases:

1. Preparation and submittal of initial notification of GSP preparation (Year One)
2. Definition of plan area and basin setting (Year Two)
3. Development of sustainable management criteria, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives and interim milestones. (Years Two and Three)
4. Design of monitoring program and data management system. (Year Three)
5. Identification and evaluation of proposed projects and management actions (Years Four and Five)
6. Development of GSP implementation costs, detailed schedule, and reporting Year Five)

Each phase requires robust outreach with the goal of educating and engaging the general public, stakeholders, the Advisory Committee and Board on the technical and policy aspects of the GSP plan elements. Each phase will include a mix of communication tools, to be used in a variety of forums. Public hearings will be held at the end of each phase. Attachment A, for Year One activities, provides a model of a full year of engagement.

Every March, staff will work with the Advisory Committee to develop an Activities Plan for the upcoming fiscal year (beginning on July 1), incorporating tools and techniques that worked well in previous years and modifying or eliminating tools that failed to engage people.

Communication Forums & Tools

Governance Agencies Briefings: Board members will brief their councils or boards regularly on GSA activities and will work with GSA staff to provide additional briefings on sensitive or important topics.

In Year One, the goal is to brief member agencies about the initiation of the GSP and the rate/fee study in January and about proposed rate/fee options in April. The purpose of the briefings is to inform boards and councils about the purpose of the GSP and the rate/fee study; the necessity and timing of the rate/fee study; and to get feedback on proposed rate/fee options.

Stakeholder Briefings: Advisory Committee members will meet with and communicate regularly with organizations comprised of the stakeholder groups they represent. To avoid overlap and mixed messages, all briefings will be coordinated with outreach staff. Many stakeholder groups were interviewed in 2015, during SGMA initial stakeholder outreach. The Stakeholder Assessment can be found online at www.sonomacountygroundwater.org.

Community events: Disadvantaged Communities are specifically called out in SGMA as an interested party. While 81 percent of the area in the Petaluma Valley Basin is designated an Economically Distressed Area, only one percent is categorized as a Disadvantaged Community. It is likely that many of the people living in the DAC area are Spanish speaking, and many are relatively recent immigrants.

Previous assessments of engaging Sonoma County's Spanish speaking community recommend using "food, faith and festivals" as opportunities to educate and interact with people on critical issues. Connecting with communities through existing organizations, like Petaluma People Services Center and the Boys and Girls Club, and through community events, churches and schools, provides an opportunity share information and solicit feedback on rate/fee options and GSP elements.

Public Meetings/Hearings

Public meetings or hearings are formal opportunities for people to provide official comments on programs, plans and proposals. SGMA requires that a public meeting be held prior to the adoption of a fee and public hearings for the adoptions of GSP elements and the final plan. There are also constitutional requirements for public hearings for some fee/rate options. Public meetings and hearings are an important forum for people to share viewpoints and concerns, but often occur at the end of a process, when only one option is under consideration. The GSA will hold required public meetings and hearings, but will also use less informal public workshops (described below) to solicit feedback and information early in the process.

Public Workshops

Public educational workshops provide less formal opportunities for people to learn about groundwater, SGMA, financing options, and GSP elements. Workshops can be organized in a variety of ways, including open houses, world cafes and traditional presentations with facilitated question and answer sessions. In order to solicit feedback from people who may not be comfortable speaking in public, workshops can include small group breakout discussions, "dot" voting, comment cards and other techniques. Whatever format of workshop is used, it will be designed to maximize opportunities for public input.

A workshop will be held in the spring of Year One (2018) to describe and solicit feedback on fee/rate options. Workshops will also be held as GSP elements are being developed.

Public Notices

In addition to the public notice required for fee adoption, SGMA requires that prior to initiating the development of a GSP, the GSA must provide a written statement describing the manner in which interested parties may participate in the development and implementation of the GSP. The statement must be provided to all the cities within the basin and to the County of Sonoma. As outlined in this Community Engagement Plan, there will be a variety of opportunities for people to participate in the development and implementation of the GSP, including workshops, public hearings, providing comments at Board and Advisory Committee meetings and through written comments. In Spring 2018, staff and legal counsel will work with the Advisory Committee and the Board on development of a written statement for public participation.

Communication Tools

Interested Persons List

SGMA mandates the creation of an interested persons list. SGMA does not specify the type of list (email versus hard copy). The first preference is an email list, to get information out quickly and to reduce costs. A secondary list will be developed for people who don't use email. Board members, Advisory Committee members and staff can contribute names of organizations, agencies, and individuals to the list. Whenever new inquiries are made they will be added to the list.

The list is broad and includes anyone who would like to stay informed about SGMA activities and anyone the Board and Advisory Committee thinks should be informed about the outcome of the planning effort. Outreach staff will send out monthly updates to the Interested Persons list.

Informational Materials

Developing a variety of informational materials is critical to the successful education and necessary to circulate consistent, accurate information. Outreach staff, with the input of the administrator, plan manager and the Advisory Committee, will develop a range of materials, including at least the following:

Periodic Updates

- **Talking Points:** Clear, concise messages to be used by Board and Advisory Committee members and staff when communicating with media, organizations and stakeholders.
- **Milestone Fact Sheets:** For initiating the GSP, the rate/fee study and completion of elements of the GSP.
- **Frequently Asked Questions:** FAQs will be issued on the rate/fee study, elements of the GSP and for specific stakeholders, including private well owners.
- **Newsletter Articles:** A short paragraph (50-100 words) that Advisory Committee members can insert into organizational newsletters. These brief articles can also be published in the Sonoma County Water Agency's e-newsletter, which has a broad distribution.
- **Newspaper editorials:** Authored by Outreach staff and Board or Advisory Committee members for submittal to local news sources.
- **Briefing Packets:** For milestone briefings. Packets will include standard talking points, PowerPoint presentations, and other materials to assist in educational outreach and for soliciting feedback.

Background/Baseline Information

- **General Fact Sheet**: A general Fact Sheet describing the GSA governance structure.
- **Basin Conditions:** Very brief description of the Petaluma Valley basin (one page, two sides).
- **GSP Goals and Requirements:** A Fact Sheet describing the goals and requirements for the Groundwater Sustainability Plan.
- **Existing Educational Materials:** Such as the Petaluma Valley Groundwater fact sheets and primers.

Existing Organizations/Efforts: When possible, engagement activities should leverage existing efforts, such as Friends of the Petaluma River, which developed an interactive atlas that includes geology, flood zone, and stream gauges.

Website: The project website, www.sonomacountygroundwater.org, will be a tool for distributing and archiving meeting and communication materials as well as a repository for any studies. Outreach staff anticipates updating the website monthly, and more often if needed. The website includes the following information:

- Home page: summary and "what's new" information
- Groundwater basics
- Petaluma Valley Information:
    - Board members, meeting schedule and meeting materials.
    - Advisory Committee members, meeting schedule and meeting materials

Social Media: Existing Facebook, Twitter, Next Door and other emerging social media technologies will be leveraged to provide updates on milestone progress to interested parties.

Surveys: Online tools, such as Survey Monkey, will be used periodically to gather stakeholder ideas and to provide feedback on key issues.

Media Plan: Outreach staff will work with the administrator to develop press releases at each milestone and for meetings. The press releases will be distributed to local and regional media and Legislative and Congressional representatives.

Appendix 1-F-1
Consideration of Interests

Appendix 1-E-1:* Consideration of Interests, as required by SGMA[1]

* This list is not exhaustive or exclusive.

Cities, County
- City of Petaluma
- County of Sonoma

Tribes
- No recognized tribes in Petaluma Valley

Federal Government
- National Oceanic & Atmospheric Administration/NMFS
- US Army Corps of Engineers
- Natural Resource Conservation Service
- USFWS
- EPA

Public Water Systems
- City of Petaluma
- Sonoma County Water Agency

Agriculture
- Sonoma County Farm Bureau
- United Winegrowers
- Community Alliance of Family Farmers
- Western United Dairymen's Association
- Sonoma County Winegrape Commission
- Sonoma County Vintners
- BRONC
- North Bay Agricultural Alliance
- Sonoma RCD
- Sonoma County Growers Alliance
- Bounty Farm (Petaluma People & Family Services Center)

Organizations Representing Environmental Uses of Groundwater
- Sonoma County Water Coalition
- Sonoma County Conservation Action
- Friends of Petaluma River
- Petaluma Wetlands Alliance

Disadvantaged Communities[2]
- None identified in Petaluma Valley

PUC-regulated and Mutual water systems inside the basin
- Penngrove Water Company

Well Owners (including domestic well owners)

[1] Water Code §10723.2

[2] As identified by the County of Sonoma

Appendix 1-F-2
Other Interested Parties

Appendix 1-E-2:* Other Interested Parties[3]

* While not required to be engaged under SGMA, these stakeholders will be including in the outreach program. This list is not exhaustive or exclusive.

- Sonoma County Agricultural Preservation & Open Space District
- Sonoma County Planning Commission
- North Bay Watershed Association
- School districts
- Regional Water Quality Control Board

Business / Developers

- Sonoma County Alliance
- North Bay Association of Realtors
- Economic Development Board
- Petaluma Chamber of Commerce

Citizens & Community Organizations

- Daily Acts
- League of Women Voters
- Democratic and Republican clubs
- Rotaries
- Kiwanis
- SIRS

PUC-regulated and Mutual water systems outside the basin but in the watershed

- Boulevard Heights Mutual Water Company
- College Park Mutual Water
- Terrace View Mutual Water Company

[3] Appendix C includes parties and organizations that may be interested in groundwater management, but are not specifically identified as an interest that must be considered under Water Code §10723.2.

Appendix 1-G
Stakeholder Assessment Report: Findings and Recommendations on Implementing the Sustainable Groundwater Management Act in Sonoma County

Consensus Building Institute

Stakeholder Assessment Report

Findings and Recommendations on Implementing the Sustainable Groundwater Management Act in Sonoma County

Developed by Senior Mediator Gina Bartlett, Consensus Building Institute, Inc.
September 15, 2015

Overview

The State of California passed the Sustainable Groundwater Management Act in 2014. The State has designated three groundwater basins in Sonoma County as medium priority: the Petaluma Valley, Santa Rosa Plain, and Sonoma Valley. The Act requires that medium and high priority basins form a groundwater sustainability agency by June 2017, develop a groundwater sustainability plan by 2022, and achieve sustainability by 2042. Under the Act, local agencies with water supply, water management or land use responsibilities are eligible to form a groundwater sustainability agency. To develop an effective process for groundwater sustainability agency formation in these three basins, the Sonoma County Water Agency contracted with the Consensus Building Institute to conduct a stakeholder assessment and make recommendations on a process for forming groundwater sustainability agencies in compliance with the Act. This report summarizes the interview findings and process recommendations.

CBI conducted interviews with representatives of each GSA-eligible local agency and key organizations and interest groups. CBI also met with both the Santa Rosa Plain and the Sonoma Valley basin advisory panels in person to discuss panel members' perspectives on implementing the Act. CBI also conducted an online survey related to these issues and received 36 confidential responses. For the survey, CBI invited basin advisory panel members from both the Sonoma Valley and Santa Rosa Plain, stakeholders interested in water issues, federal and state agencies with jurisdiction in the region, and Public Utilities Commission-regulated water companies to participate.

During this assessment, CBI met periodically with the County-Water Agency Working Group made up of staff from the County Administrator's Office, Permit & Resource Management Department, County Counsel and the Sonoma County Water Agency to discuss preliminary insights and findings and identify subsequent steps in the assessment process. After completing most of the interviews and receiving the majority of survey respondents, CBI met with staff of the GSA-eligible entities to discuss the assessment's preliminary findings and begin developing a process that would consider the responsibilities of the governing boards of the eligible entities and the many stakeholders in the county that are interested in groundwater issues. Process recommendations in this report reflect the outcome of those deliberations.

Existing Groundwater Management Programs

Both the Sonoma Valley and the Santa Rosa Plain have groundwater management programs with monitoring programs, stakeholder involvement, and other components to manage groundwater in

different stages of implementation. The Sonoma County Water Agency is the lead agency for implementing these programs. Both have a Basin Advisory Panel that develops consensus-based recommendations to implement the groundwater programs effectively. The Petaluma Valley is in the early stages of assessing its groundwater resources.

Assessment Findings

The following summarizes findings from interviews and surveys of the Consensus Building Institute.

Understanding SGMA and Water Stakeholders

Generally, interviewees are trying to understand and think about the best way to implement the law in the designated basins in the county. It is important to note that most respondents, both staff and stakeholders, articulate commitment to long-term sustainable groundwater management and the importance of groundwater-surface water interaction, conjunctive use, and integrated water resources management. One interviewee emphasized that cooperation across all the entities (water districts, cities and county) is essential for implementing SGMA successfully.

Governance and Representation

Respondents discussed a range of issues that they would recommend for consideration in forming one or more groundwater sustainability agencies. Key themes were keeping decisions local within the basin, and making sure that different users' interests are somehow balanced in groundwater management. Respondents respect local knowledge and control for water management and expressed concern about needing to participate in management decisions for other basins and about agencies or stakeholders from external jurisdictions making decisions about local groundwater. At the same time, some recognize a need for a regional perspective on water resources and land use; those with this perspective feel confident that regional considerations can blend with local decisions. Everyone acknowledges that the county government has an important role to represent the unincorporated areas of the County, in particular domestic well owners. Participants offer the following considerations for the voting structure and representation.

Potential Voting Structure and Representation in a GSA

- Balance agriculture, urban, city, and rural residential interests
- Provide for local control
- Consider that Sebastopol (100% reliance) and Rohnert Park rely more heavily on groundwater supply than other cities
- Protect groundwater supply interests of cities' that use groundwater as supplemental supply (peak and emergency)
- Consider that SCWA has pumping facilities in the Santa Rosa Plain groundwater basin only, not in Petaluma Valley or Sonoma Valley
- Avoid using the quantity of water use for representation since conserving water use is key
- Consider population in representation
- Allow for governing boards to appoint representatives (so representative could be elected official or an appointee). Each entity to decide who represents it.
- GSA Board should not mix staff and elected officials. Interviewees prefer that GSA board consist of elected or appointees of electeds. People cite the Water Advisory Committee / Technical Advisory Committee model as effective with policy arm for limits and potential fees.
- Consider rural domestic well owners: representation and participation, the large number of wells, and significant groundwater use.

- Some would like opportunity for agriculture and private water companies (like Cal American Water) to have a role in governance.
- Concern exists that agricultural interests, if involved in GSA, might overwhelm cities' interests.

Examples
Multiple interviewees suggested the Sonoma County Transportation Authority and the Sonoma County Water Agency's Water Advisory Committee / Technical Advisory Committee as successful models to examine and possibly emulate. One person suggested the North Bay Watershed Association. Interviewees repeatedly cited the Waste Management Agency as an example to avoid.

Costs
Interviewees from the agencies are concerned about costs and funding SGMA implementation. While SGMA authorizes the groundwater sustainability agency to levy fees, the agency is still subject to Proposition 218, potentially limiting the ability to raise funds. Entities that purchase water from the Sonoma County Water Agency to supply their customer base (water contractors) expressed concern about paying for groundwater planning more than once – through water purchases that fund SCWA and through cost sharing agreements for groundwater planning. The cities express commitment to continuing to fund groundwater planning, but would like other groundwater users (specifically in unincorporated areas) to contribute since substantial groundwater use occurs outside of city boundaries, and some cities only use groundwater for emergency and peak supply – it is a small part of their water budget.

County of Sonoma Role
Since the County is default agency under SGMA[1], many interviewees believe that the County should take the lead in organizing SGMA implementation and seeking public input. The County has a stated commitment to sustainability and view groundwater as an element. The Board of Supervisors has the responsibility of representing both agriculture and domestic well owners in the unincorporated areas as well as city residents under SGMA. Some interviewees express concern about the County's ability to represent agricultural interests in the unincorporated areas. Most interviewees support the County representing rural residential well owners. The relationship between the Cities and the County is complex. As agencies, the Cities and County work together on a number of issues, and due to differing interests, some efforts have created tensions. These unrelated tensions sometimes affect attitudes about the role that the County should play in implementing SGMA.

Basin Advisory Panels and Public Input
Everyone recognizes the value that the existing basin advisory panels play in an advising on groundwater management. Interviewees express openness to relying on the basin advisory panels into the future in some capacity. Some interviewees strongly advocate that basin advisory panels continue because the panels have played a critical role for discussing and resolving groundwater management issues, reducing conflict in the groundwater basins. Some interviewees articulate concerns about challenges within the Santa Rosa Plain Basin Advisory Panel and limitations this places on effective collaboration.

[1] Under SGMA, the County can opt out of GSA formation. If no agency in a basin steps forward to form the GSA, the state would intervene.

Stakeholders demonstrate a high level of expectation for public outreach and stakeholder involvement. Respondents urge expansive outreach to rural residential well owners and seeking guidance and input from basin advisory panels and the public on forming the groundwater sustainability agency.

Governance Options

As part of the assessment, the facilitator and interviewees discussed possible configurations for the groundwater sustainability agency(s) within basins and across the three basins. Stakeholders articulated pros and cons of different options based on their understanding at the time.

One GSA per Basin or 3 GSAs

Pros
+ Provides for decision making at local level, reflects each unique basin

Cons
GSAs might compete against one another for external funding
Spreading resources too thin

Models: Existing BAP Structure

Hybrid: One GSA per Basin (or 3 GSAs) that Coordinate or Share Staff and Resources

This option was very popular among interviewees.

Pros
+ Provides for decision making at local level
+ Shares resources across basins
+ Allows for regional consideration on management issues

Cons
GSAs might compete against one another for external funding

Models: Metropolitan Transportation Commission

Centralized: 1 GSA in County for all three Basins

Pros
+ Like simplicity and ease of setting up
+ Shares decision making across agencies with possibility of designating seats for particular agencies or interests groups
+ Shares resources and costs

Cons
Governing board too big. Agency too big.
Prefer decision-making at local level. Might miss the nuances of the local detail
Concerned about GSA board representing all groundwater users' interests

Models: LAFCO

Multiple GSAs/Basin

No one expressed interest in having multiple GSAs within a basin

Important Qualities for a Groundwater Sustainability Agency

In response to the facilitator's question, respondents articulated the following qualities for the agency:

- Political and technical credibility
- Strong technical capacity
- Track record of conducting similar activities
- Fairly represent local interests
- Willingness to leverage existing work (USGS studies and existing Groundwater Management Programs)
- Link responsibility between countywide surface water supply and basin groundwater supplies
- Equal representation
- Ratepayer considerations
- Efficiencies
- Cost effective

Other Evaluative Elements

Interviewees recommend comparing costs, potential fees that structures and options would require.

Interviewees recommend creating a structure that can manage future basin designations as medium or high priority in the county

Consistent with SGMA, participants would like to evaluate the ability of the governance structure to protect groundwater supply interests for all beneficial uses / users.

Interviewees noted that SCWA has the technical and scientific capacity to develop the groundwater sustainability plan. SCWA is involved in groundwater management and conjunctive use. SCWA also provides regional perspective across basins and has been able to solicit funding from the state to assist existing groundwater programs.

Interviewees recommended repeatedly to keep the structure as simple as possible and to avoid cumbersome, costly bureaucracy while allowing more complex structures to evolve if needed in the future. Concern exists that establishing structure could be lengthy or difficult. Some worry that creating a joint powers authority would be very difficult to organize / agree to and cumbersome in implementation.

Some local agencies also express concern about the possibility of the groundwater sustainability agency usurping the control of local jurisdictions in decision-making.

Recommendations

The Consensus Building Institute has developed these process recommendations through a participatory evaluation process, sharing preliminary interview findings with staff of the GSA-eligible agencies to then design a recommended process. The goal of the proposed process is to form groundwater sustainability agencies in the basins that have widespread support of the eligible agencies, stakeholders, and the general public.

Anticipated Discussion Topics for Decision-Making on GSA Formation

Based on the interviews, surveys and discussions, the parties will need to discuss the following topics to reach a successful conclusion on GSA formation.

- *Decision-making framework*: Agree on how decisions will be made at a staff level and sequencing for governing board consideration and final approvals.
- *Principles for developing governance options*: Serve as a tool to demonstrate intent and help others understand how the GSA-eligible agencies will work together.
- *GSA authorities and responsibilities*: Clarify the authorities and responsibilities that the law establishes.
- *Governance structures and options*: Explore the governance structure options and necessary legal agreements necessary to support successful formation and implementation.
- *Criteria for evaluating options:* Use to evaluate, weigh and compare options using eligible entity and stakeholder interests as basis of criteria.
- *Legal documents for GSA formation*: Craft the legal documentation of all agreements.
- *Communication and outreach*: Develop an outreach strategy to inform all beneficial users of groundwater and the public at large.
- *Costs*: Consider the costs of forming and operating the groundwater sustainability agency and developing a funding and finance plan and associated policies.
- *Timeframe for GSA formation*: Monitor and comply with state-mandated deadlines.

Process Overview

The diagram outlines the recommended process for GSA(s) formation in Sonoma County. In summer 2015, staff of the GSA-eligible agencies began meeting to understand and explore options to comply with SGMA. In the summer and fall of 2015, staff would work together to develop governance options that might be appropriate for the basins, given the existing groundwater programs and based on the interests of the agencies and stakeholders in the basins. During fall 2015, the County and the Sonoma County Water Agency, in cooperation with the other GSA-eligible entities, would host public workshops to increase the public's understanding of SGMA and share information about potential options for complying with SGMA in the basins. Additional outreach activities would also occur, including informational materials and a web site. Also some GSA-eligible agencies would likely provide briefings to governing boards during regularly scheduled meetings, all of which are open to the public and would serve as another outreach vehicle.

While outreach was occurring, the GSA-eligible entities would continue discussing the details of GSA governance options, exploring options in more depth over time. These discussions would benefit from the outreach process yielding new insights and potential concerns that staff can then incorporate into discussions.

The California Department of Water Resources used its Bulletin 118 to establish the basin boundaries. If a basin wishes to change its boundary, the responsible entity must submit an application to the Department of Water Resources between January and March 2016. To that end, the GSA-eligible entities would decide on this issue by December 2015 to ready the application.

Proposed Process Overview

Anticipated Discussion Topics for Decision-Making on GSA Formation

Decision-making framework

Principles for developing governance options

GSA authorities and responsibilities

Governance structures and options

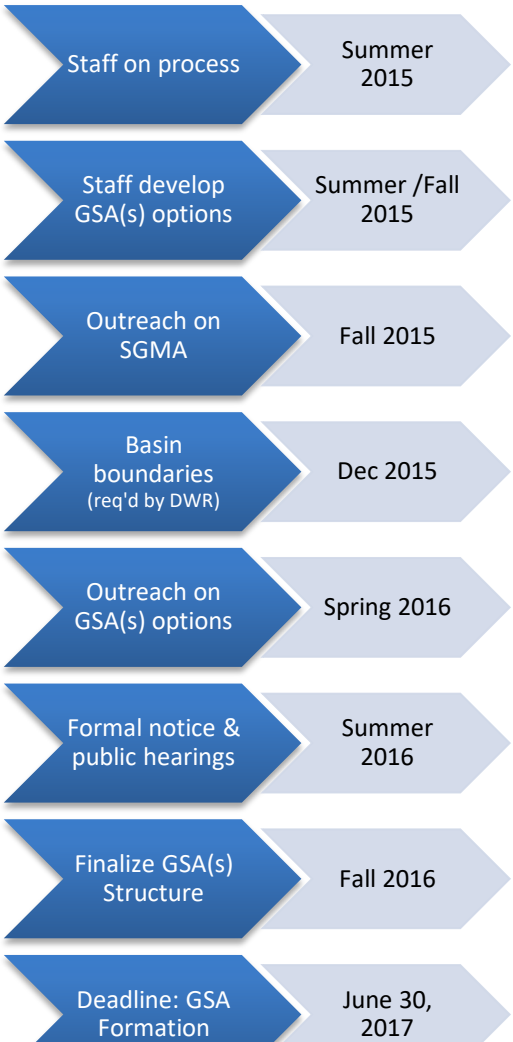
Criteria for evaluating options

Legal documents for GSA formation

Communication and outreach

Costs

Timeframe for GSA formation



By spring 2016, the goal would be for staff to have recommendations on the GSA(s). A robust outreach program on the recommendations would occur during the spring. Assuming no major challenges at that point, the responsible agency(s) would issue one or more formal notices (one per GSA), as SGMA requires, and hold the necessary public hearing. Contingent on the outcome of the public hearing, the governing boards would then direct staff to finalize the GSA structure(s) and notify the State of California of its formation.

Other Important Considerations

Government-to-government contact with the Lytton Rancheria and Graton Rancheria: The County of Sonoma is the appropriate body to initiate formal contact with the tribes in the basins to discuss SGMA. Initial outreach to the tribes has already occurred.

Dry Creek Tribe Land Ownership in Petaluma Valley Basin: The Dry Creek Tribe owns land in the Petaluma Valley groundwater basin; however, the land is not currently in trust.

Disadvantaged Communities: One stakeholder suggested to investigate water quality issues on wells in Southwest Santa Rosa - part of it is Roseland and North of Hearn, south of Highway 12, east of Wright Road and west of Highway 101.

Outreach Strategy: The GSA-eligible entities are putting together an outreach strategy, including briefing governing boards at public meetings, holding public workshops, communicating with the Basin Advisory Panels, and general information on a web site.

Interviews Completed and Survey Information

GSA-eligible Entities
Valley of the Moon Water District
City of Cotati
City of Petaluma
City of Rohnert Park
City of Santa Rosa
City of Sebastopol
City of Sonoma
Town of Windsor
North Bay Water District
Sonoma County Water Agency
County of Sonoma / PRMD

Also Interviewed
Cal American Water Company
Russian River Keeper – Don McEnhill
Sonoma County Farm Bureau – Tito Sasaki
Sonoma County Water Coalition Members: Rue Furch, Stephen Fuller-Rowell & Jane Nielson
Sonoma Resource Conservation District – Kara Heckert
United Winegrowers – Group interview

Group Discussion
Santa Rosa Plain Basin Advisory Panel
Sonoma Valley Basin Advisory Panel

36 Surveys Submitted
Basin Advisory Panel members, state and federal agencies, and non-governmental organization representatives invited to participate in survey.

About the Consensus Building Institute and Gina Bartlett

Founded in 1993, the Consensus Building Institute improves the way that community and organizational leaders collaborate to make decisions, achieve agreements, and manage multi-party conflicts and planning efforts. A nationally and internationally recognized not-for-profit organization, CBI provides collaborative problem solving, mediation and high-skilled facilitation for state and federal agencies, non-profits, communities, and international development agencies around the world. CBI senior staff are affiliated with the MIT-Harvard Public Disputes Program and the MIT Department of Urban Studies and Planning. Learn more about CBI at: www.cbuilding.org

Gina Bartlett is a senior mediator at CBI. She has mediated many complex policy issues related to water resources, land use and natural resources over the last 20 years. She is on the national roster of the U.S. Institute for Environmental Conflict Resolution and has a Master's degree in Conflict Analysis & Resolution. Ms. Bartlett previously conducted an assessment and facilitated development of the Sonoma Valley and Santa Rosa Plain groundwater management plans. You can learn more about Gina at: http://www.cbuilding.org/about/bio/gina-bartlett (Email: gina@cbuilding.org and Tel: 415.271.0049)

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Appendix 3-A
Water Year Type Classification for Petaluma Valley, Santa Rosa Plain, and Sonoma Valley

Water Year Type Classification for Petaluma Valley, Santa Rosa Plain, and Sonoma Valley

Monthly PRISM precipitation records from each basin were combined to create a single precipitation record. The 3 locations are

PRISM Location	Groundwater Basin	Representative Station
38.5068,-122.8029	Santa Rosa Plain	Santa Rosa Airport
38.2473,-122.6250	Petaluma Valley	Petaluma Airport
38.2992,-122.4553	Sonoma Valley	Vallejo House

These three records were first averaged for each water year. These are shown in Figure 1 for the period from 1895 to January 2020. The precipitation records for the 3 basins are highly correlated (Figure 2). This means aggregation of the 3 records will not introduce biases into the synthesized record. It also means that a single site could also be used as a surrogate for all 3. This approach does not account for the original biases that e ist within the original datasets. These biases may e ist because PRISM monthly estimates do not match actual recorded values for a given station.

A rolling weighted average was applied to the combined yearly precipitation record. This is done because groundwater recharge has a latency to precipitation, infiltration and other processes. We used a 3 year rolling window. Figure 3 shows the filtered signal using the same filter that is applied to the water year records. The filter applies weights so that the current year has the most effect on the moving average, and the two previous have lesser effects.

To classify water years in to hydrologic types, the following percentile classifications were applied. These values are based on the percentiles of the entire record and were used to classify the 3-year rolling average values (Table 1).

Table 2 Shows the number of water types based on this classification. The combined precipitation record, water year types, and rolling average is shown if Figure 4.

Percentile of Entire Record	Water Year Type	Lower Bound (inches)	Upper Bound (inches)
0 - 20	Very Dry	11.2	18.5
20- 40	Dry	18.5	22.7
40-60	Normal	22.7	32.3
60-80	Wet	32.3	41.5
80-100	Very Wet	41.5	56.1

Percentile of Entire Record	Water Year Type	Number of Water Year Types
0 - 10	Very Dry	4
10- 30	Dry	20
30-70	Normal	65
70-90	Wet	34
90-100	Very Wet	2

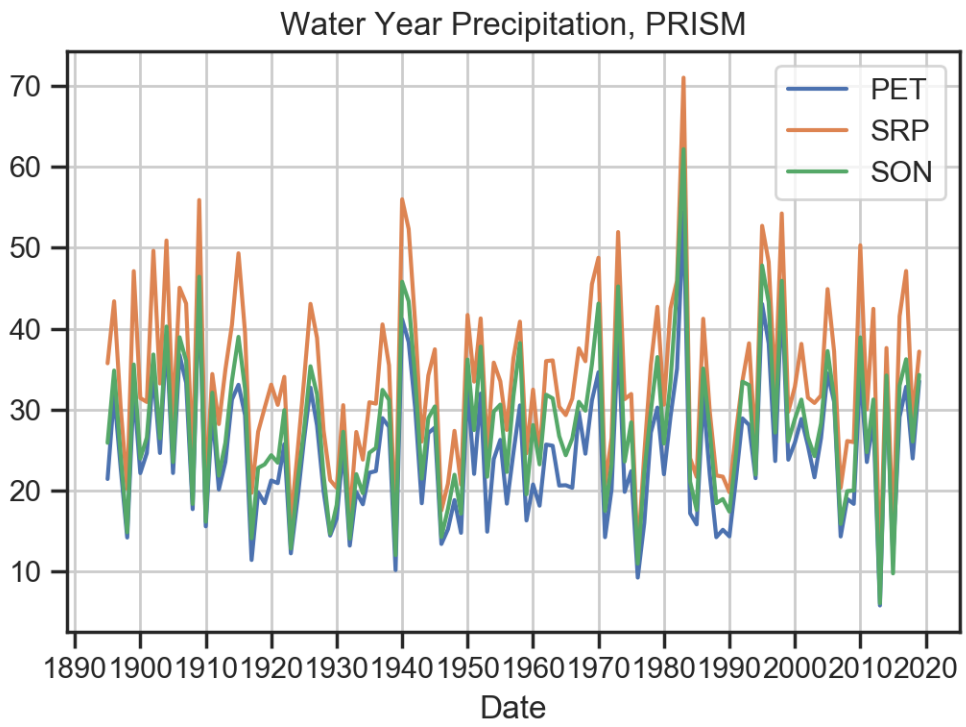

Figure 1 Water year precipitation for each basin

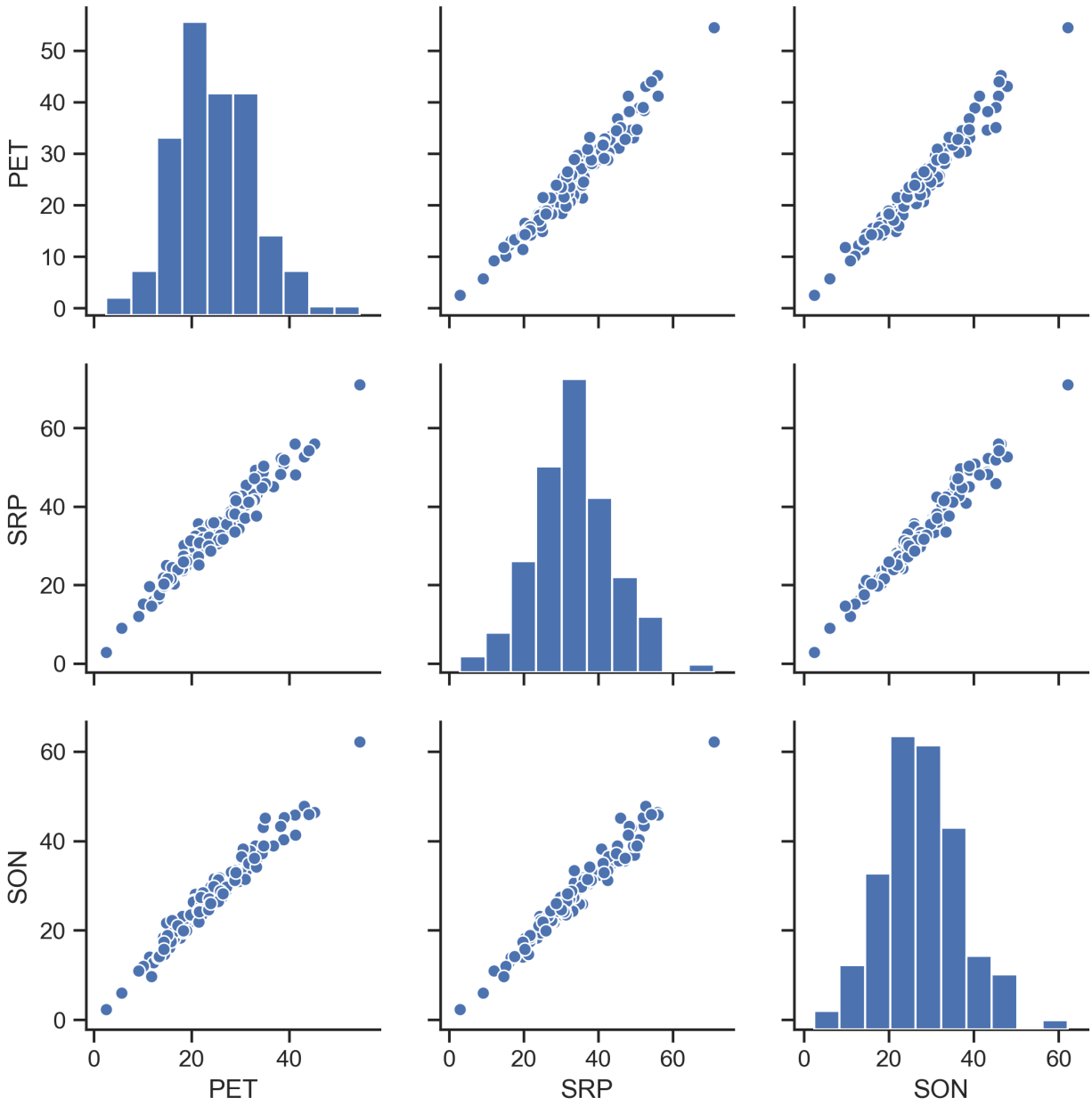

Figure 2 pairwise relationships for the 3 subbasin records

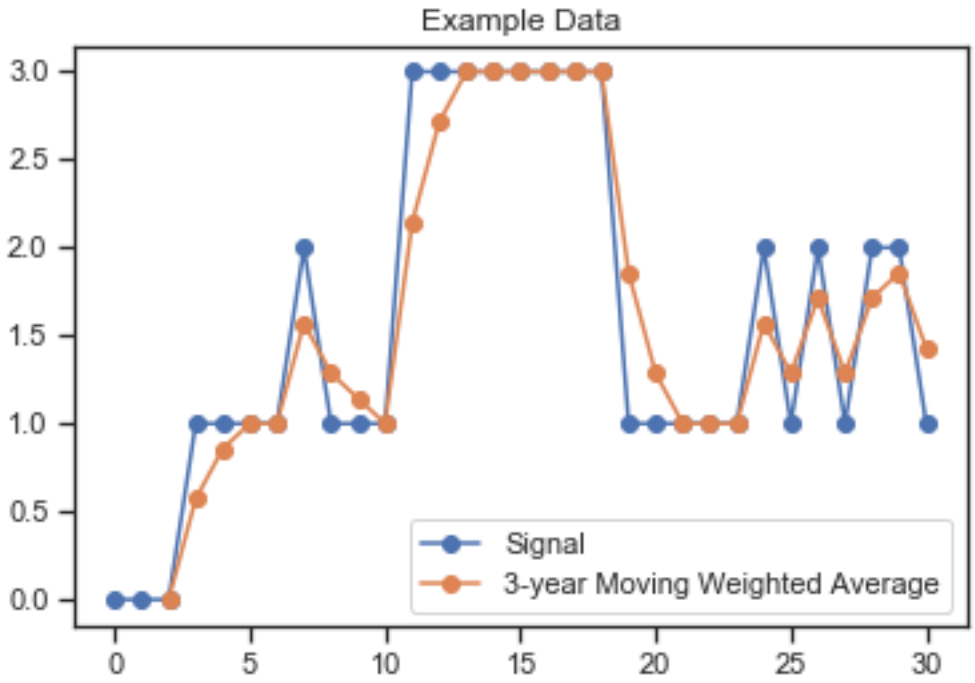

Figure 3 Example data showing signal and filtered response timeseries

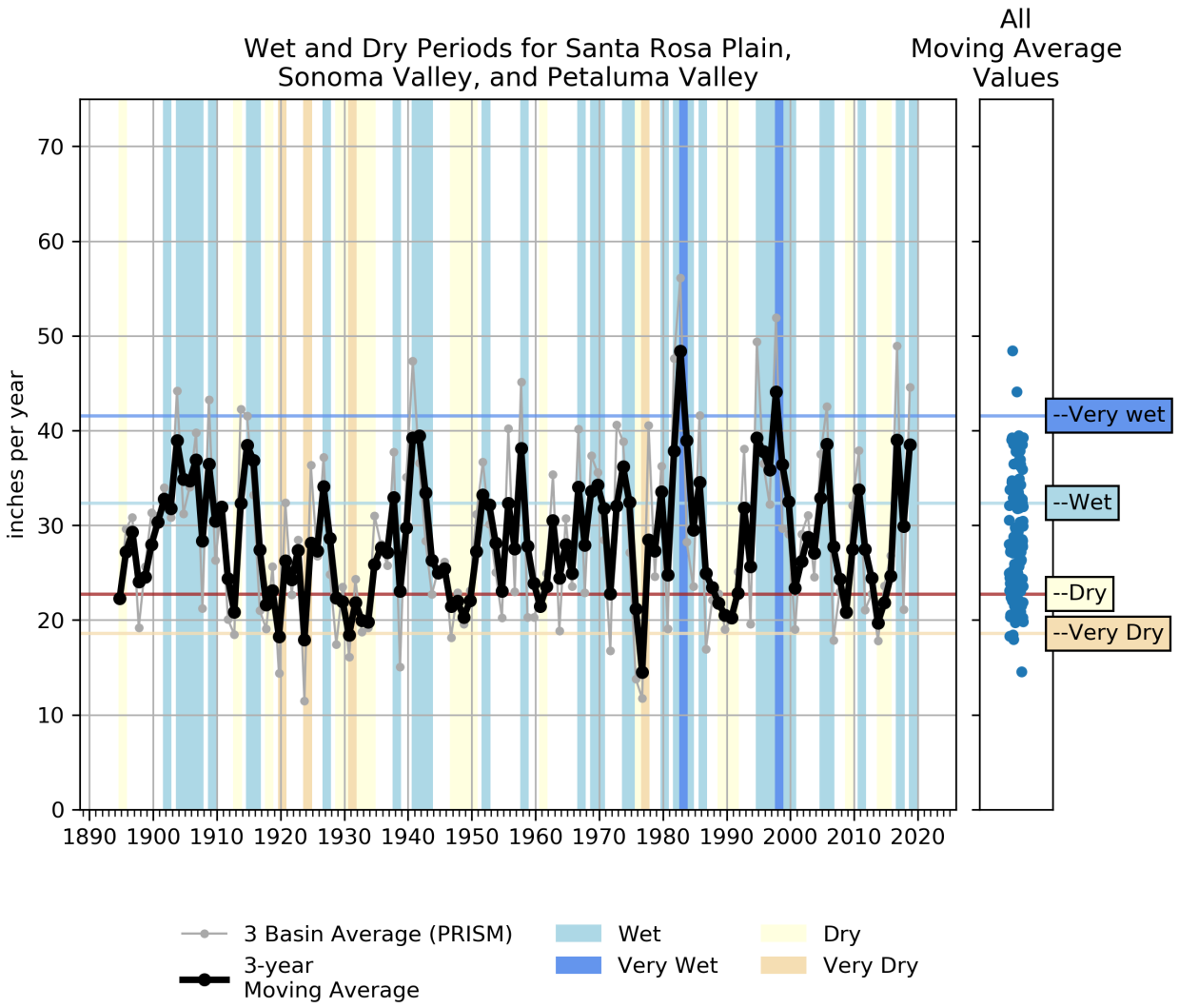

Figure 4 Water Classifications for Santa Rosa Plain, Sonoma Valley, and Petaluma Valley

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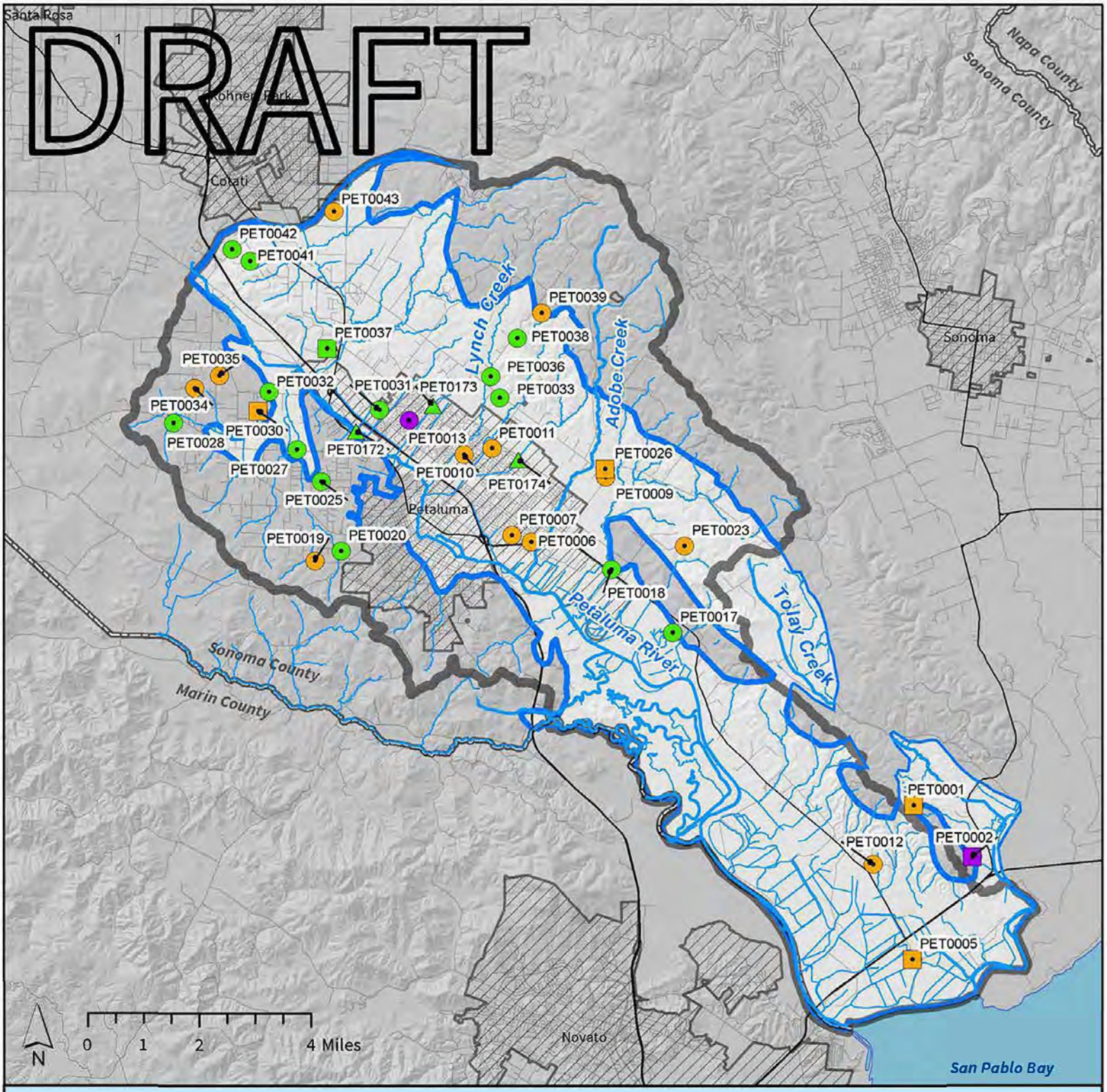
Appendix 3-B
Long-Term Groundwater Monitoring Well Hydrographs



CASGEM/Volunteer Wells

- Deep(>500ft)
- Medium (200-500ft)
- Shallow (0-200ft)
- Square symbols indicate wells with no data since 2015

High-Frequency Monitoring Wells

- Shallow (0-200ft)
- Petaluma Valley Groundwater Basin
- Streams
- Contributing Watershed Area
- City Footprints

1

Figure 3-11 Petaluma Valley Groundwater-Level Elevation Monitoring Network

Data Sources:

Groundwater Basins - California Department of Water Resources, Bulletin 118

Hydrologic Features - USGS

PETALUMA VALLEY GROUNDWATER SUSTAINABILITY AGENCY

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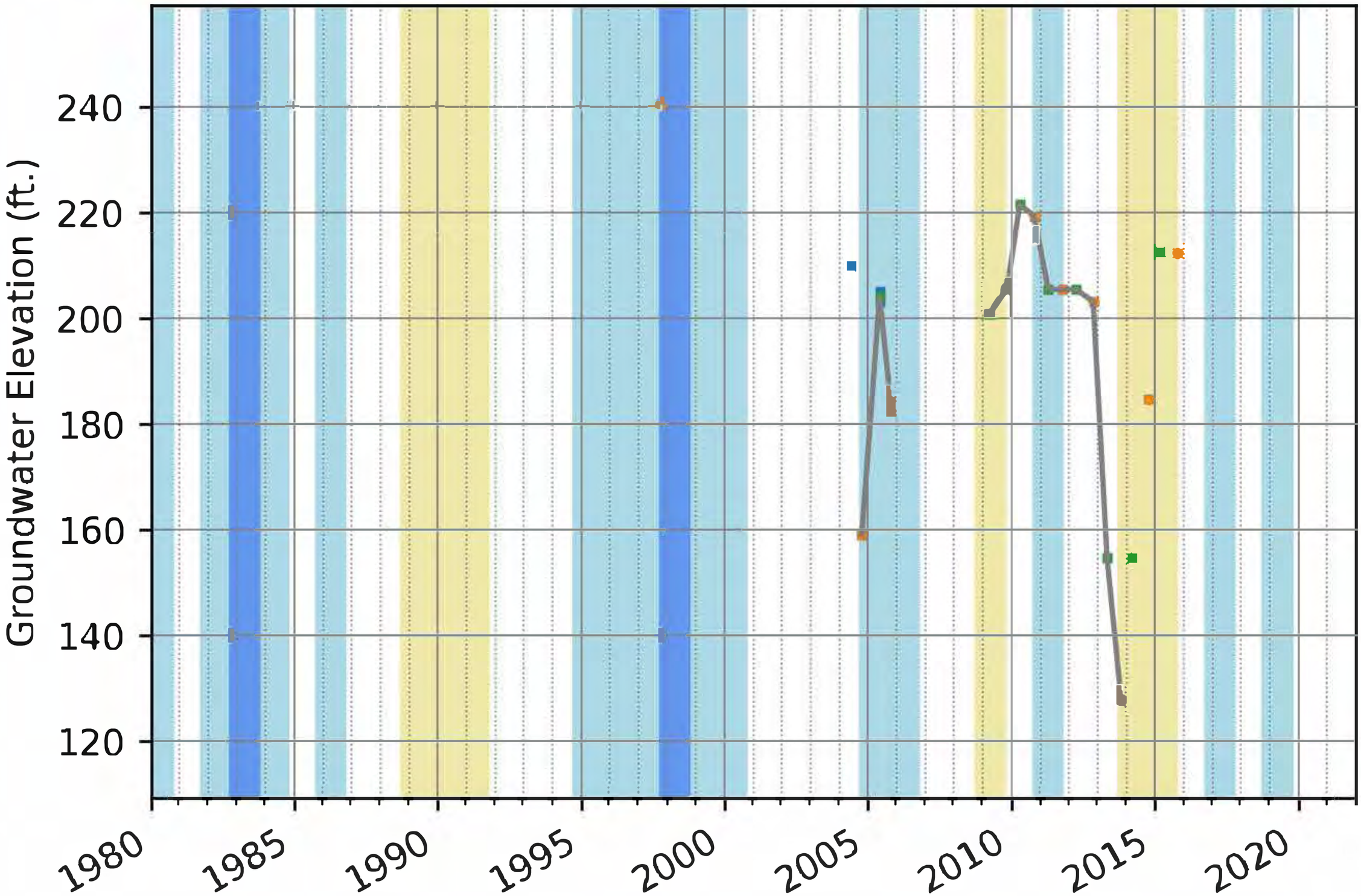

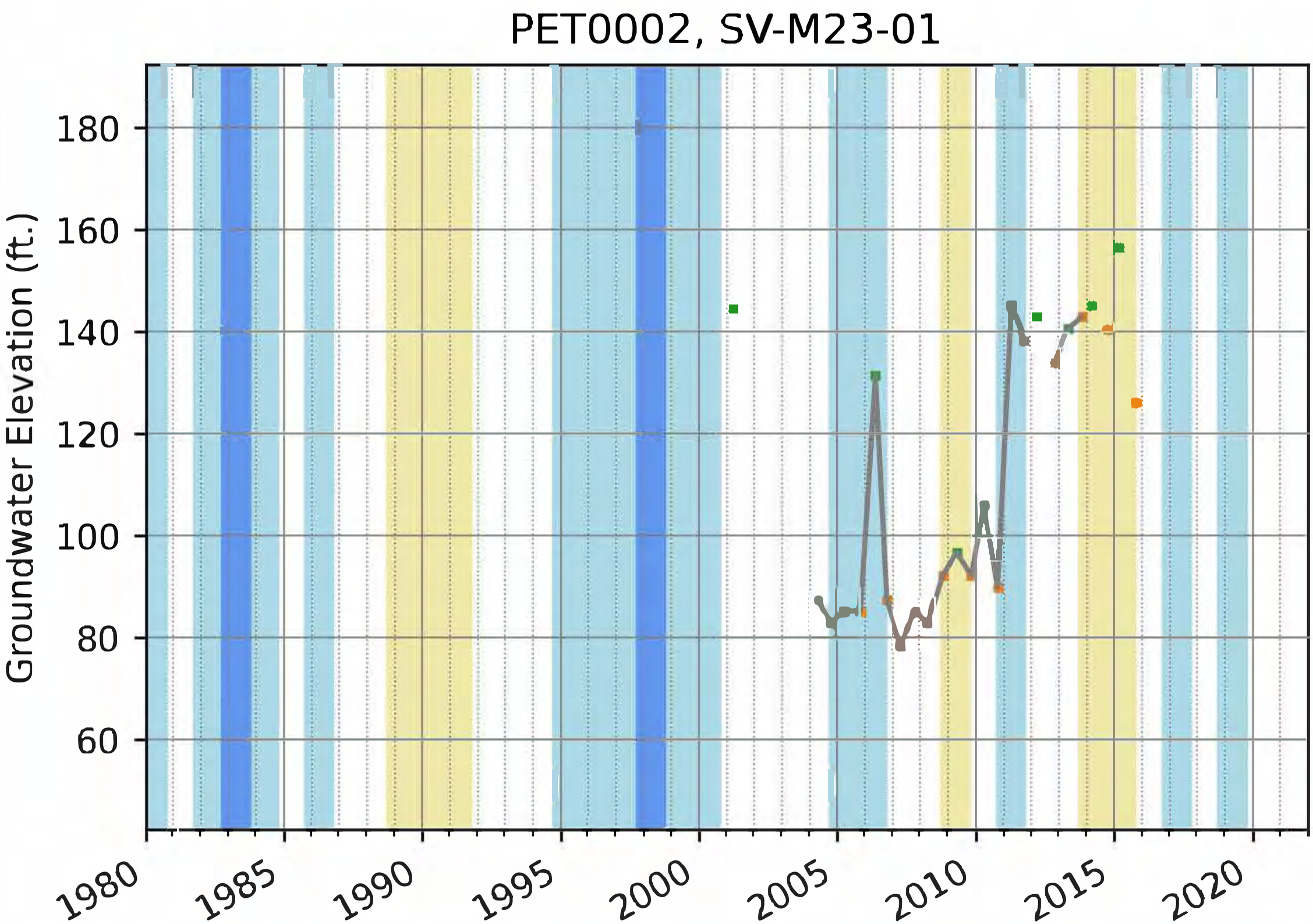
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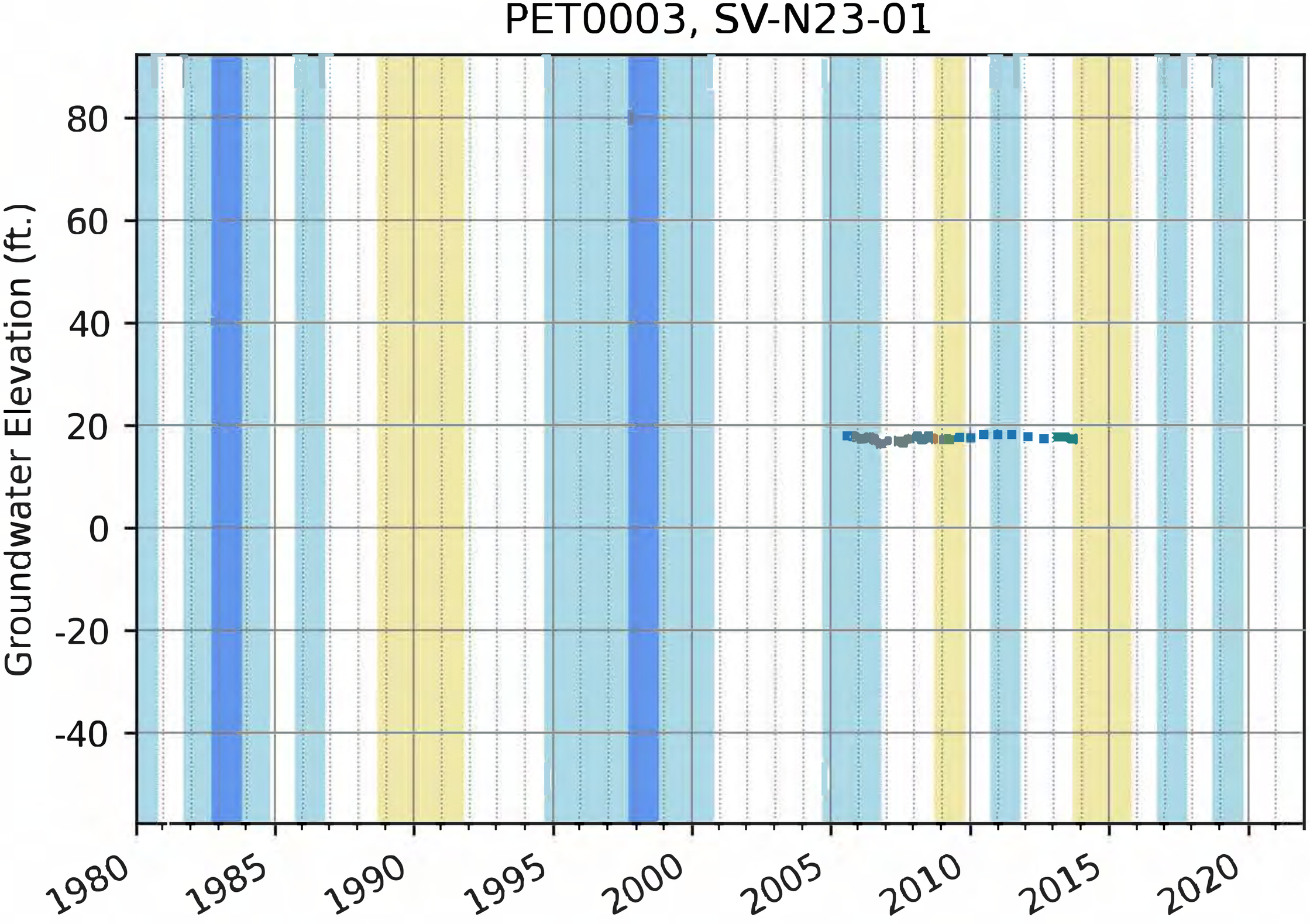
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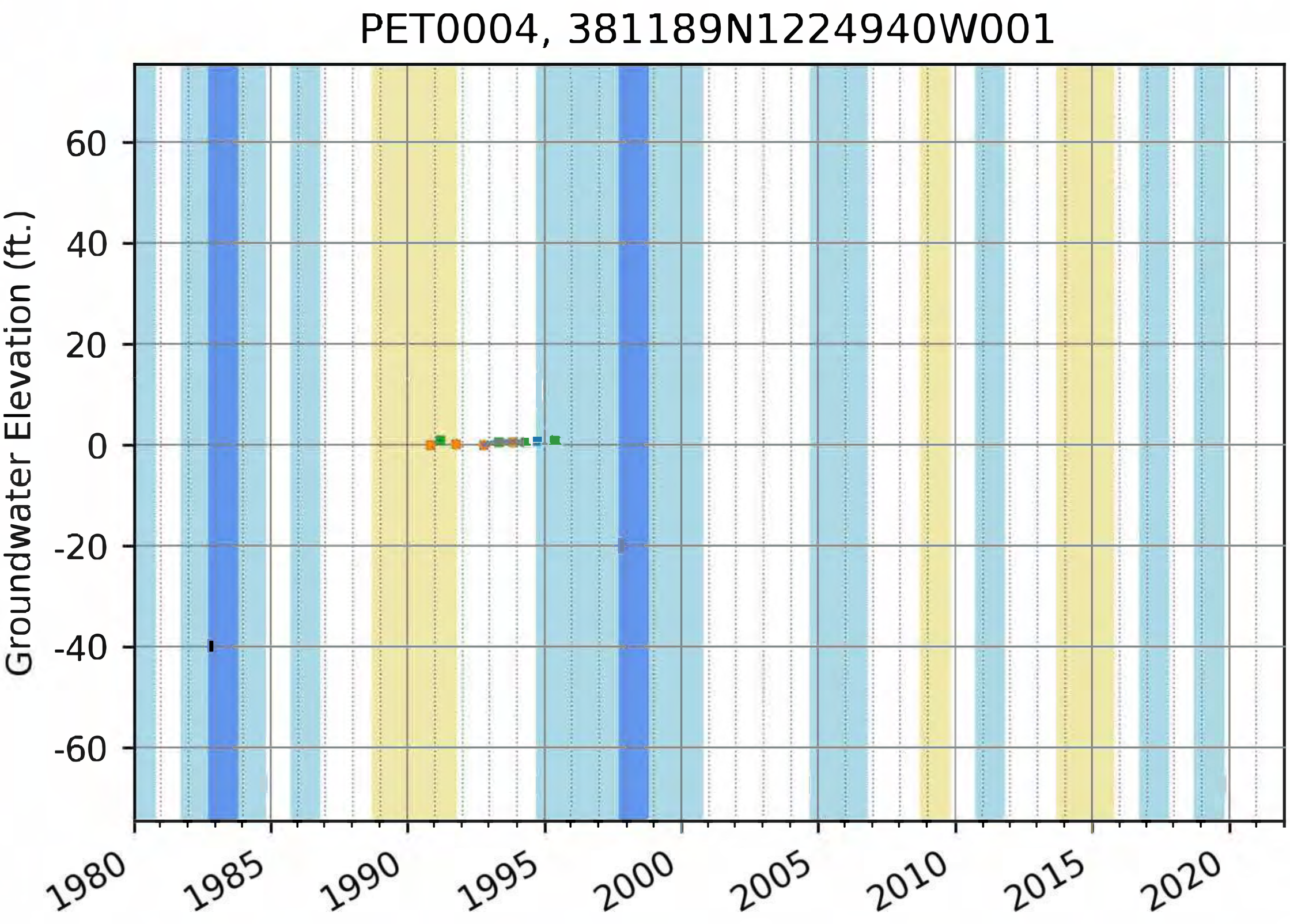
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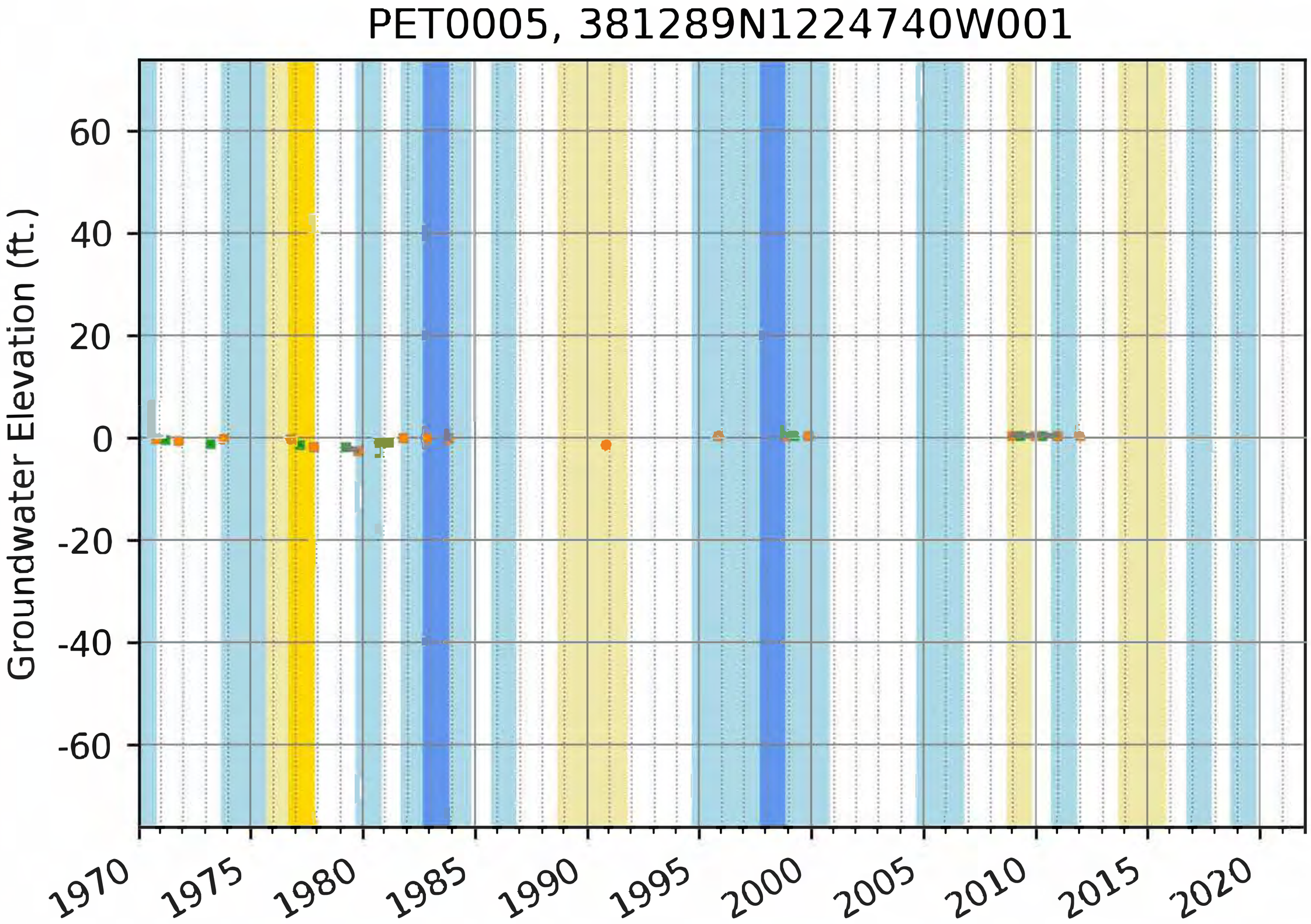
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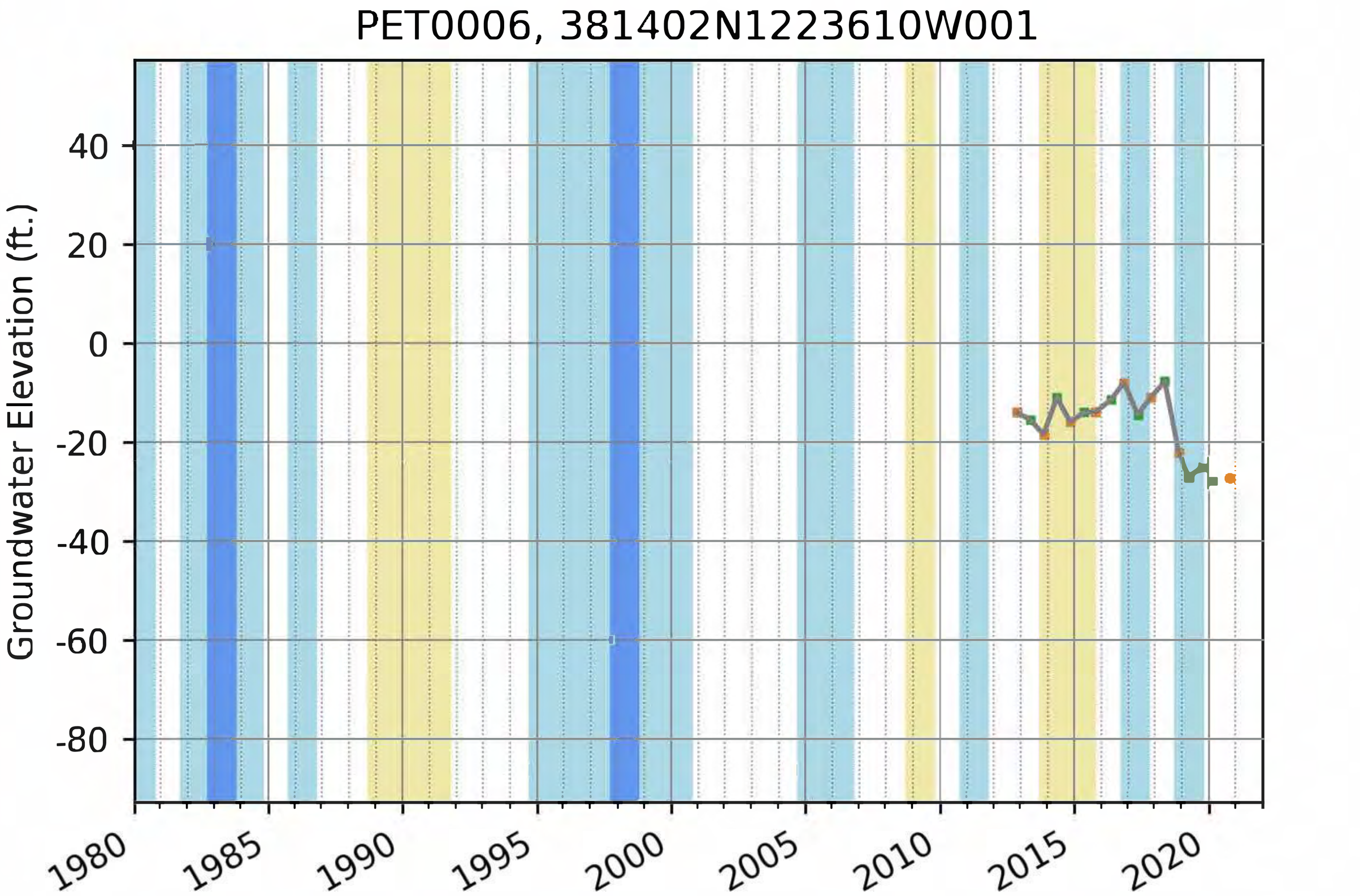
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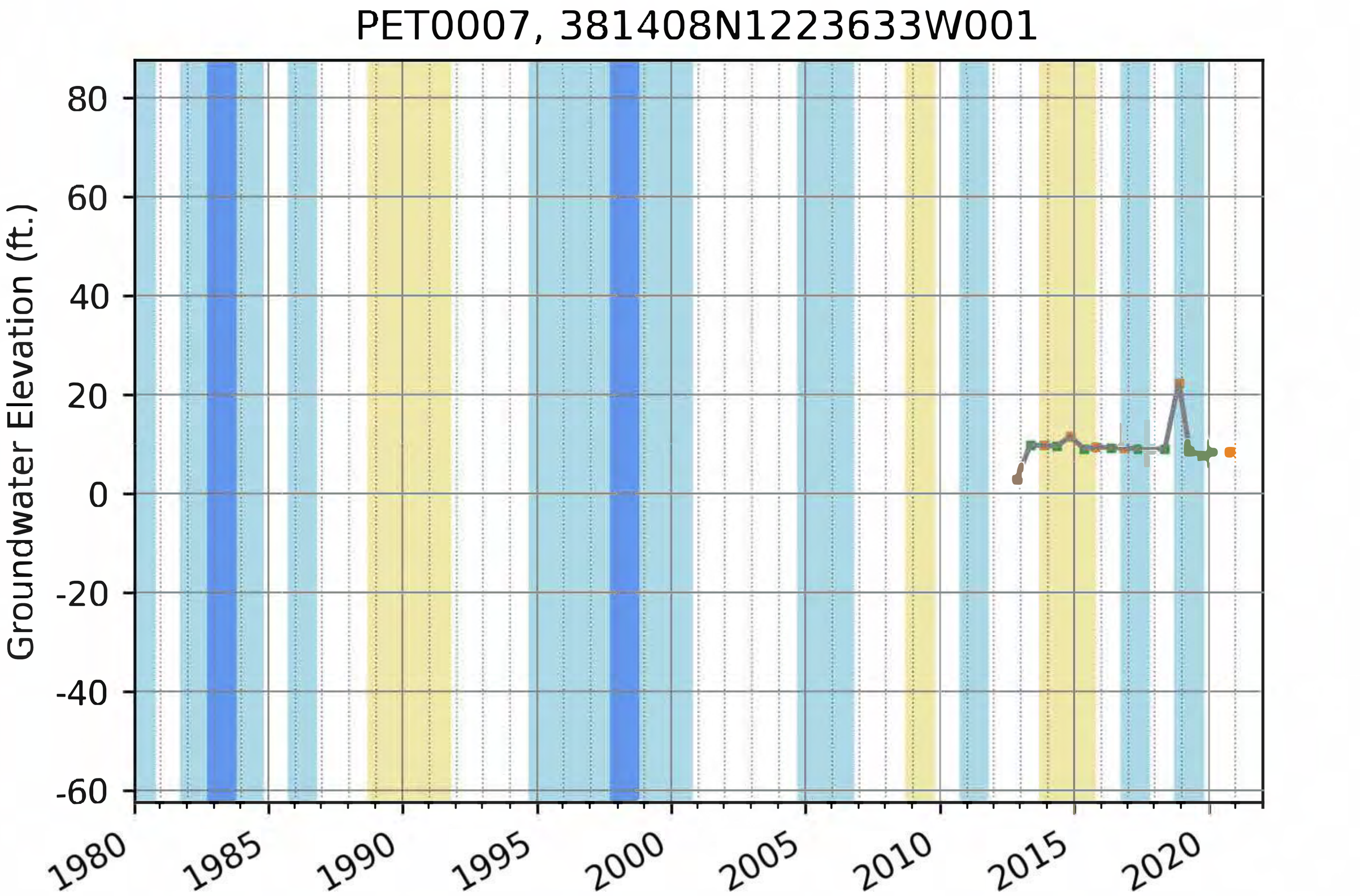
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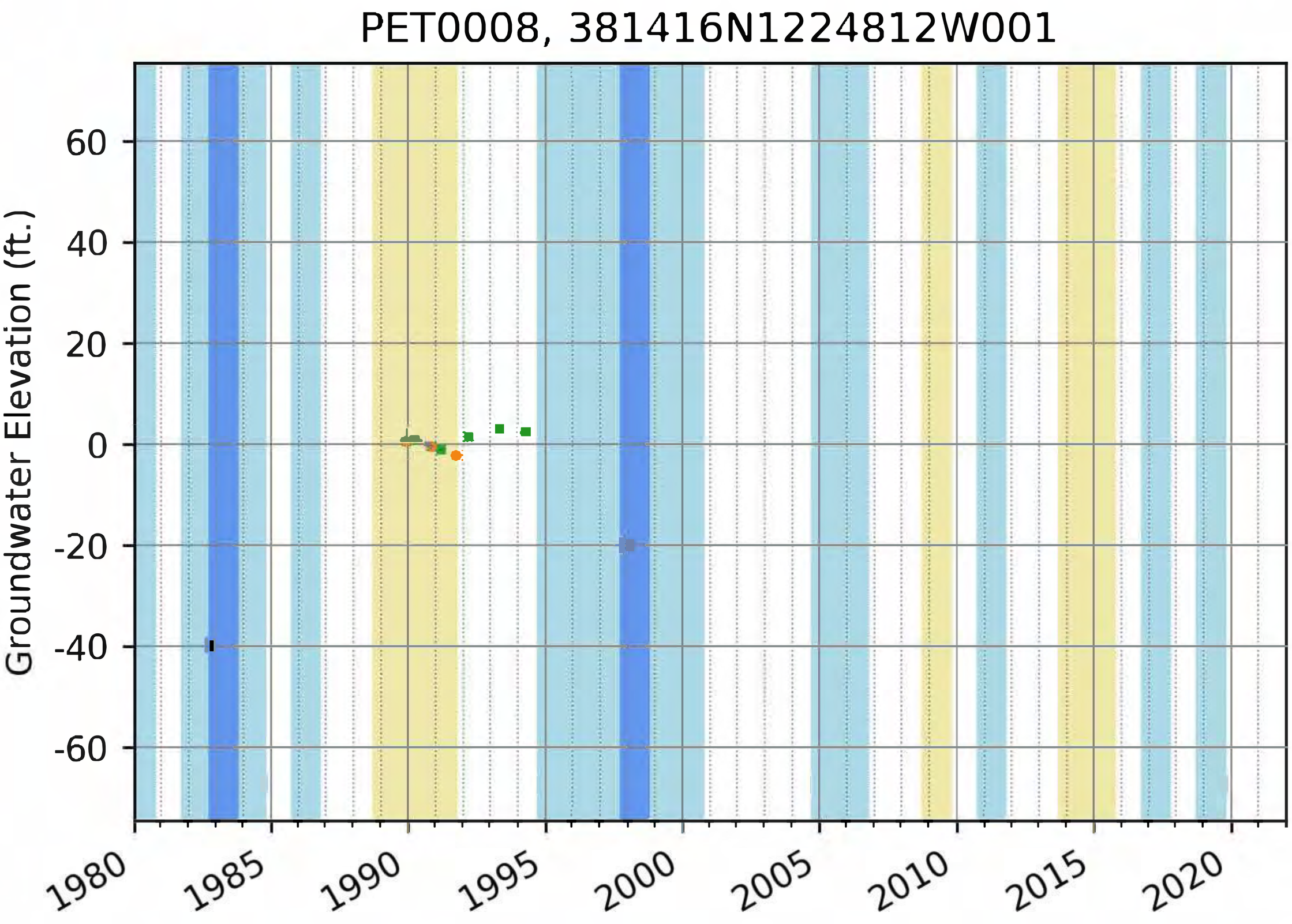
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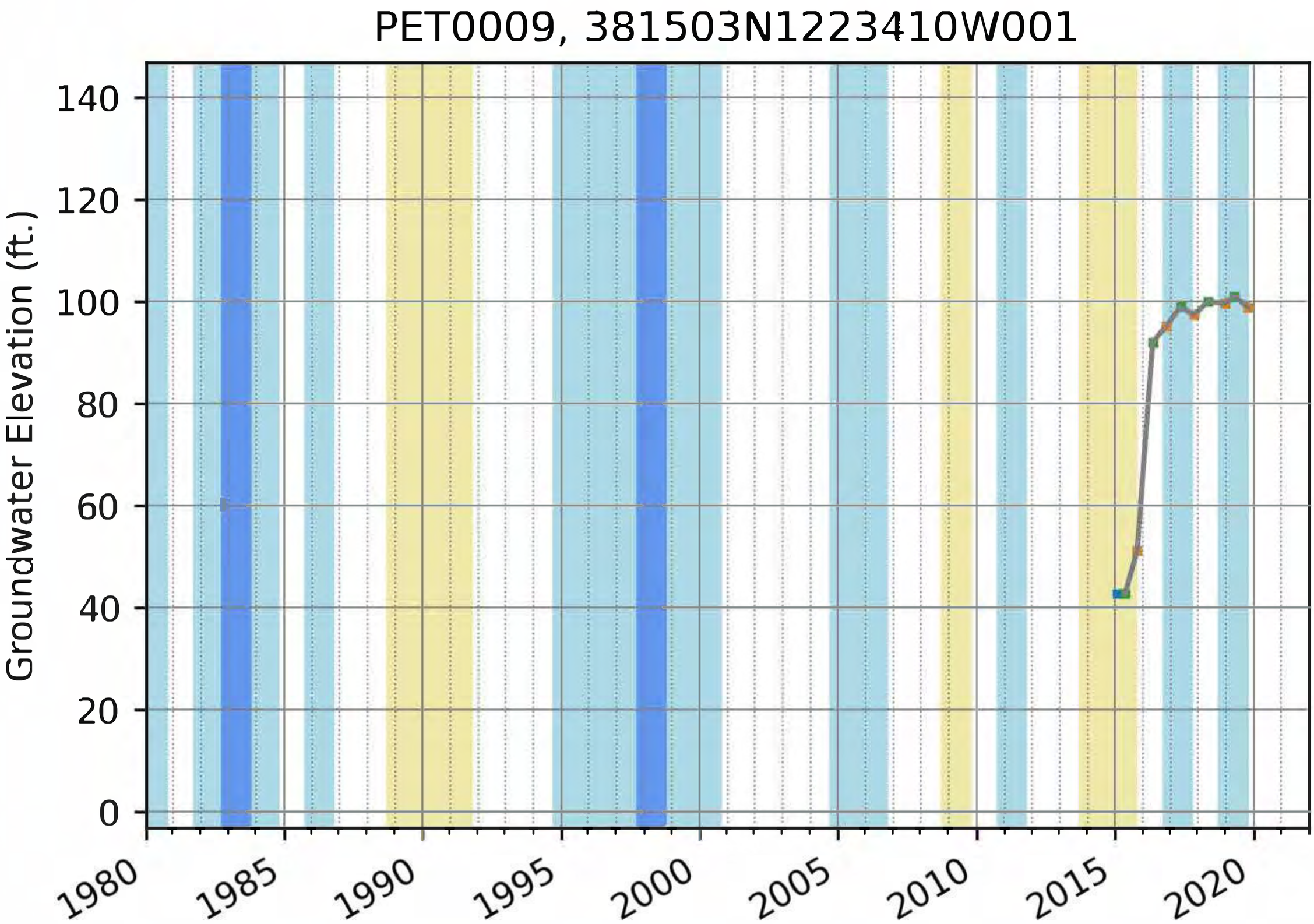
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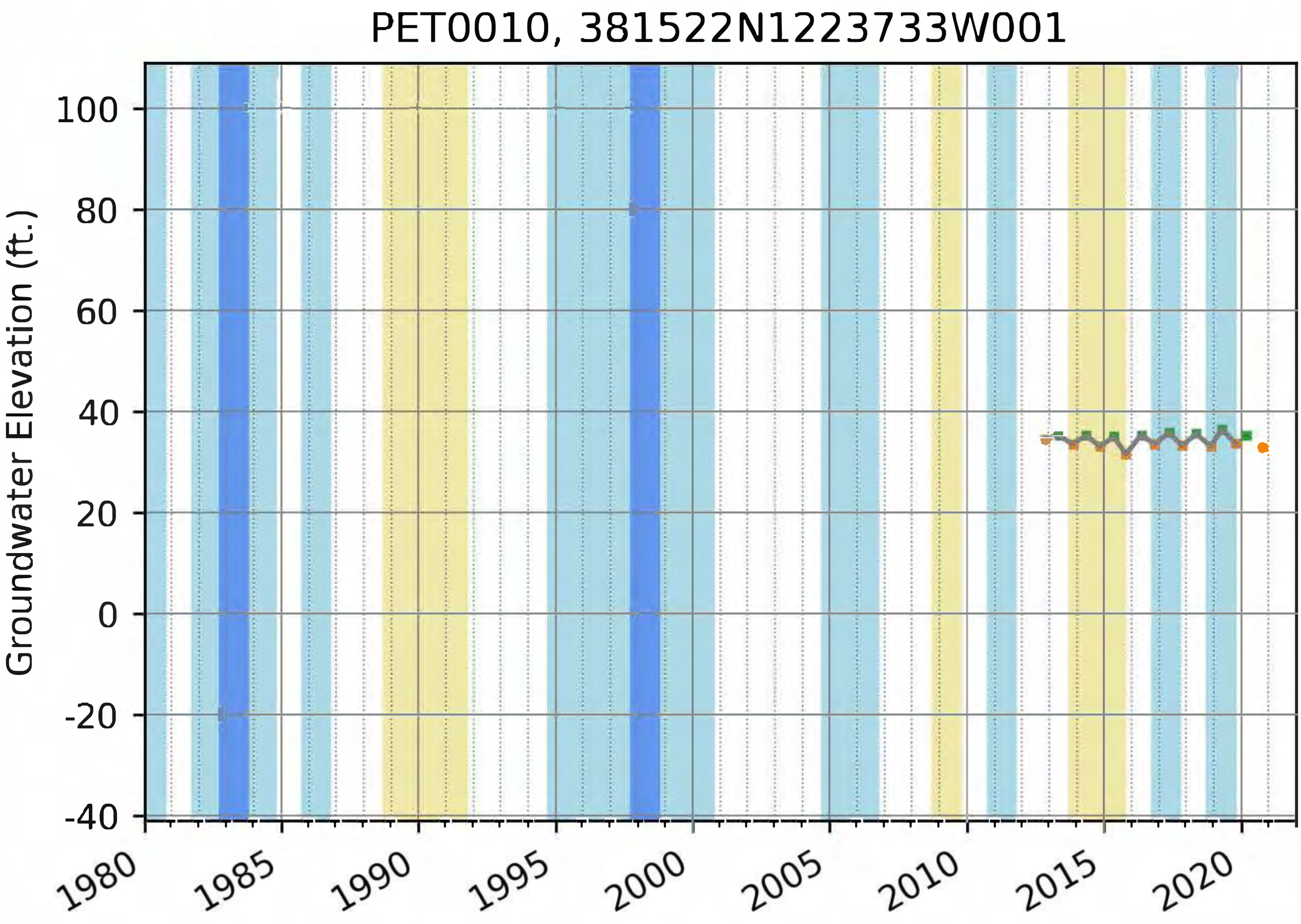
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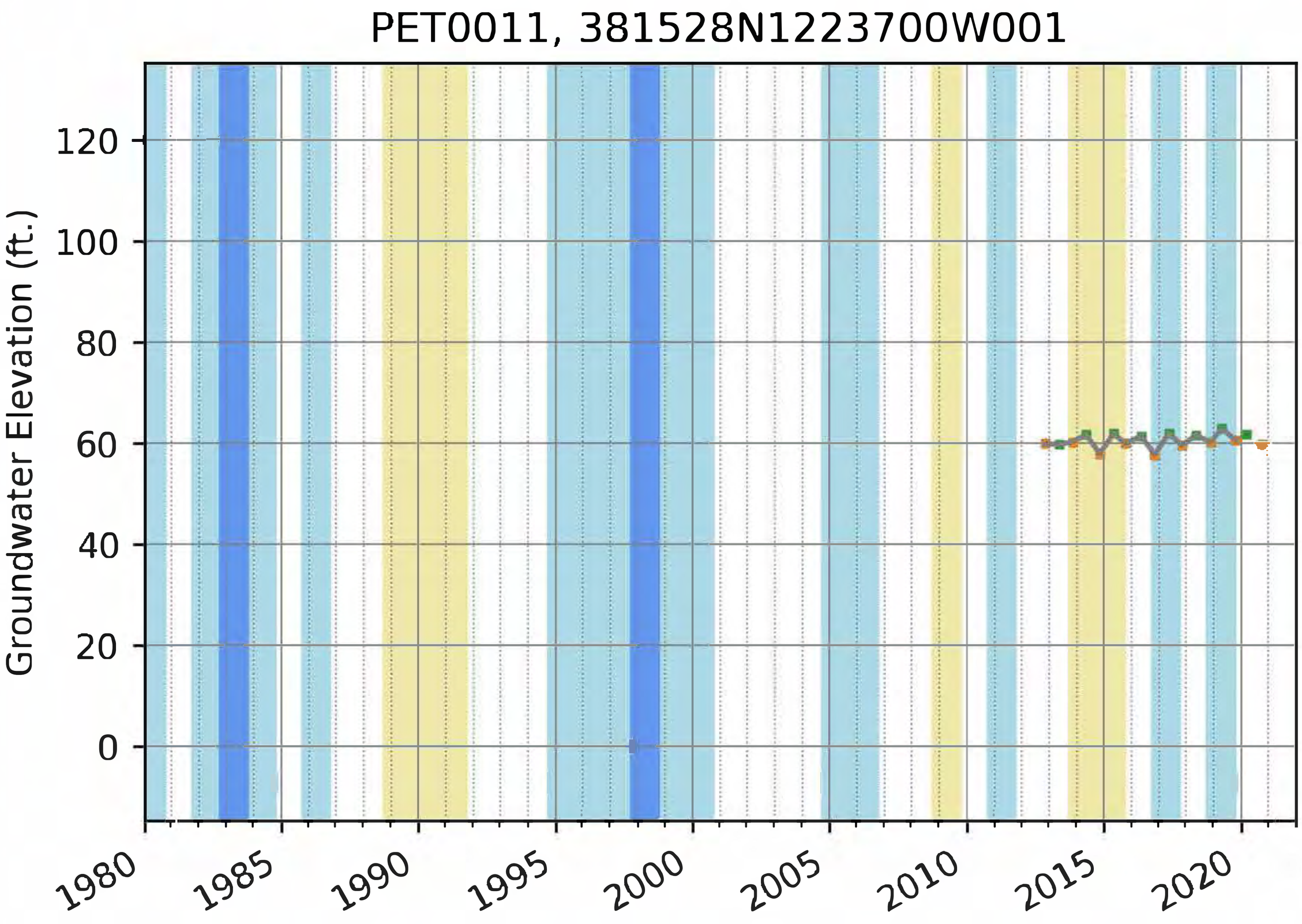
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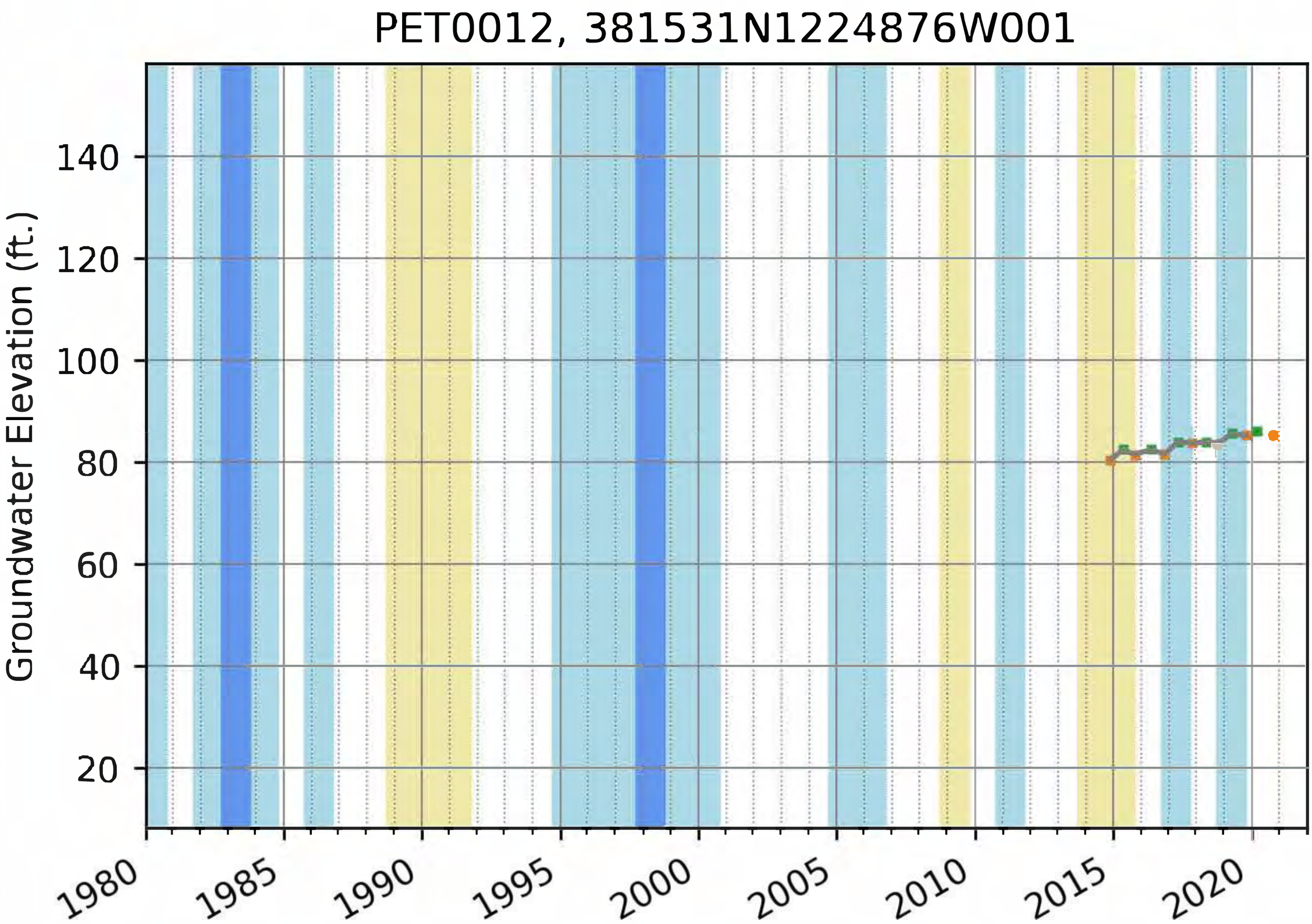
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Groundwater Elevation (ft.)
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120
100
80
60
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1985
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2005
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2015
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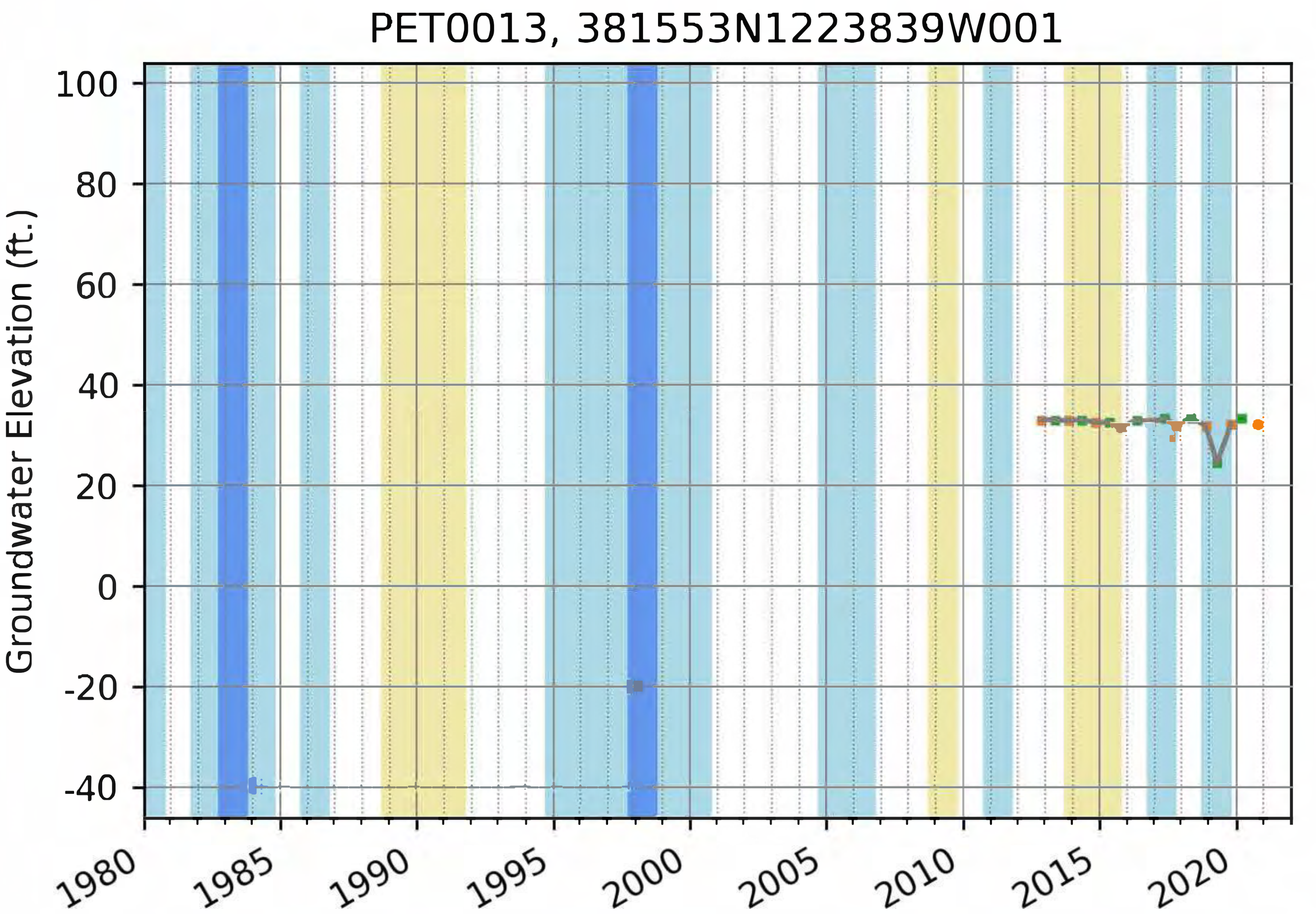
PET0013, 381553N1223839W001
Groundwater Elevation (ft.)
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80
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-20
-40
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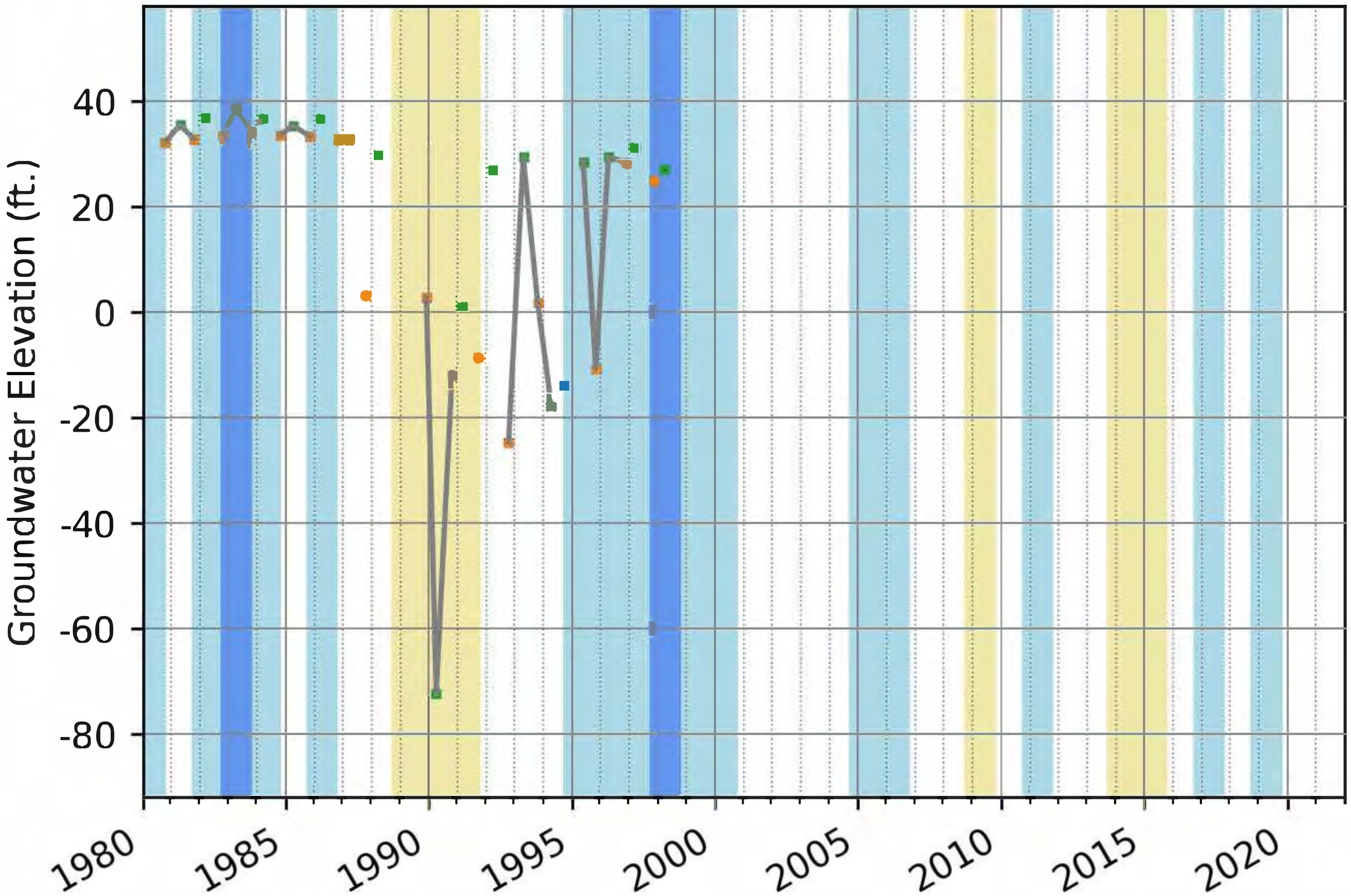

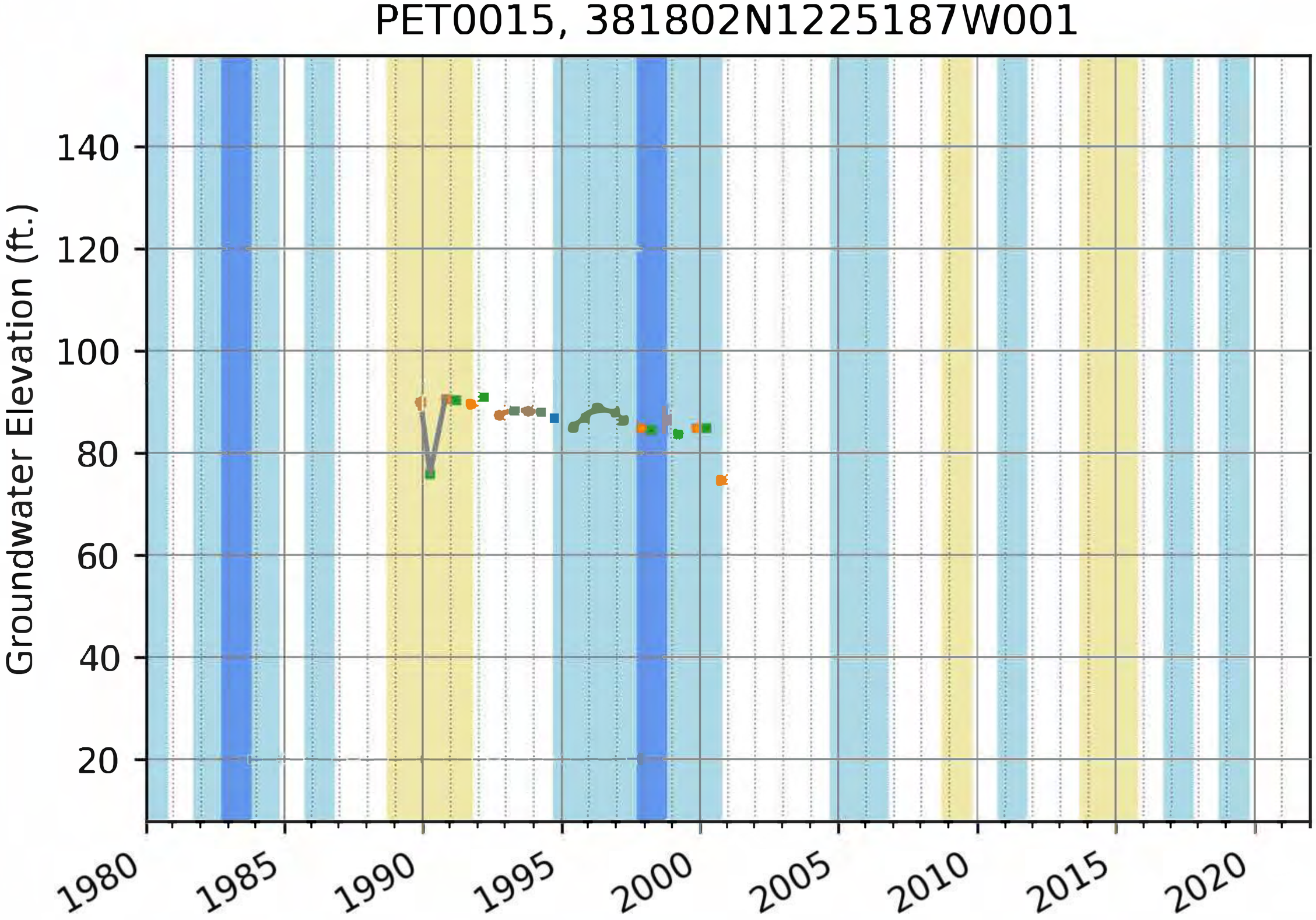
PET0015, 381802N1225187W001
Groundwater Elevation (ft.)
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100
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60
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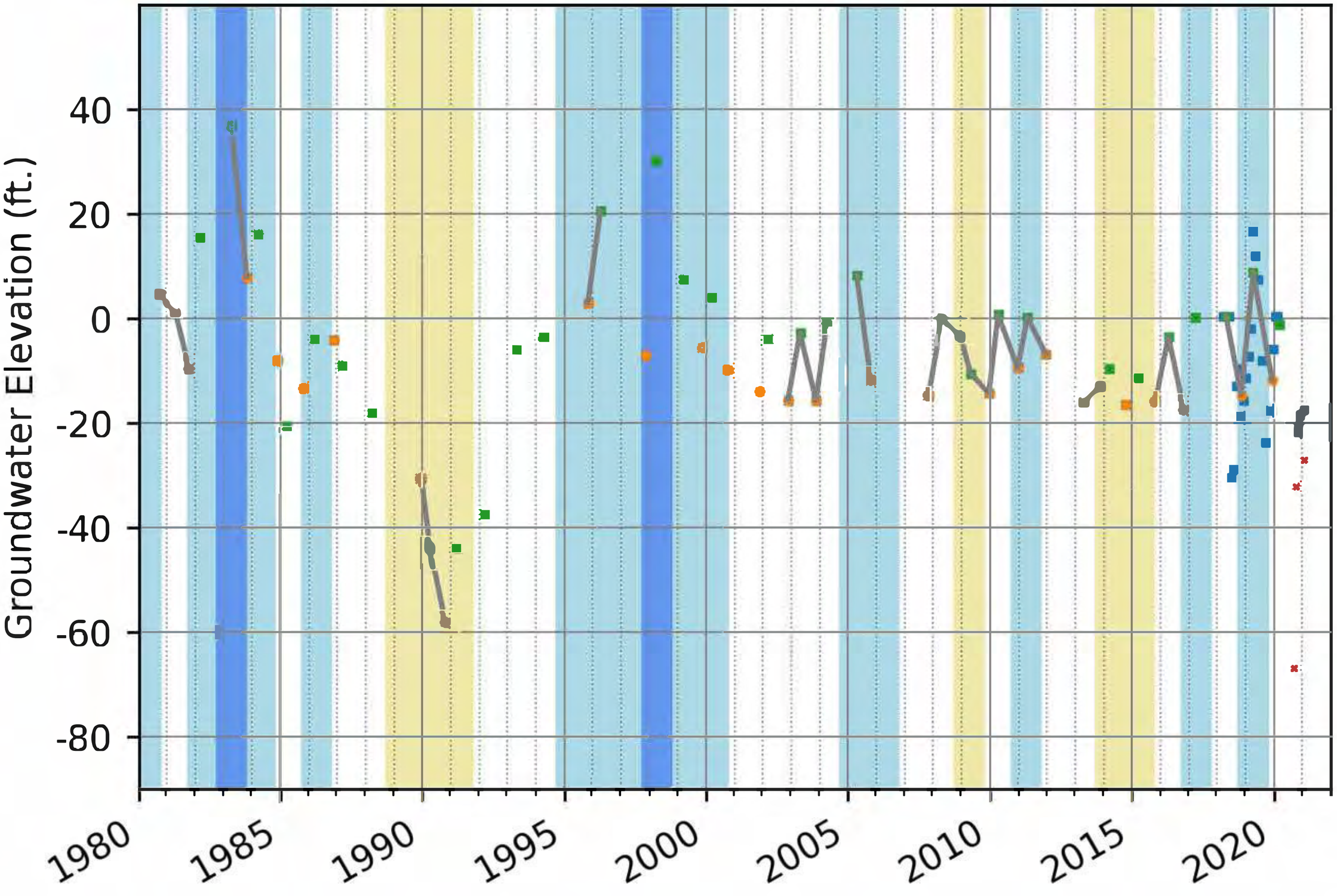
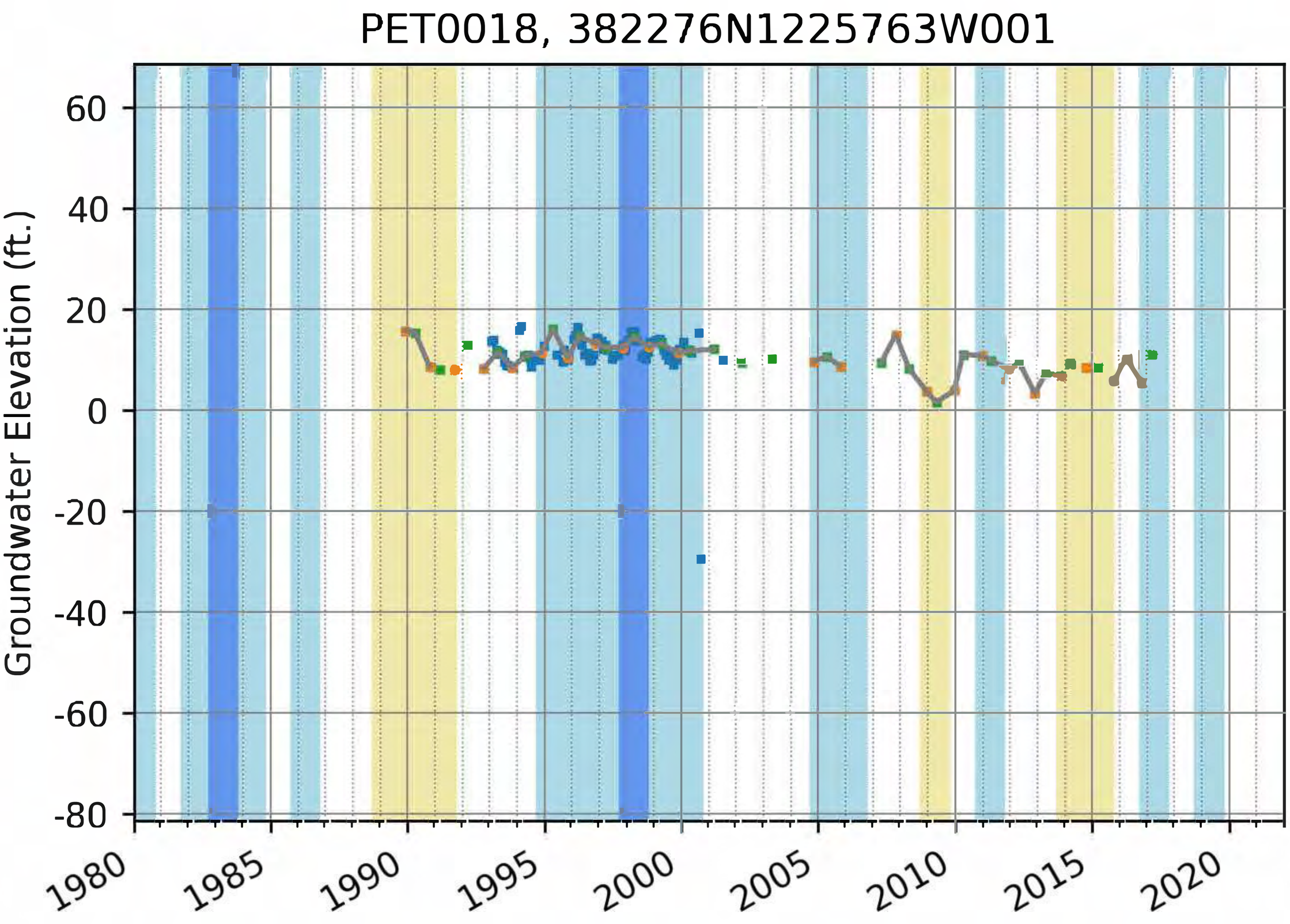
2020

PET0017, 382117N1225556W001




PET0018, 382276N1225763W001
Groundwater Elevation (ft.)
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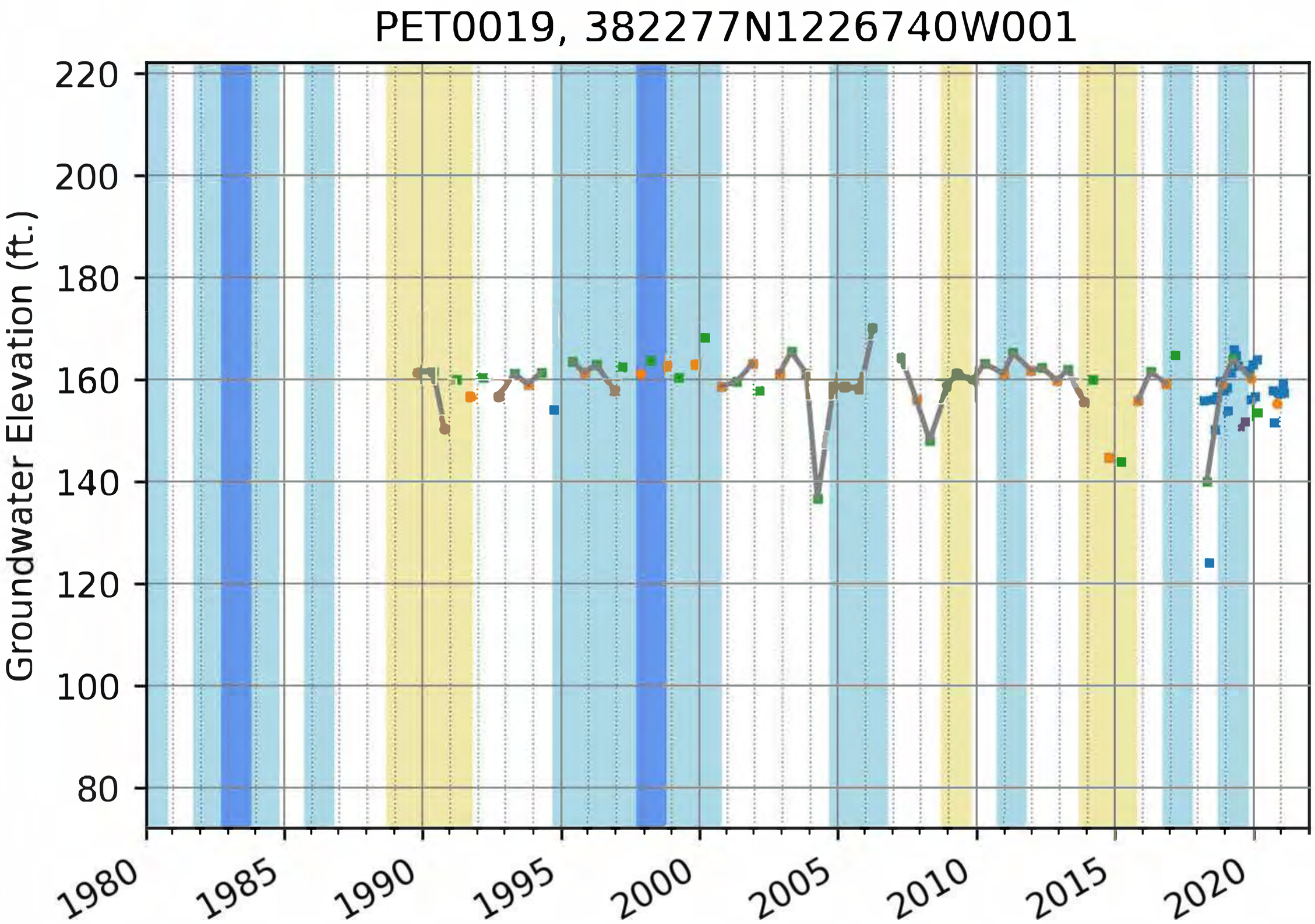
PET0019, 382277N1226740W001
Groundwater Elevation (ft.)
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180
160
140
120
100
80
1980
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2015
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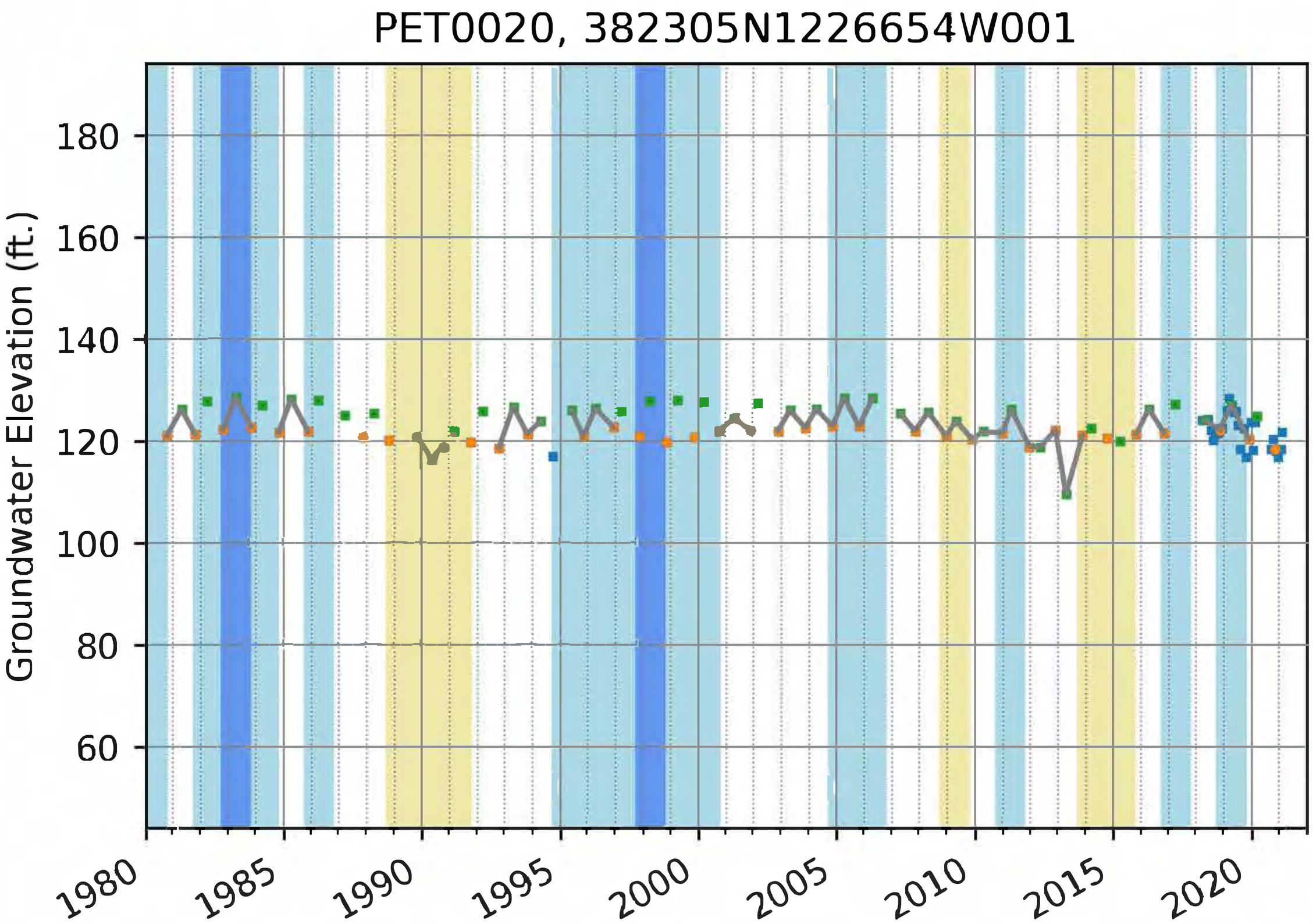
PET0020, 382305N1226654W001
Groundwater Elevation (ft.)
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120
100
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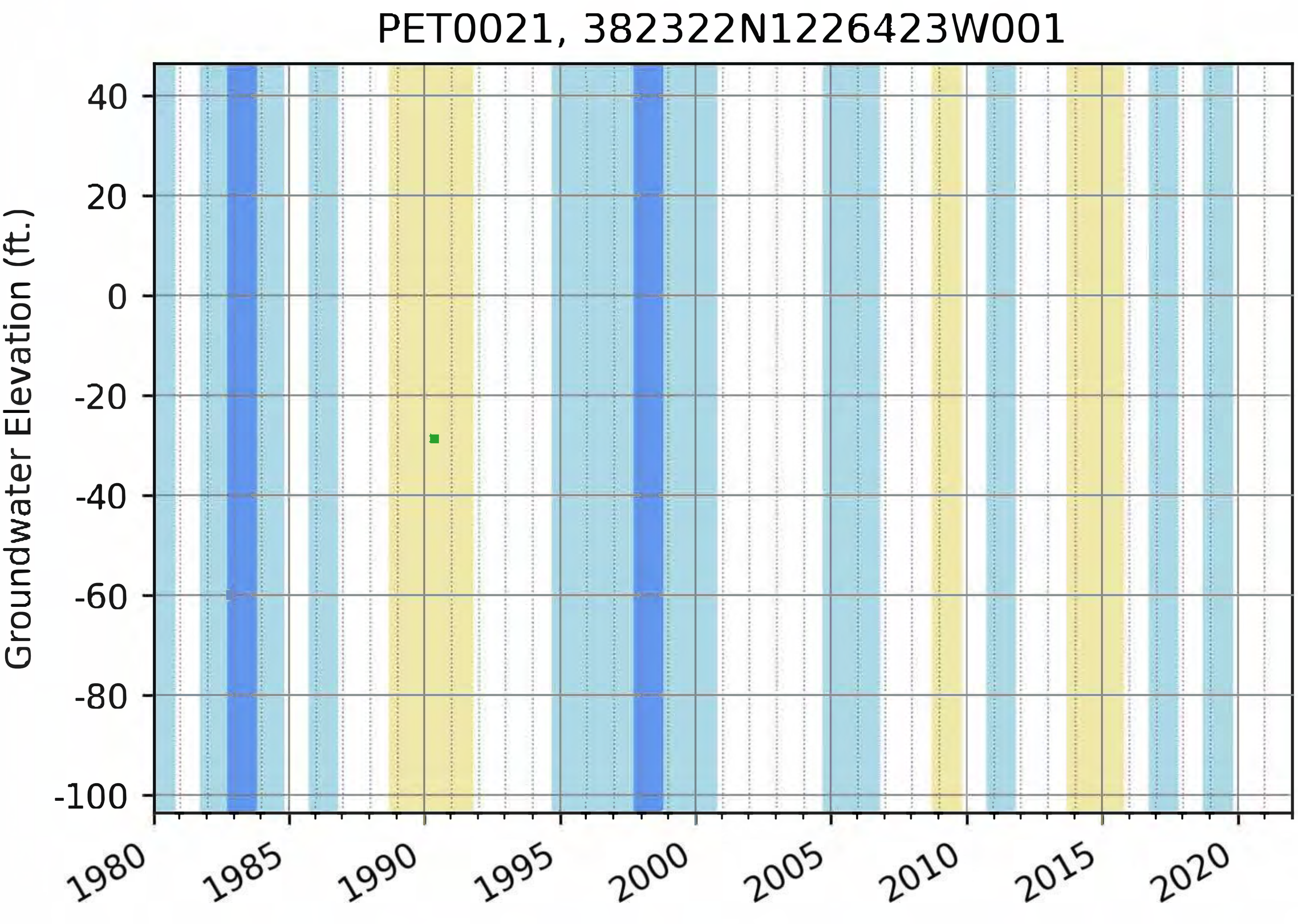
2020


PET0021, 382322N1226423W001
Groundwater Elevation (ft.)
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-20
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-60
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-100
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2015
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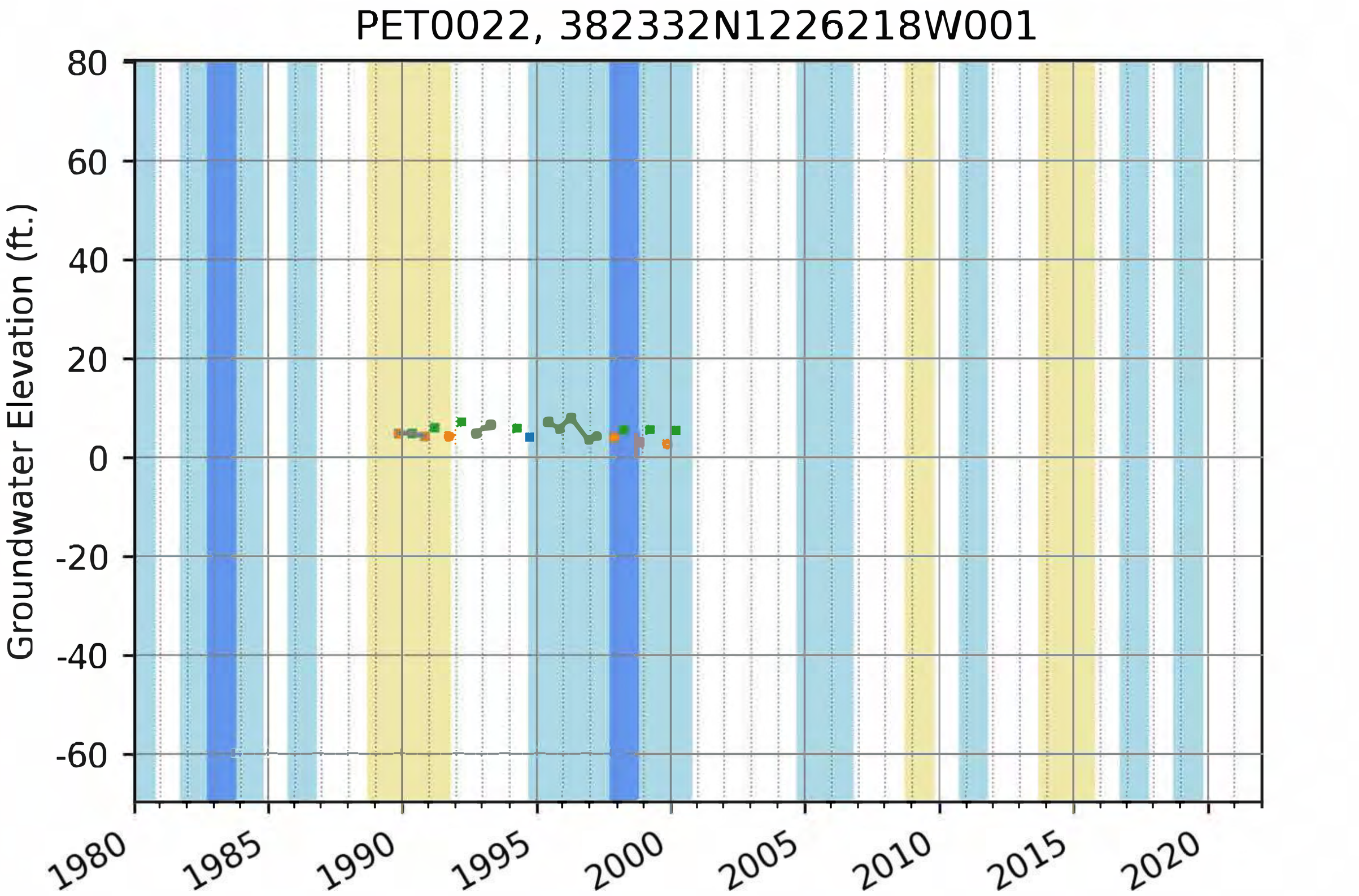
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Groundwater Elevation (ft.)
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40
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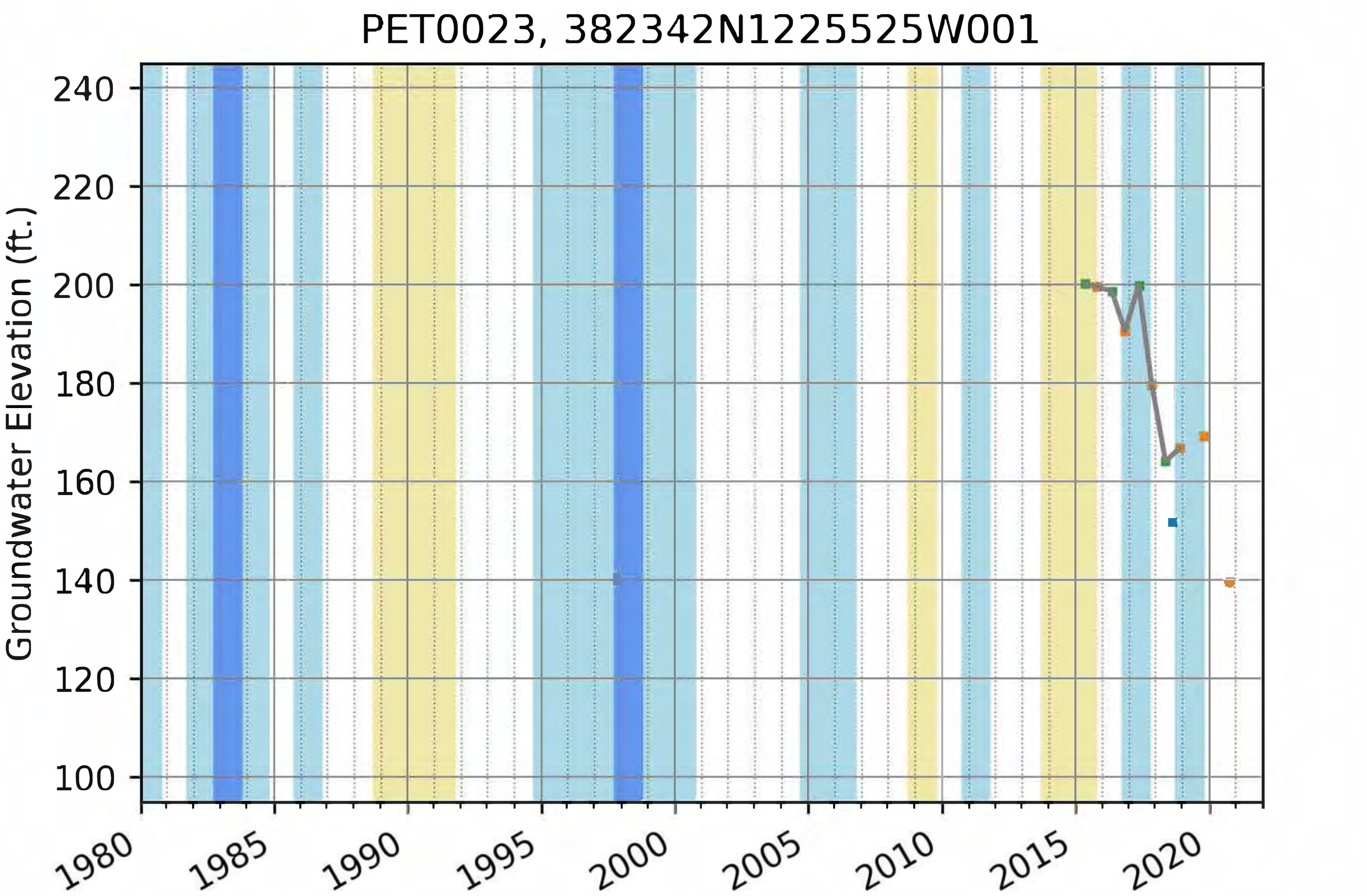
2005
2010
2015
2020


PET0023, 382342N1225525W001
Groundwater Elevation (ft.)
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200
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160
140
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100
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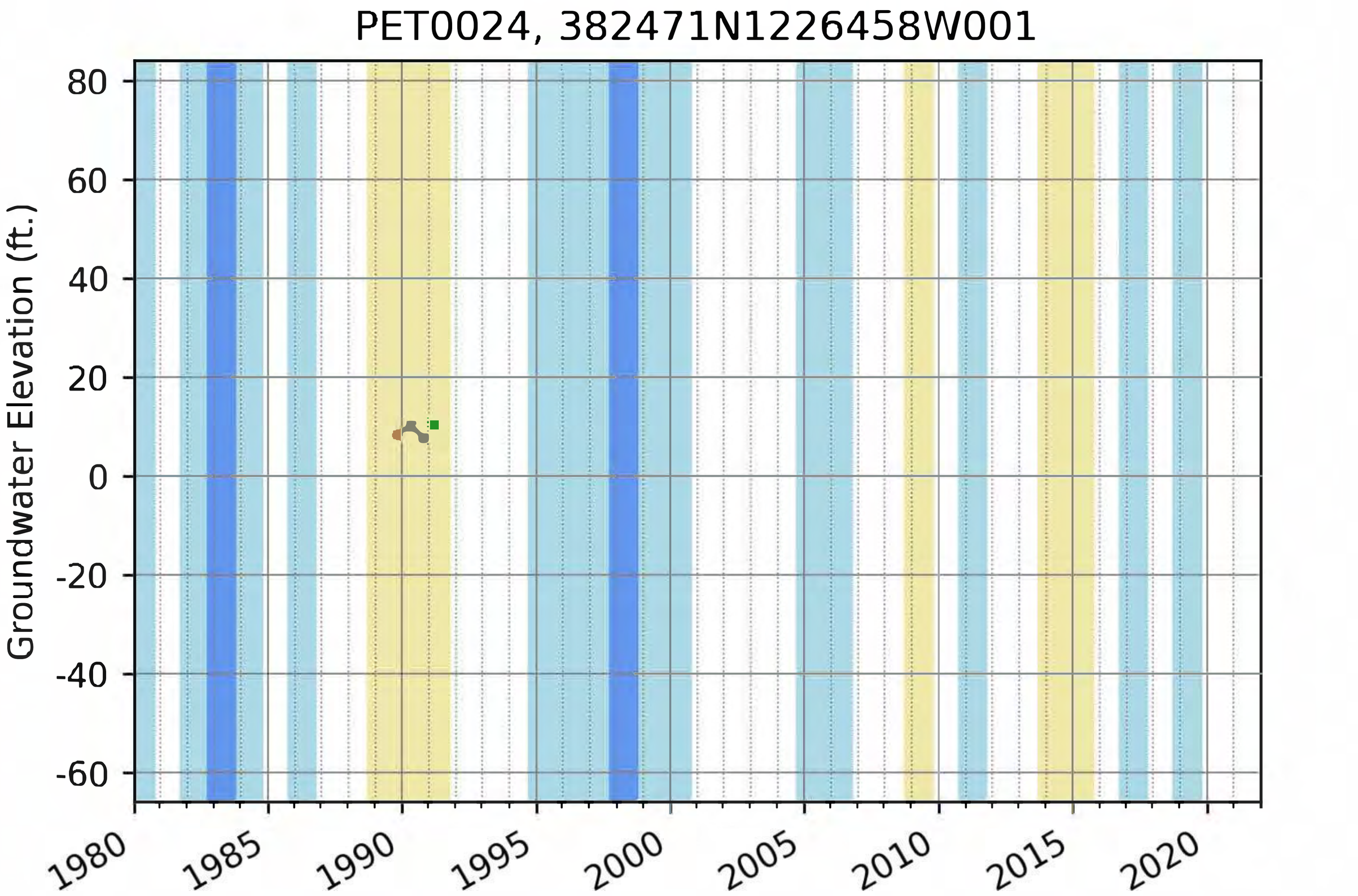
PET0024, 382471N1226458W001
Groundwater Elevation (ft.)
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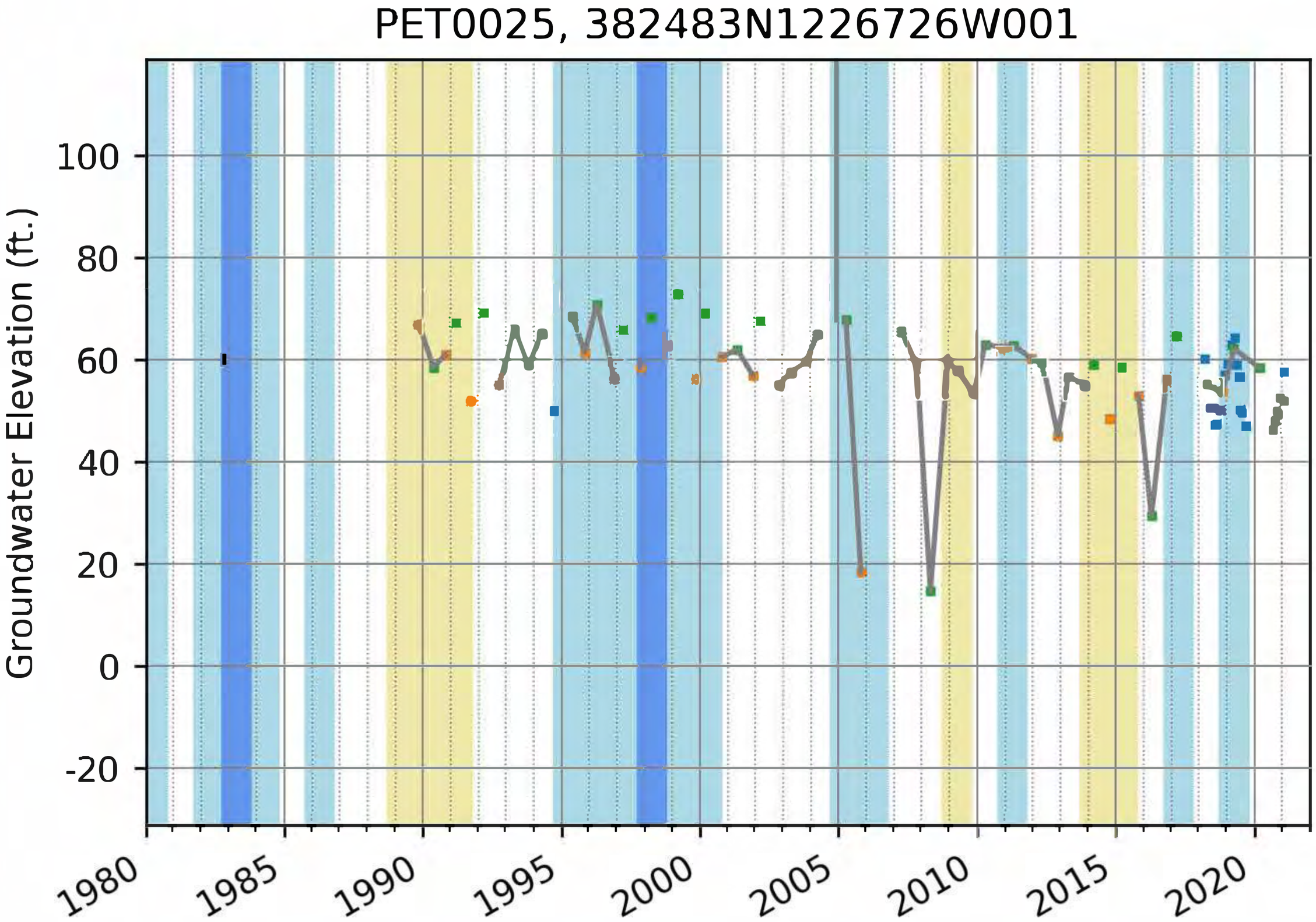
2010
2015
2020


PET0025, 382483N1226726W001
Groundwater Elevation (ft.)
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0
-20
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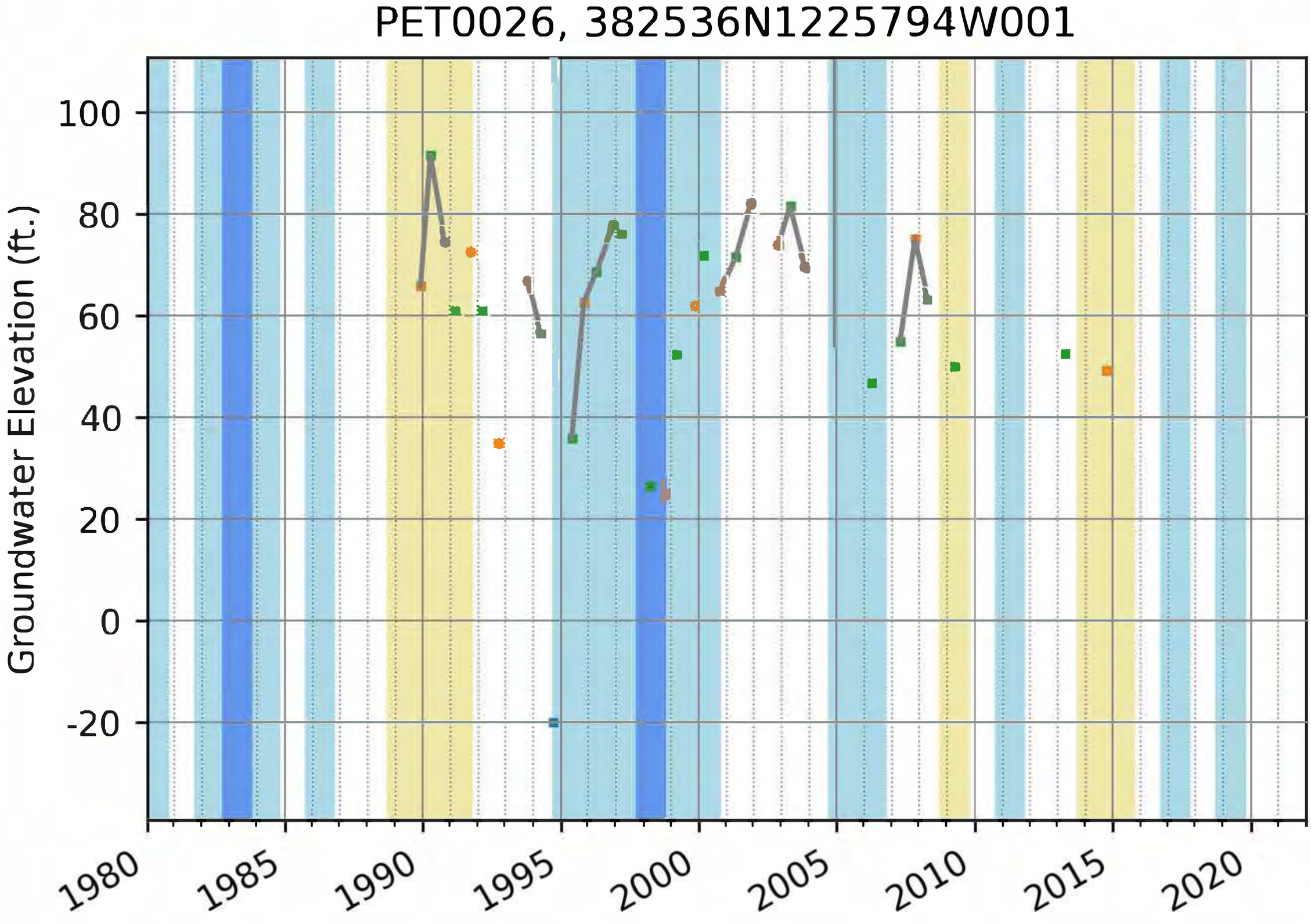
1985
1990
1995
2000
2005
2010
2015
2020


PET0026, 382536N1225794W001
Groundwater Elevation (ft.)
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0
-20
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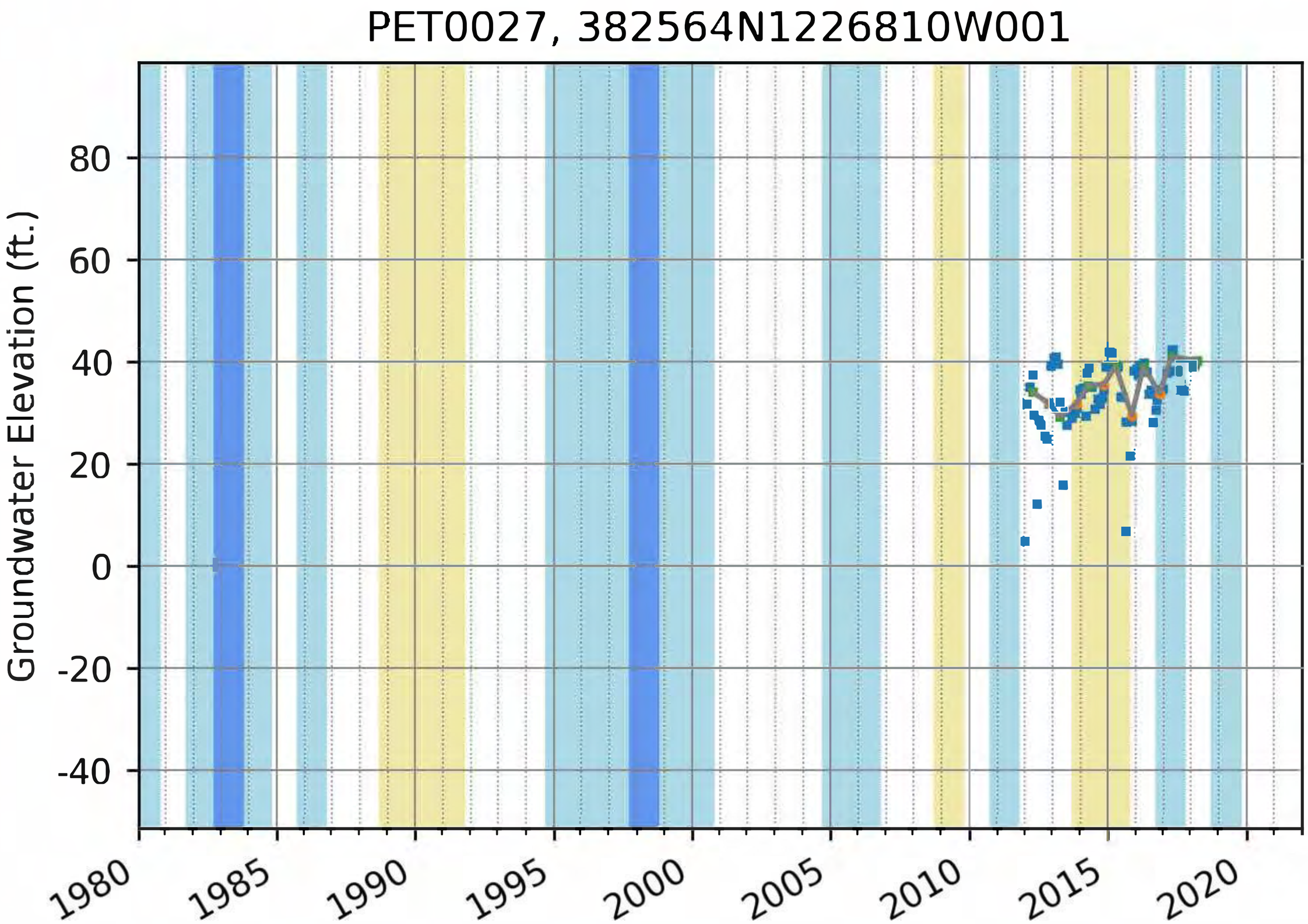
2000
2005
2010
2015
2020


PET0027, 382564N1226810W001
Groundwater Elevation (ft.)
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-40
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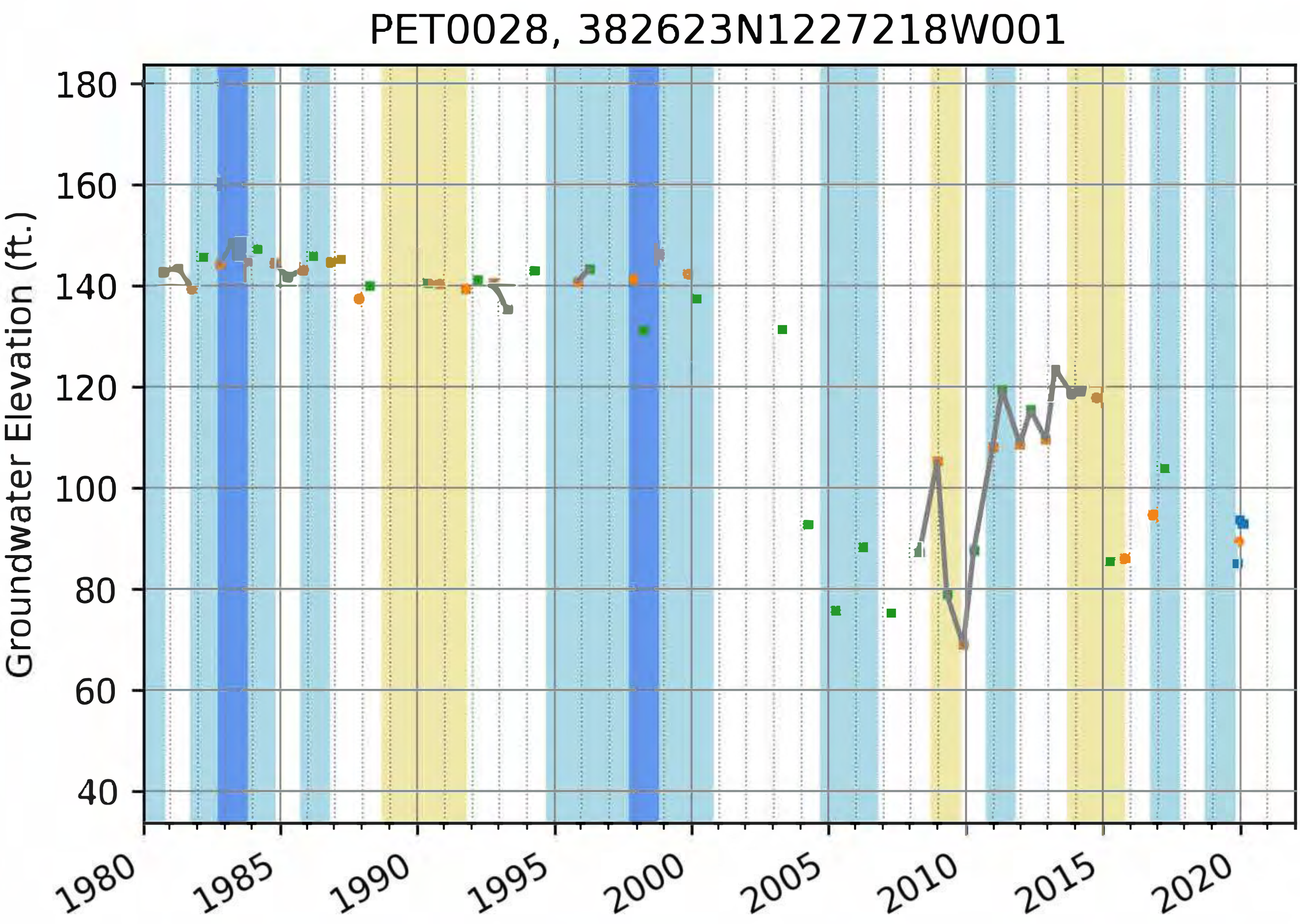
2000
2005
2010
2015
2020


PET0028, 382623N1227218W001
Groundwater Elevation (ft.)
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160
140
120
100
80
60
40
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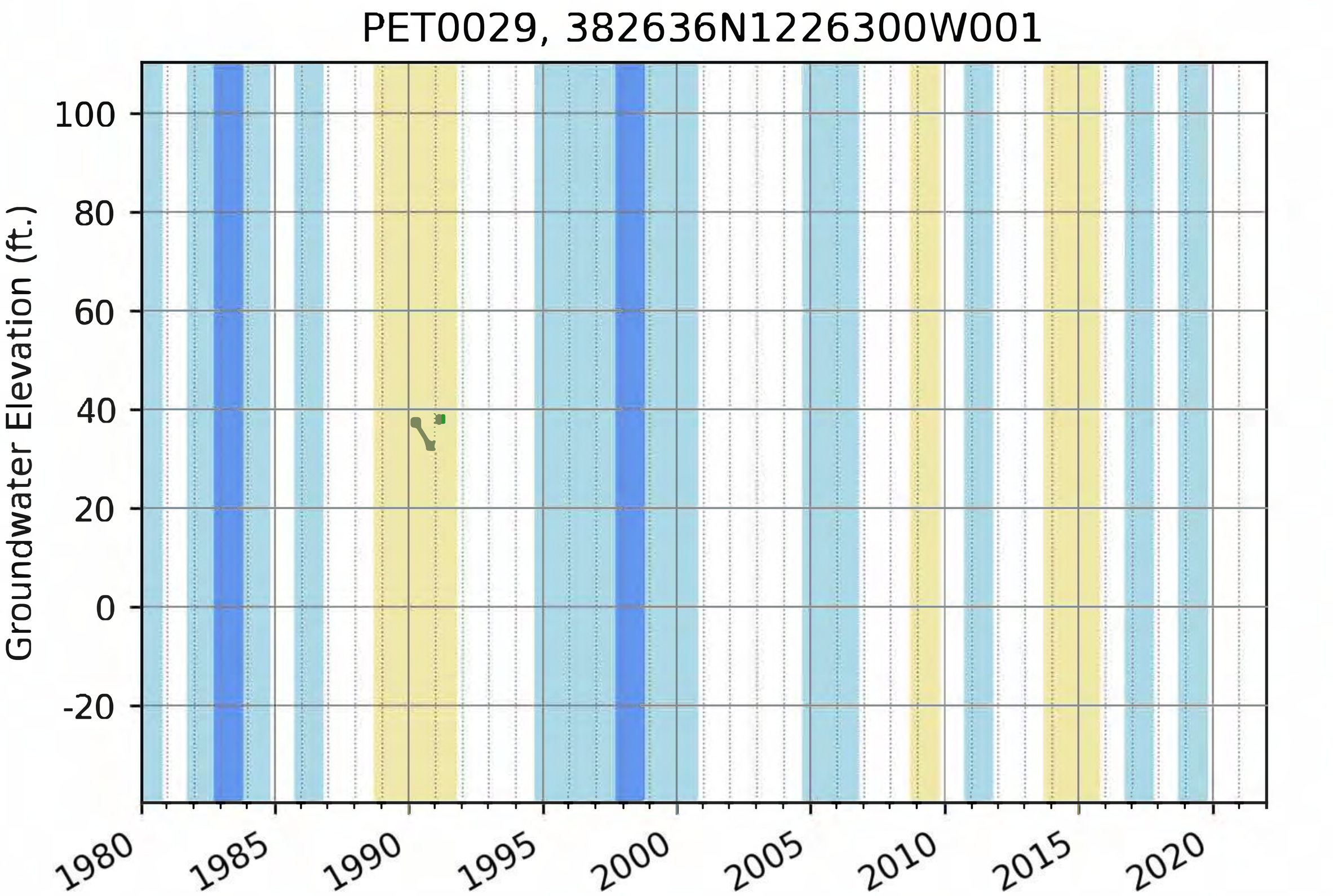
1985
1990
1995
2000
2005
2010
2015
2020


PET0029, 382636N1226300W001
Groundwater Elevation (ft.)
100
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60
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20
0
-20
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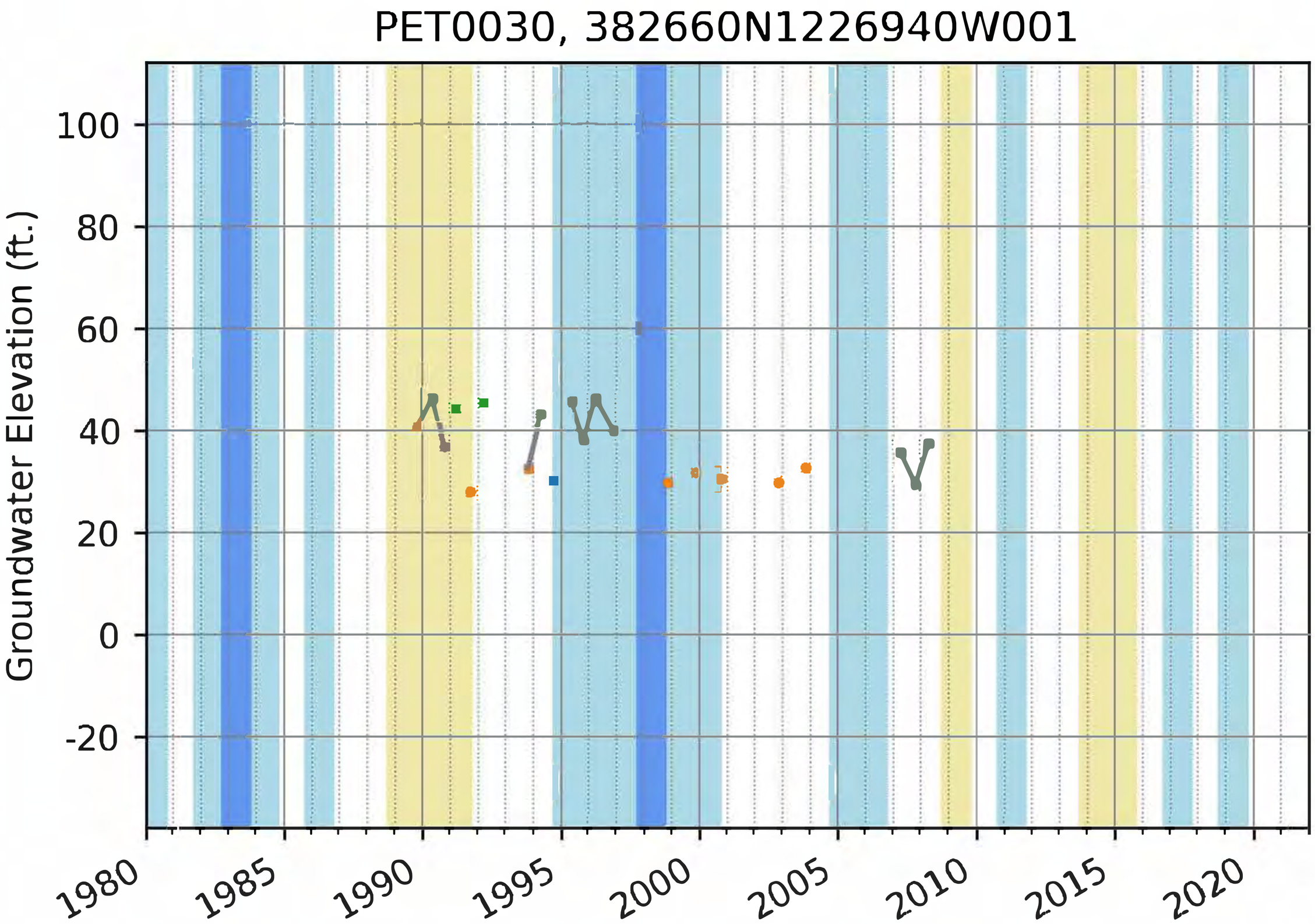
2000
2005
2010
2015
2020


PET0030, 382660N1226940W001
Groundwater Elevation (ft.)
100
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-20
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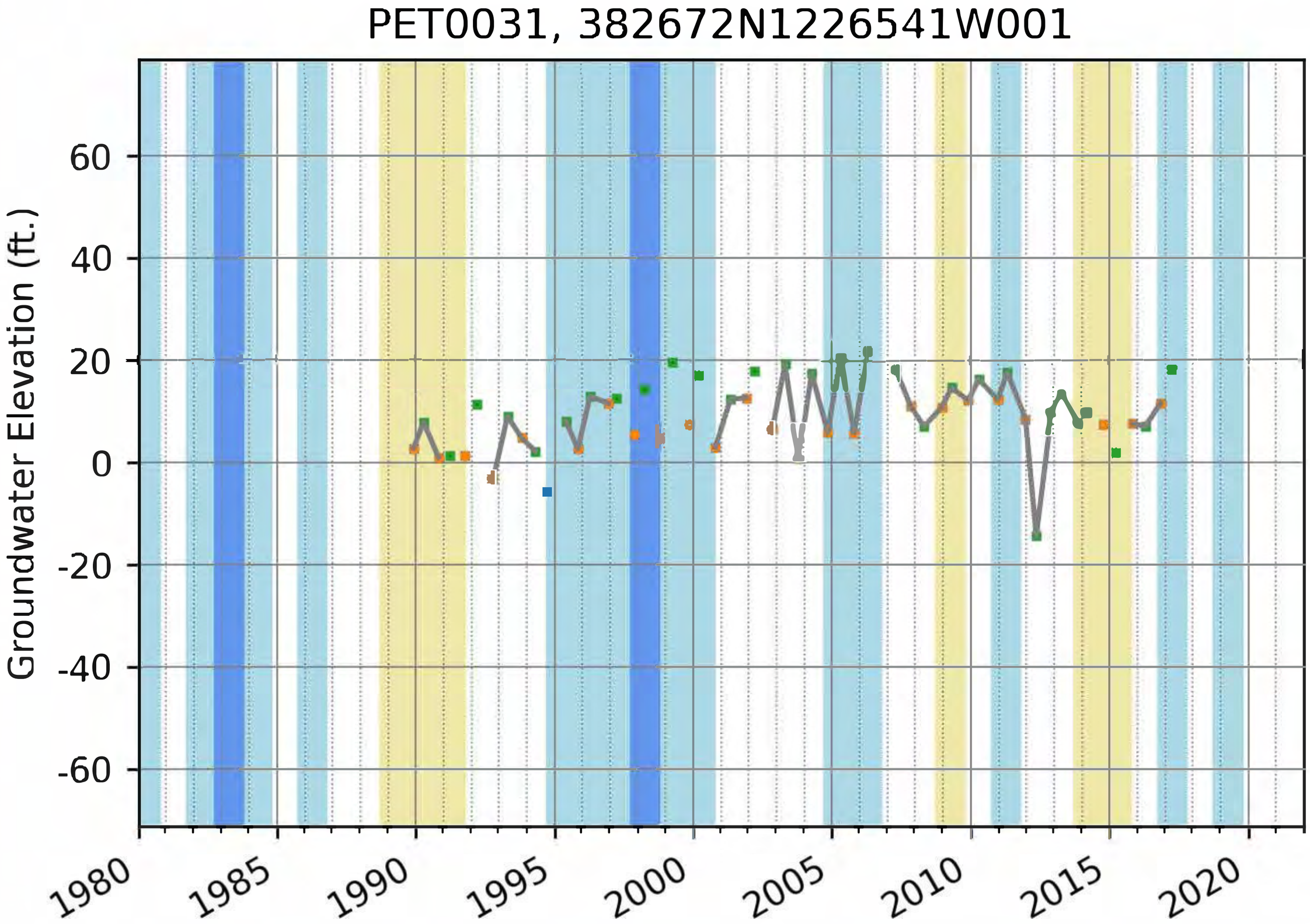
2005
2010
2015
2020


PET0031, 382672N1226541W001
Groundwater Elevation (ft.)
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40
20
0
-20
-40
-60
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2005
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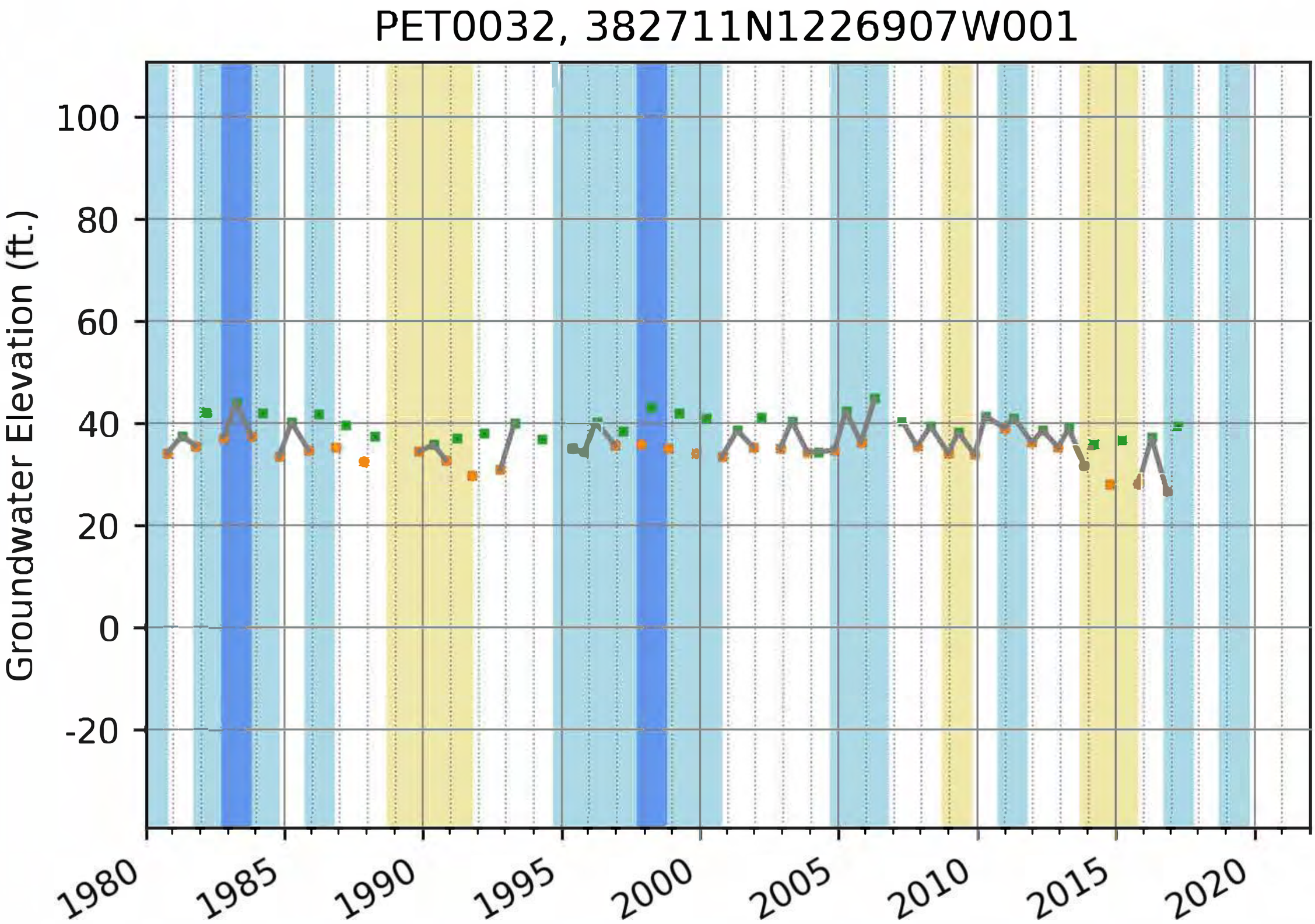
2015
2020


PET0032, 382711N1226907W001
Groundwater Elevation (ft.)
100
80
60
40
20
0
-20
1980
1985
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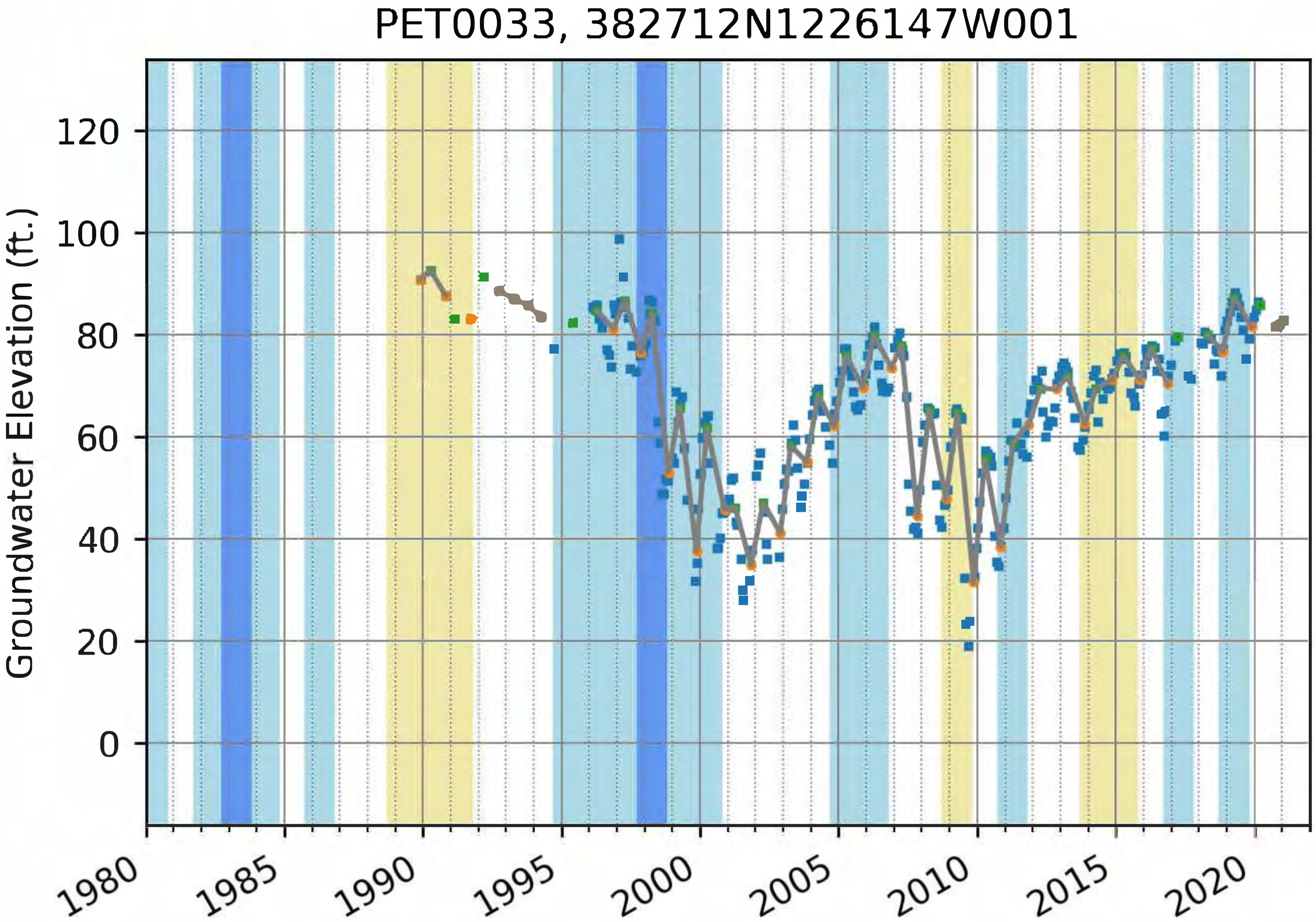
1995
2000
2005
2010
2015
2020


PET0033, 382712N1226147W001
Groundwater Elevation (ft.)
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0
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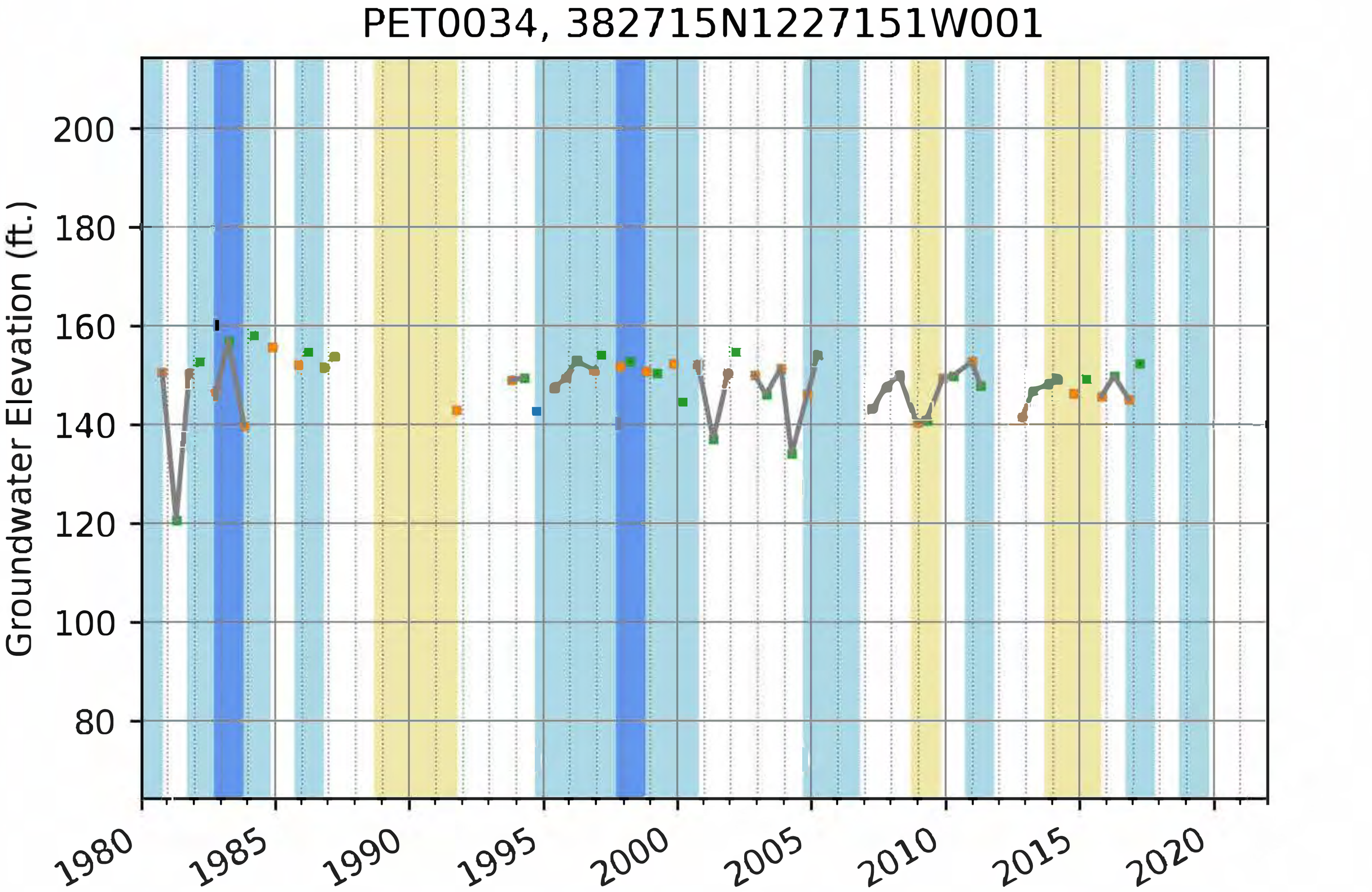
1995
2000
2005
2010
2015
2020


PET0034, 382715N1227151W001
Groundwater Elevation (ft.)
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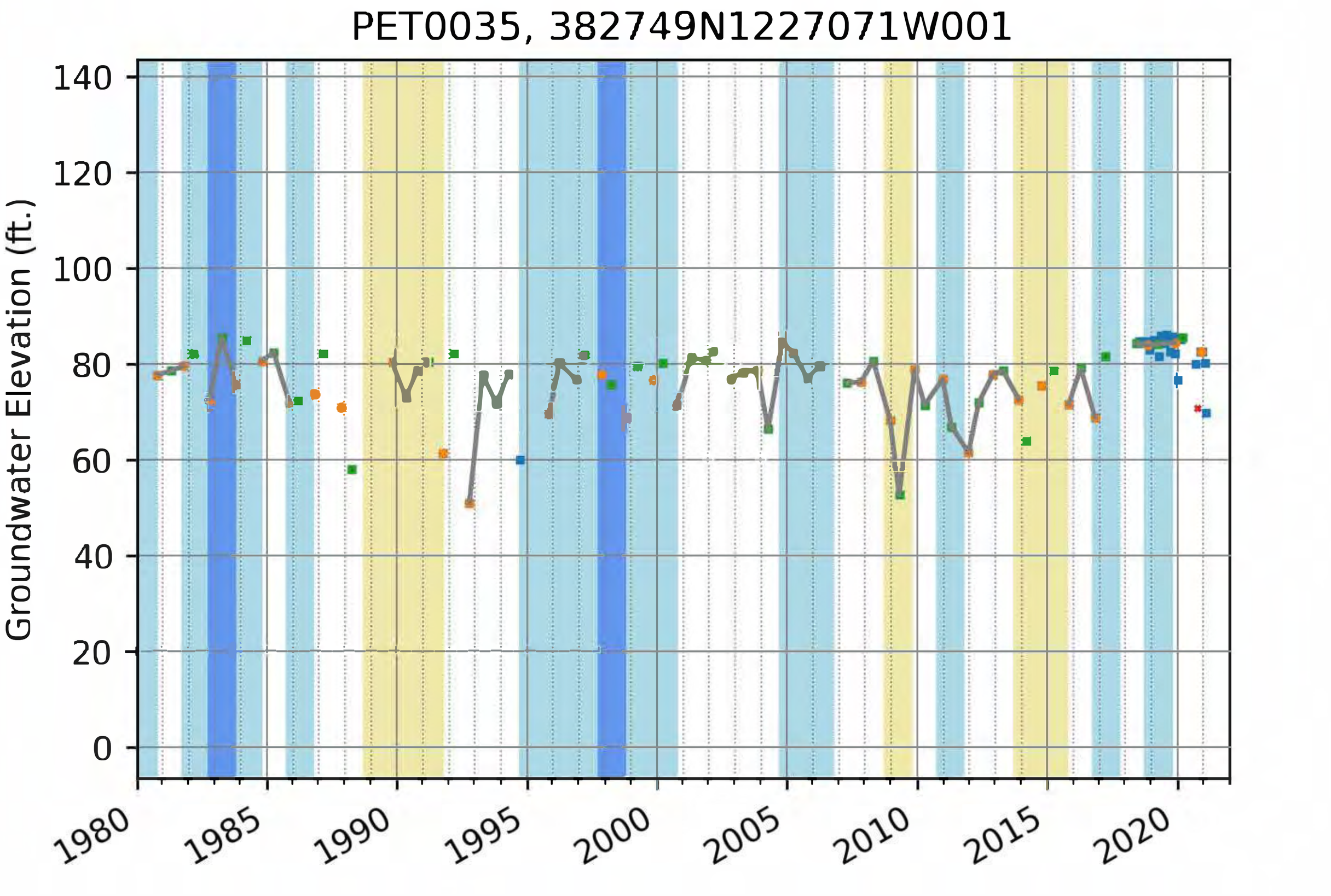
140
120
100
80
1980
1985
1990
1995
2000
2005
2010
2015
2020


PET0035, 382749N1227071W001
Groundwater Elevation (ft.)
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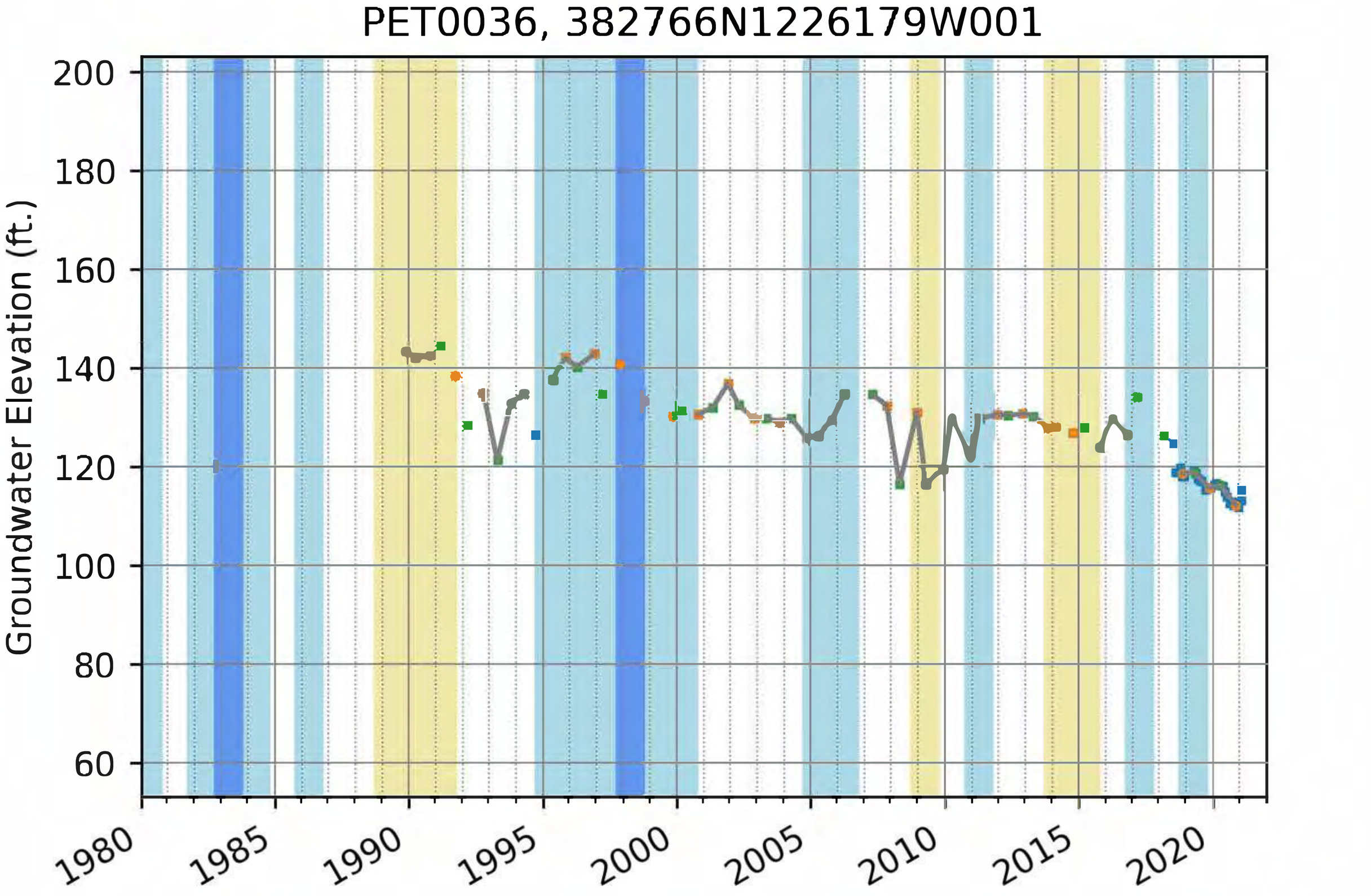
2015
2020


PET0036, 382766N1226179W001
Groundwater Elevation (ft.)
200
180
160
140
120
100
80
60
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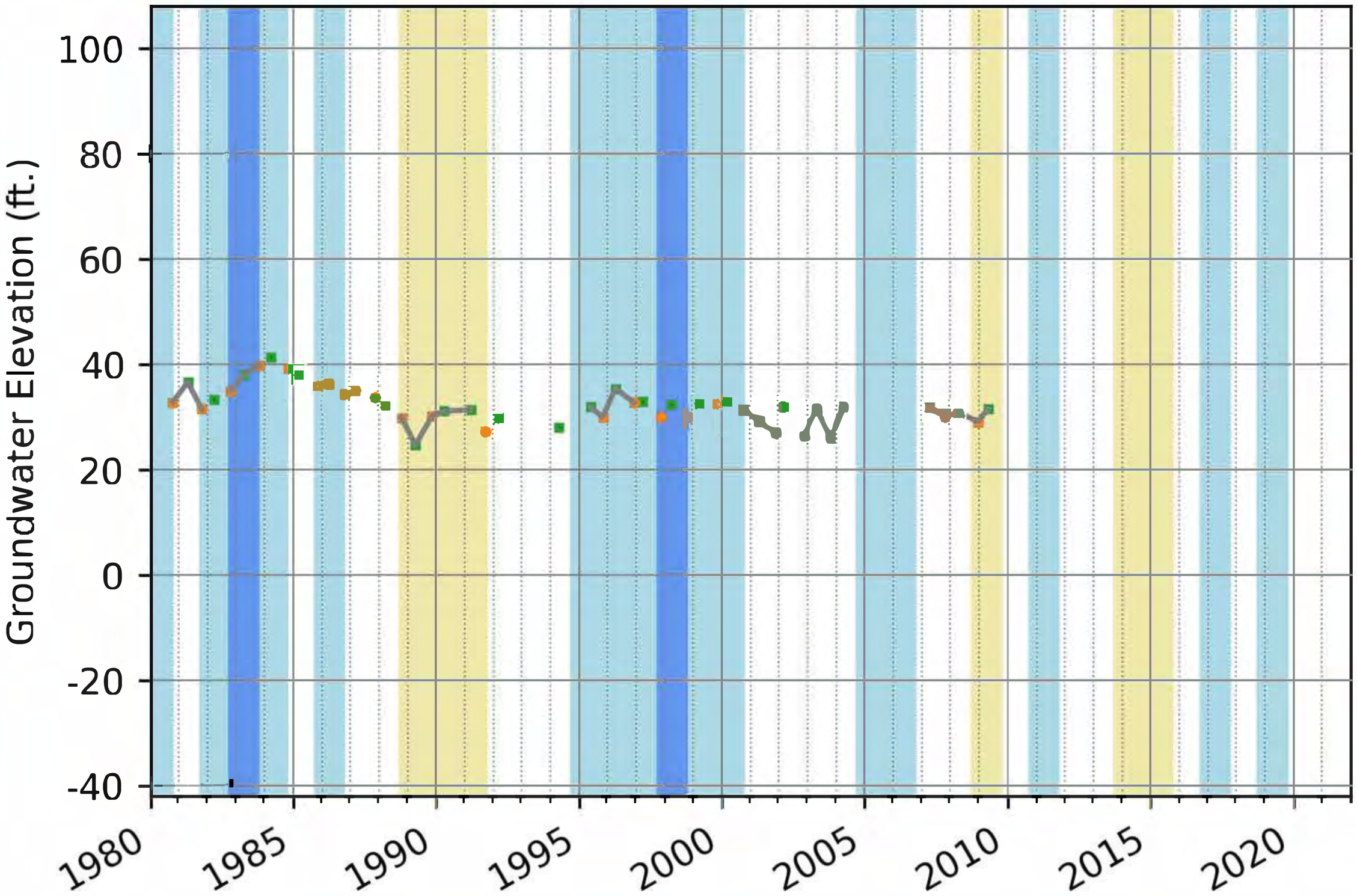
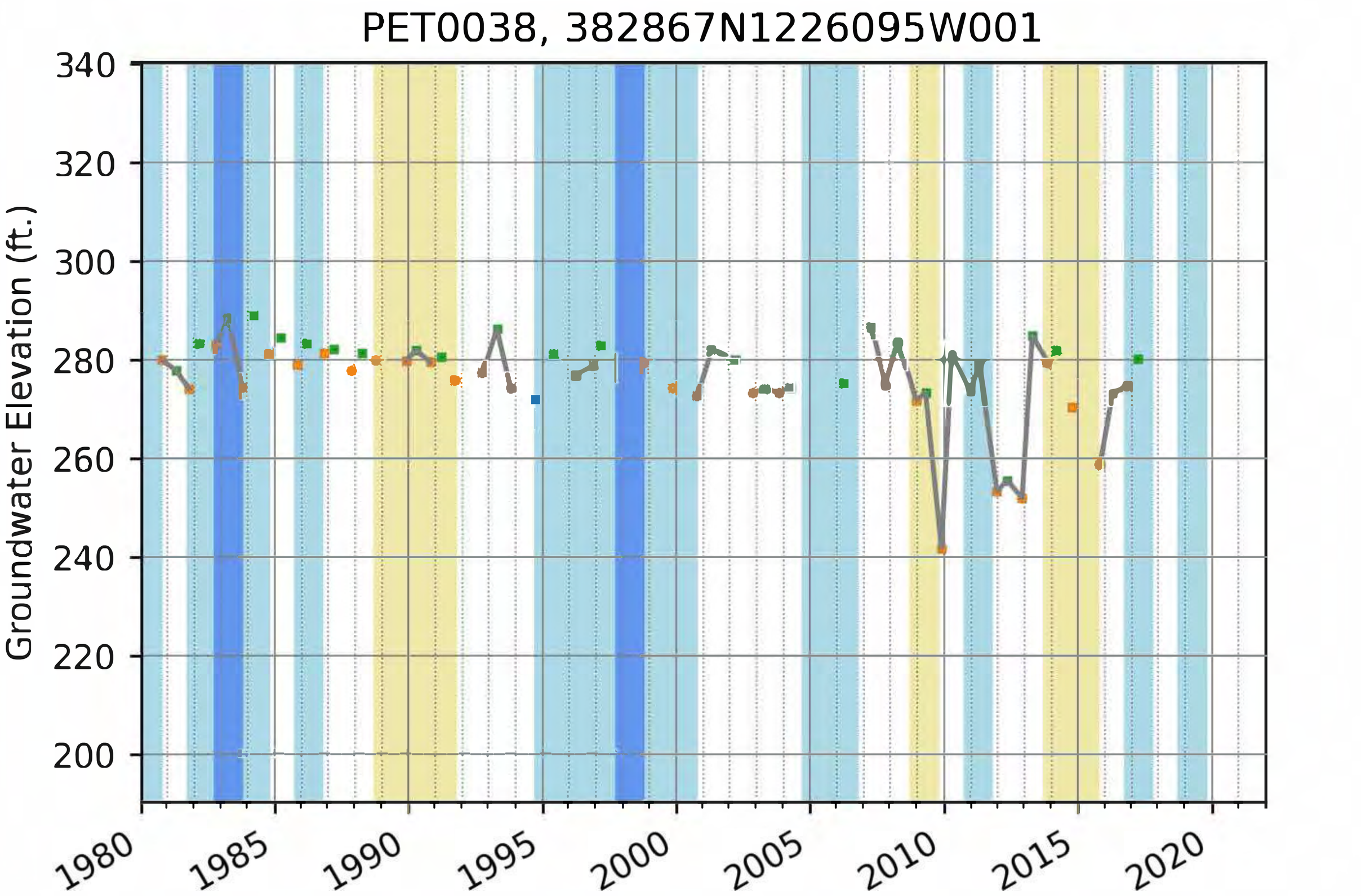
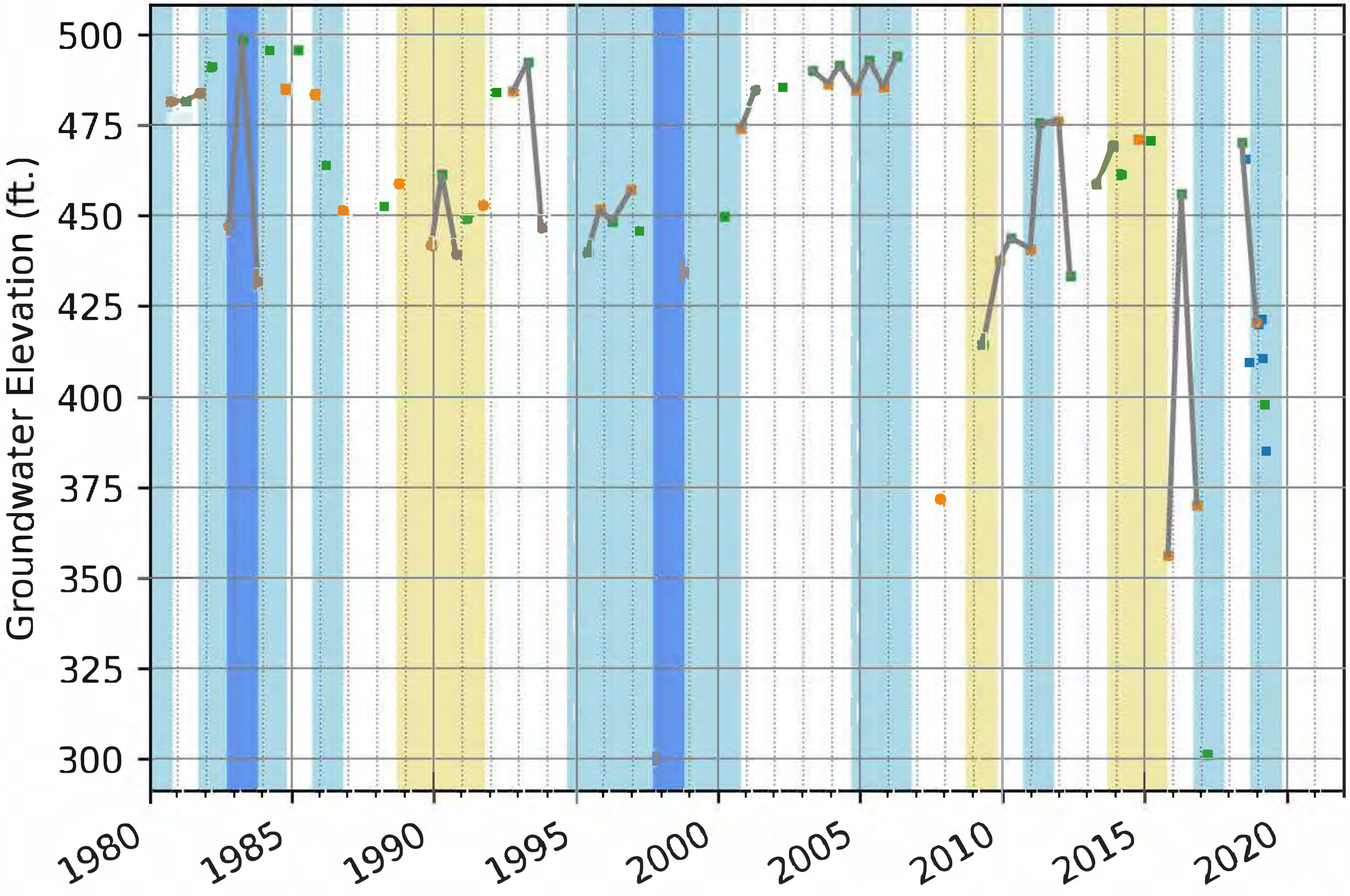
1985
1990
1995
2000
2005
2010
2015
2020

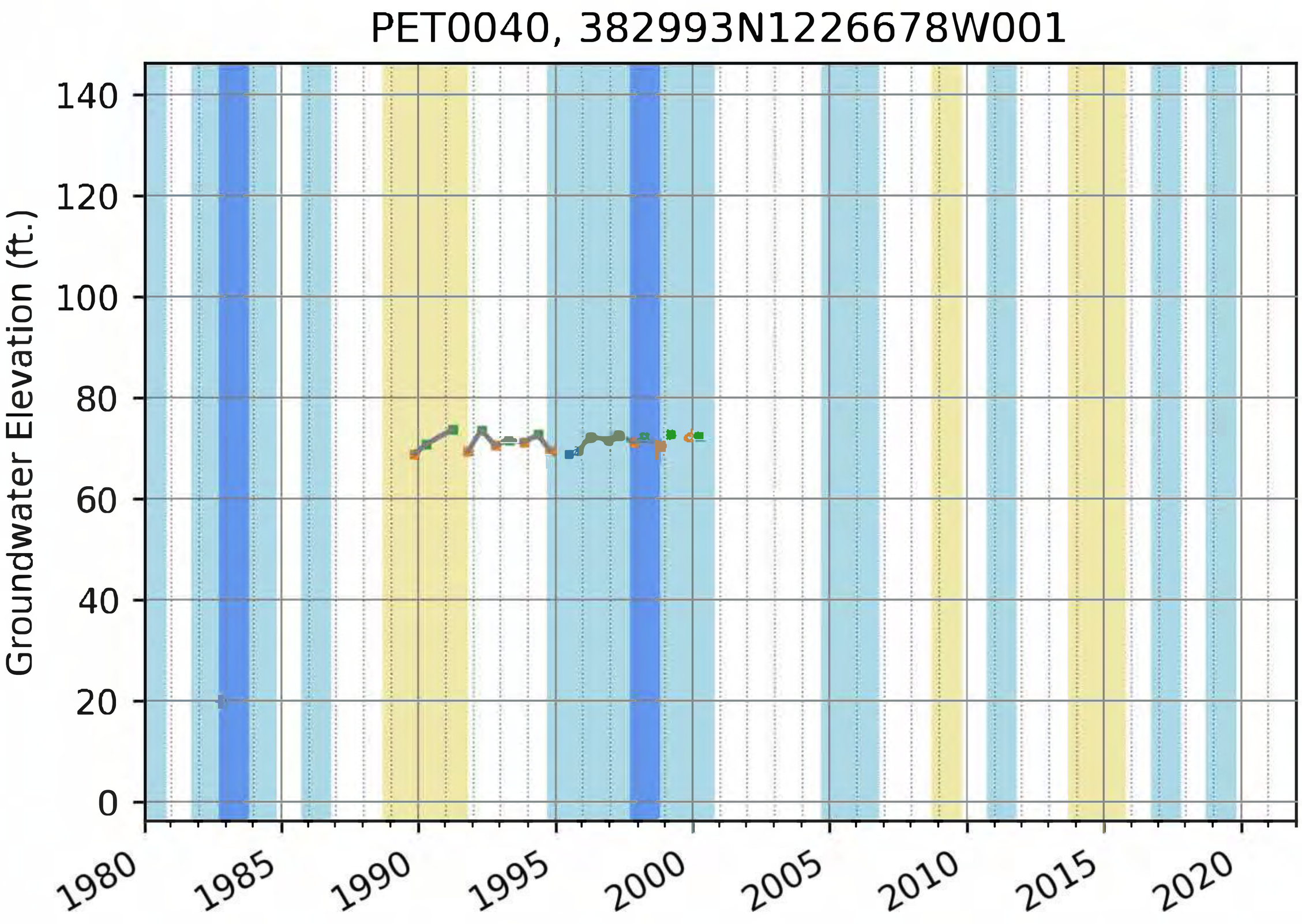
PET0037, 382827N1226719W001




PET0038, 382867N1226095W001
Groundwater Elevation (ft.)
340
320
300
280
260
240
220
200
1980
1985
1990
1995
2000
2005
2010
2015
2020

PET0039, 382934N1226016W001




PET0040, 382993N1226678W001
Groundwater Elevation (ft.)
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100
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40
20
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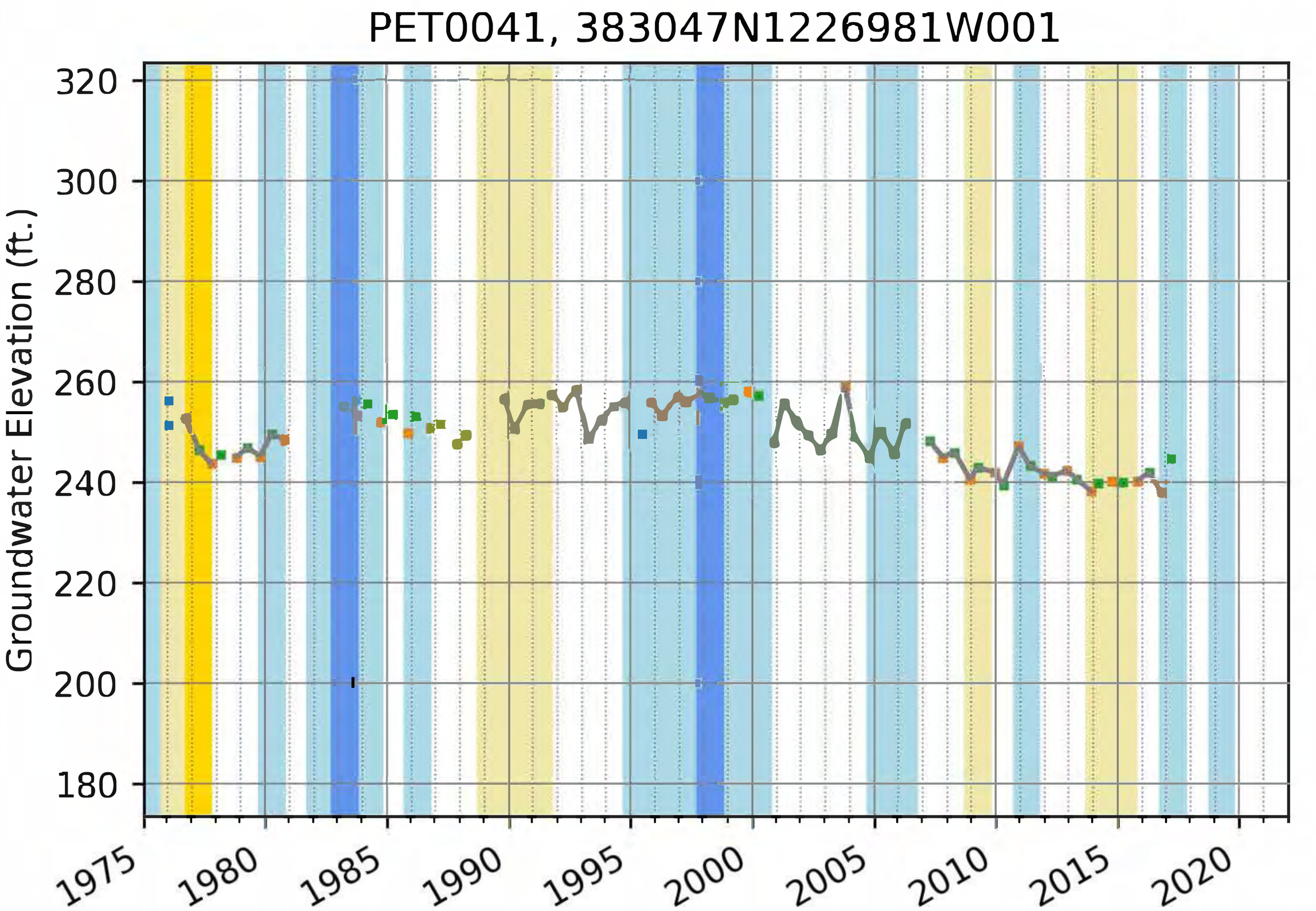
1990
1995
2000
2005
2010
2015
2020


PET0041, 383047N1226981W001
Groundwater Elevation (ft.)
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300
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260
240
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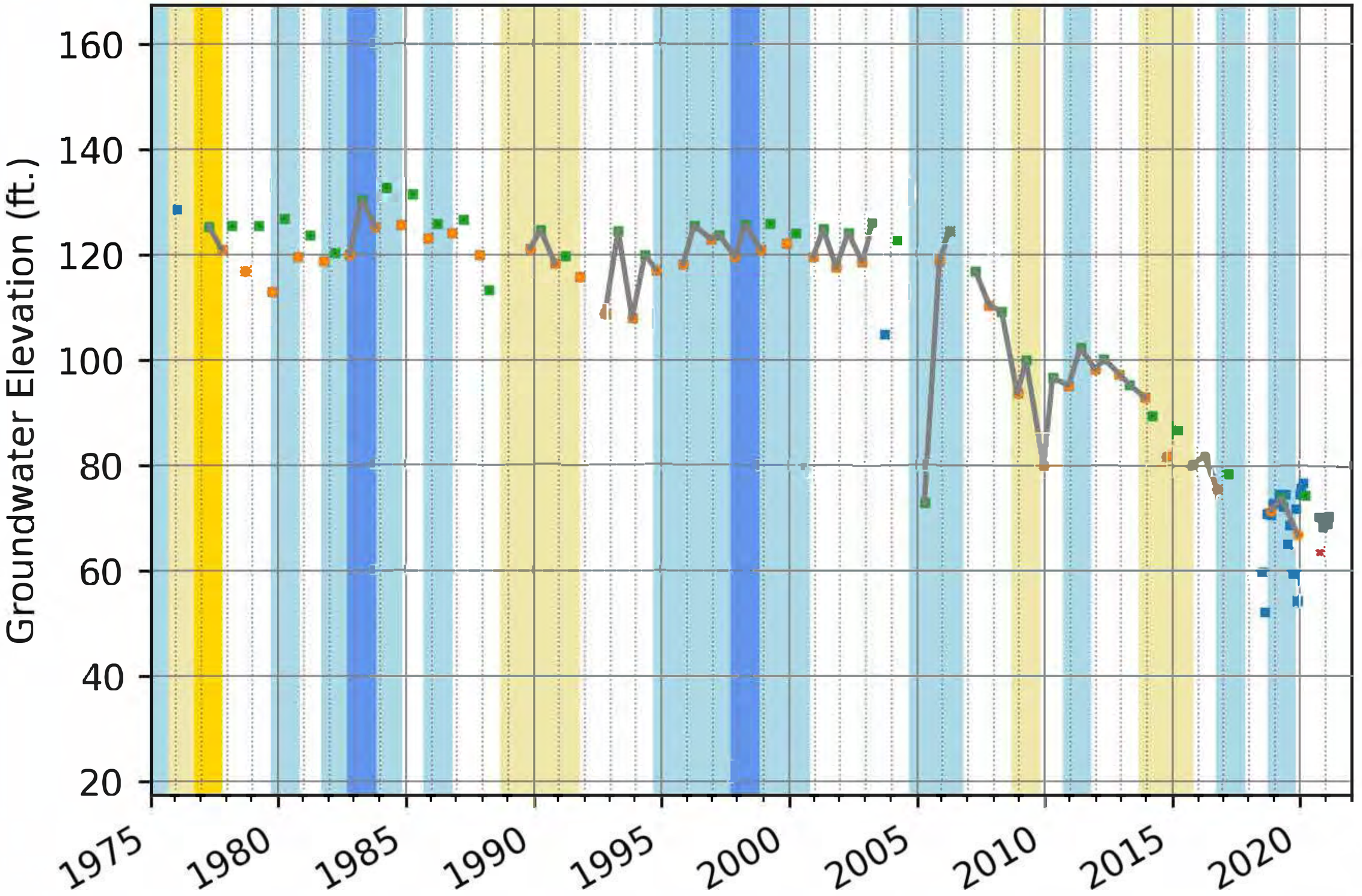
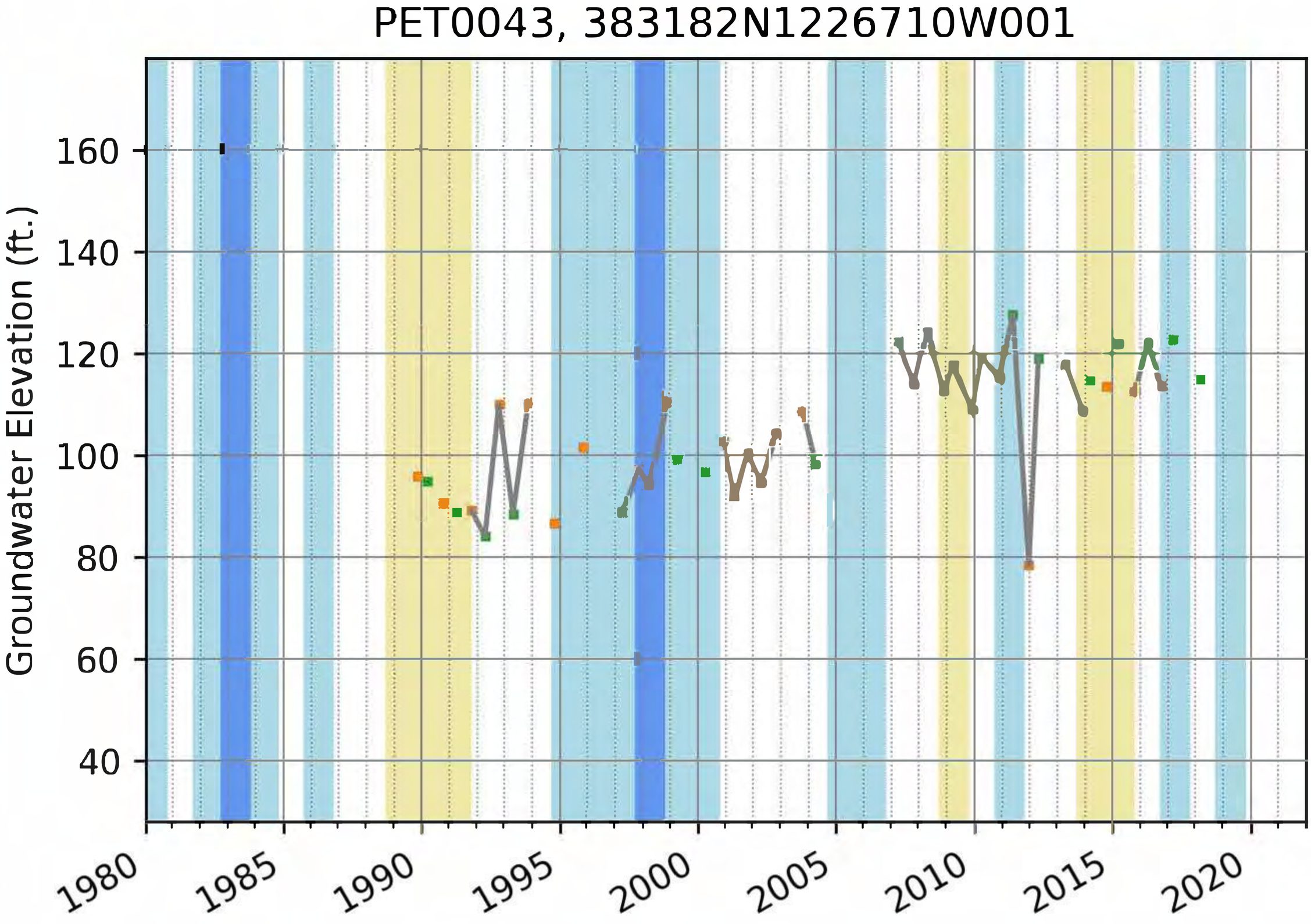
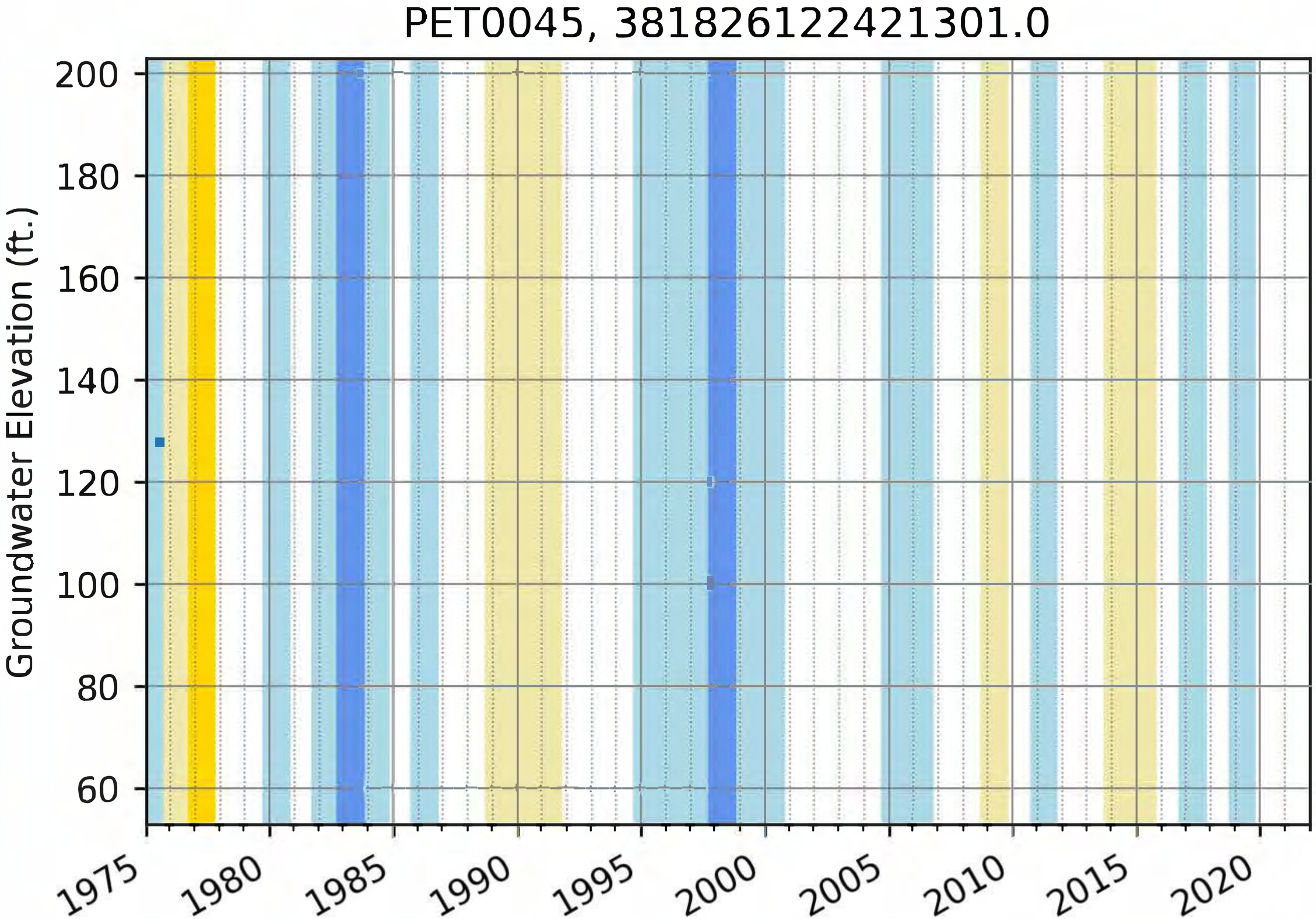
200
180
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020

PET0042, 383076N1227041W001




PET0043, 383182N1226710W001
Groundwater Elevation (ft.)
160
140
120
100
80
60
40
1980
1985
1990
1995
2000
2005
2010
2015
2020


PET0045, 381826122421301.0
Groundwater Elevation (ft.)
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160
140
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80
60
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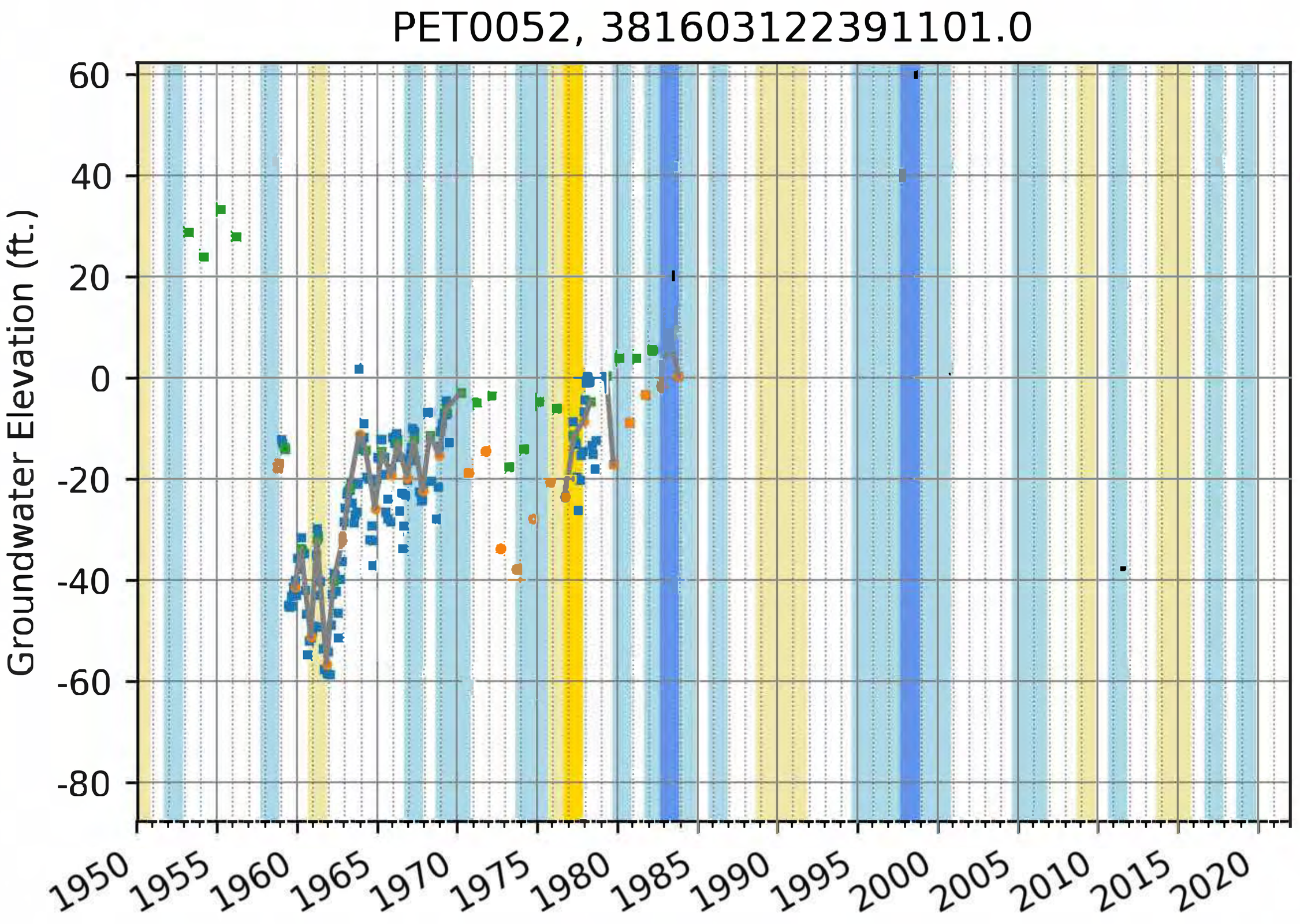
2010
2015
2020


PET0052, 381603122391101.0
Groundwater Elevation (ft.)
60
40
20
0
-20
-40
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-80
1950
1955
1960
1965
1970
1975
1980
1985
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2005
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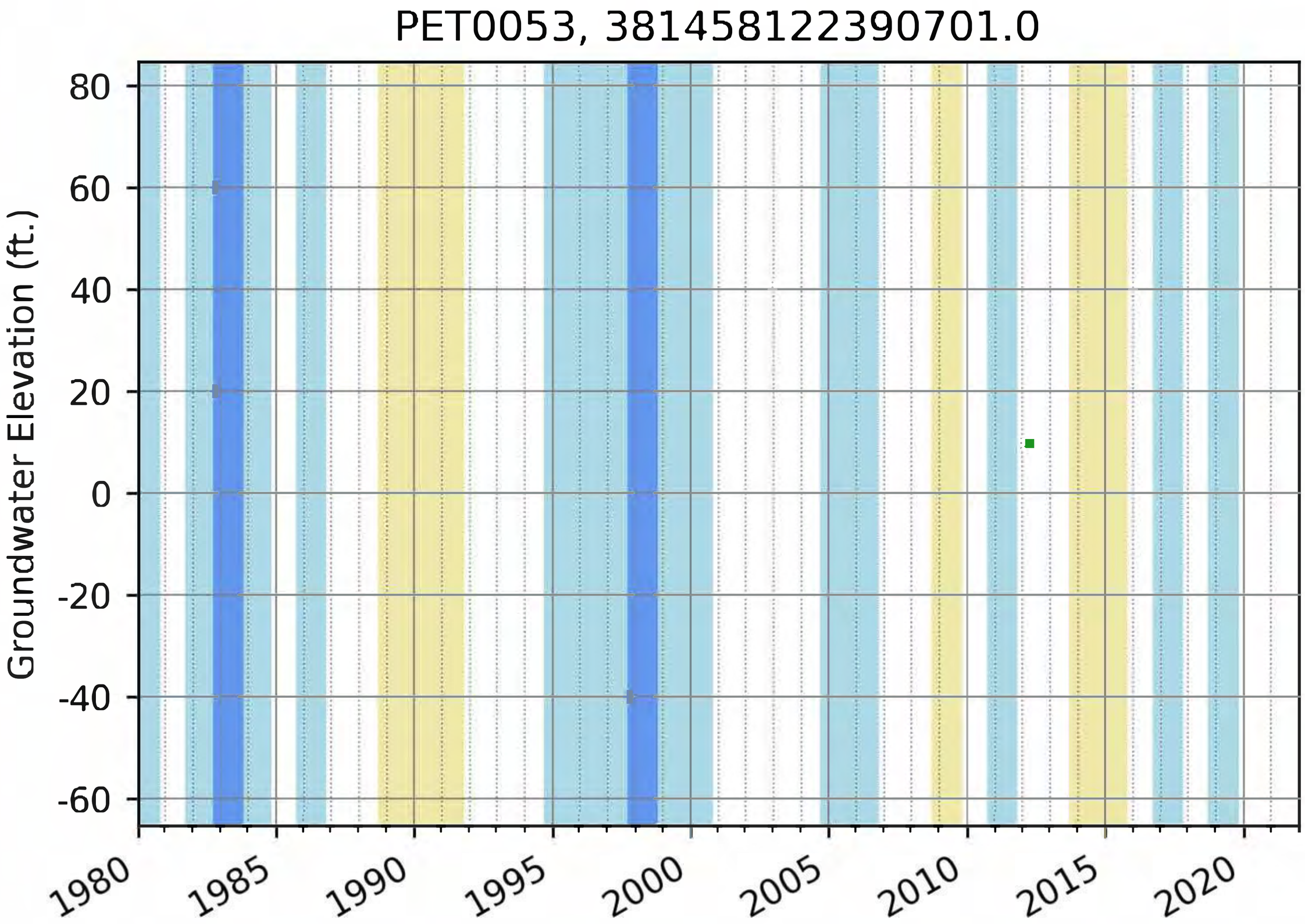
2015
2020


PET0053, 381458122390701.0
Groundwater Elevation (ft.)
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-20
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-60
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2015
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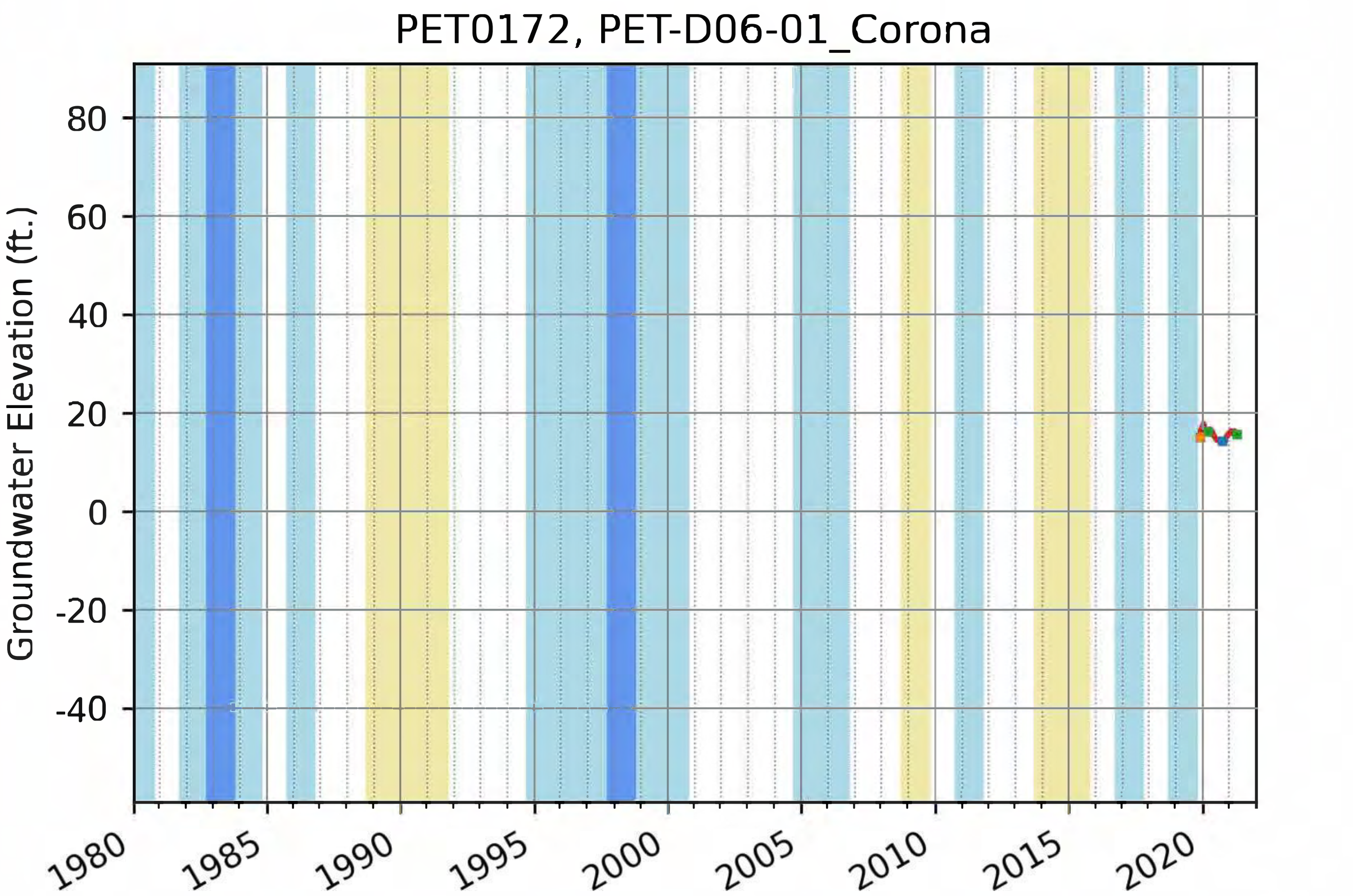
PET0172, PET-D06-01_Corona
Groundwater Elevation (ft.)
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60
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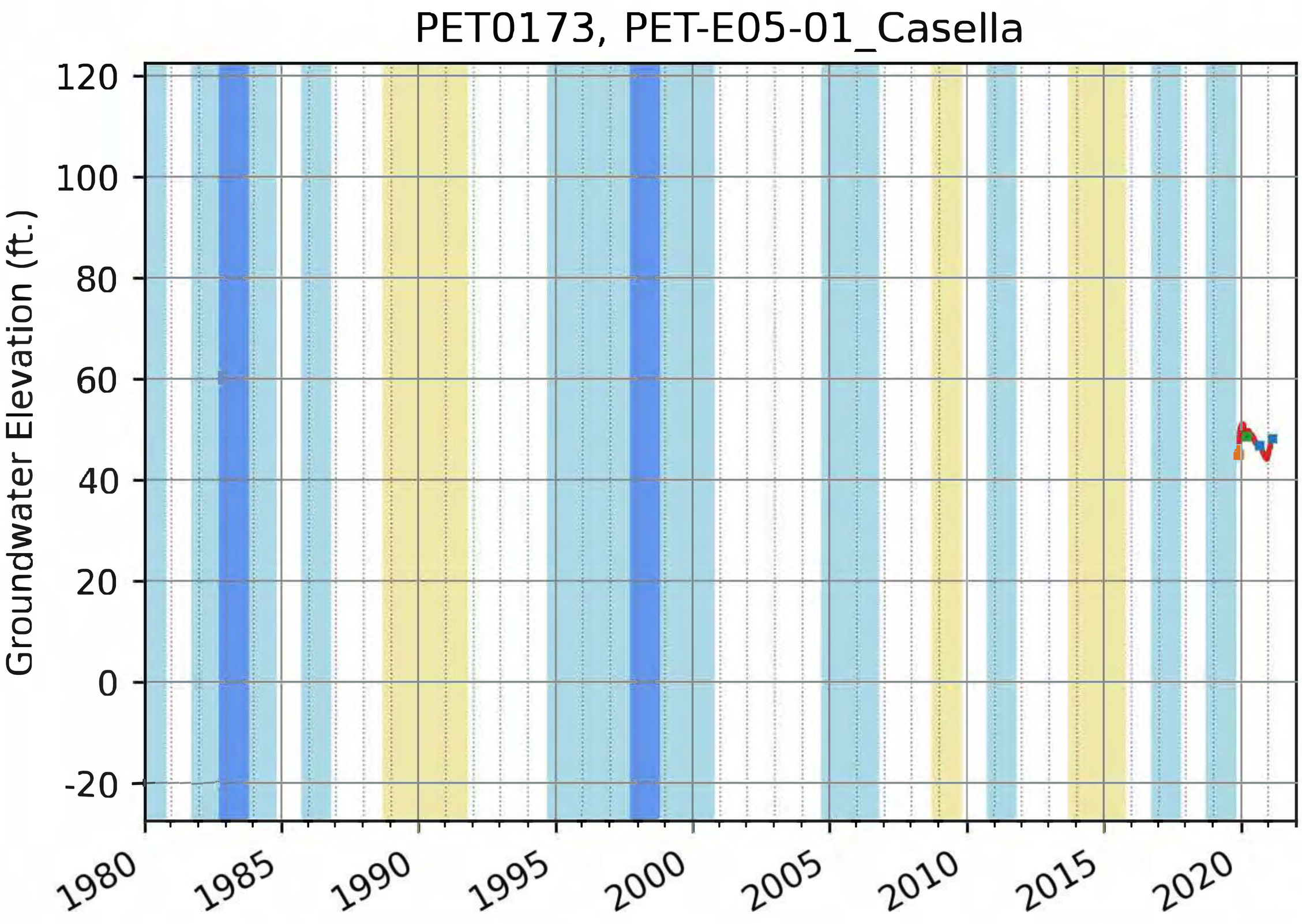
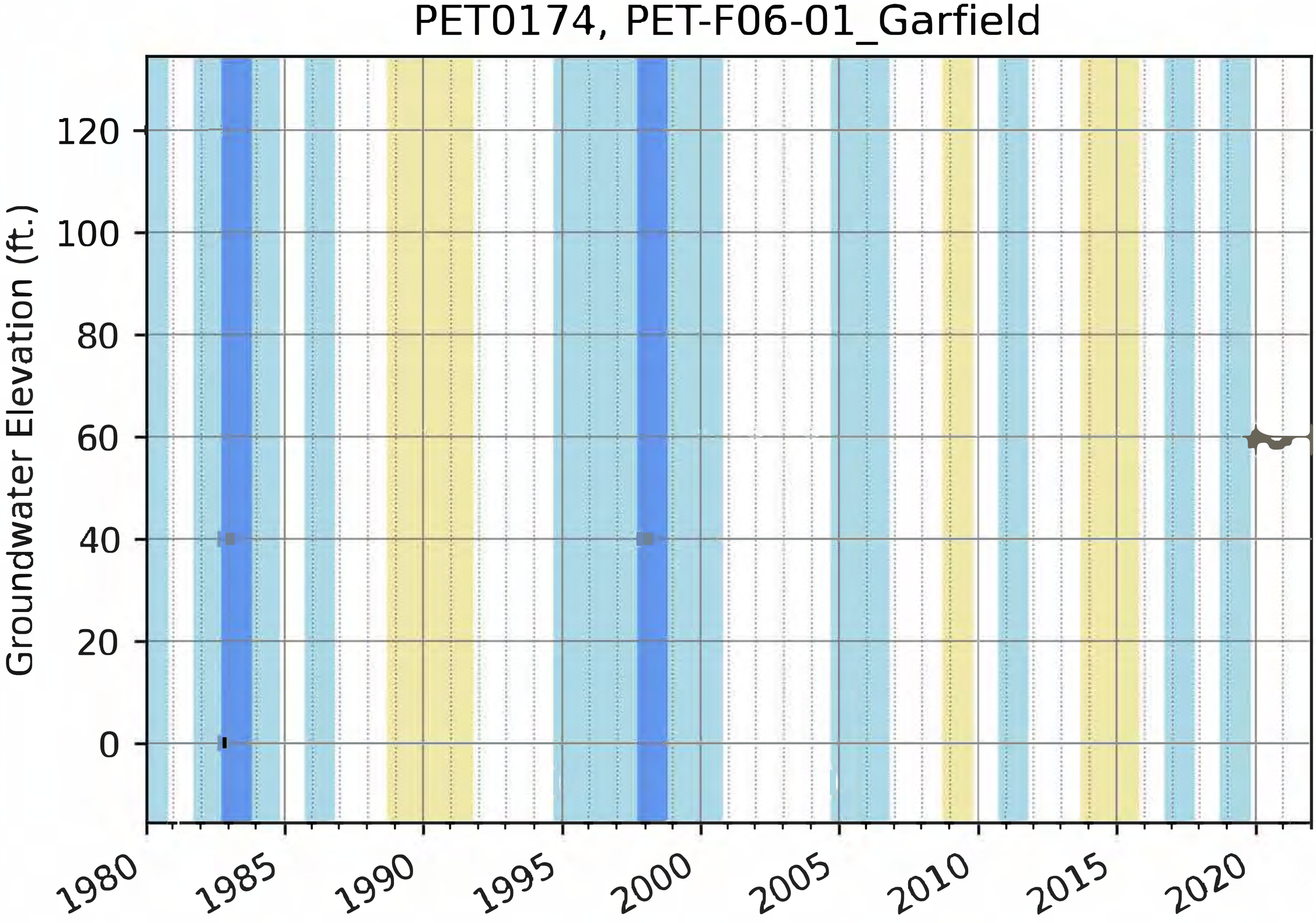
20
0
-20
-40
1980
1985
1990
1995
2000
2005
2010
2015
2020


PET0173, PET-E05-01_Casella
Groundwater Elevation (ft.)
120
100
80
60
40
20
0
-20
1980
1985
1990
1995
2000
2005
2010
2015
2020


PET0174, PET-F06-01_Garfield
Groundwater Elevation (ft.)
120
100
80
60
40
20
0
1980
1985
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Appendix 3-C
Integrated Groundwater Flow Model (PVIHM); Modifications for Use in the Development of the Groundwater Sustainability Plan for the Petaluma Valley Groundwater Basin

APPENDIX 3-C

Integrated Groundwater Flow Model (PVIHM); Modifications for Use in the Development of the Groundwater Sustainability Plan for the Petaluma Valley Groundwater Basin

General Description of Model

The Petaluma Valley Integrated Hydrologic Model (PVIHM) was developed in 2020 by the USGS to simulate groundwater circulation, stream-aquifer interaction, and landscape hydrologic processes within the Petaluma Valley Groundwater Subbasin and surrounding watershed. **Figure 1** shows the spatial extent of the PVIHM, including locations of certain hydrologic boundaries simulated by the model. The model extent primarily coincides with the 2018 Bulletin 118 subbasin boundaries and includes some areas outside of the subbasin boundaries. The PVIHM domain covers the entire subbasin, and additionally covers a portion of the Wilson Grove Formation Highlands to the northwest of the subbasin (PVIHM groundwater active extent). In addition, the watershed area surrounding the groundwater subbasin is included in the model to simulate rainfall and runoff that flows into the groundwater active domain.

The original PVIHM simulated groundwater conditions from October 1959 through September 2015. Additional modifications to the original PVIHM were incorporated by the USGS on behalf of Sonoma Water and the simulation time frame was extended through 2018. These modifications are described in this document.

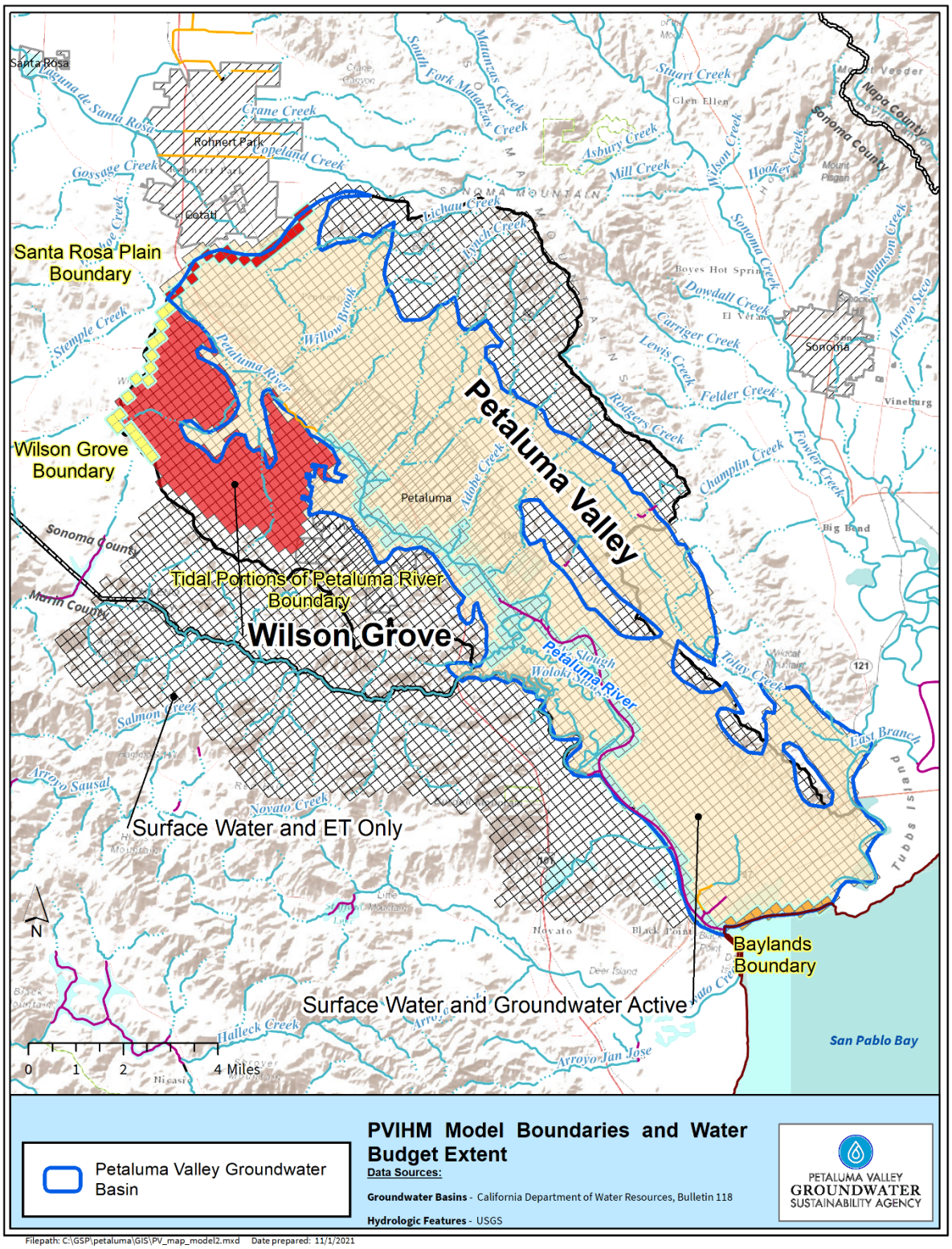


Figure 1: Extent and Boundary Conditions of PVIHM

The PVIHM was developed using the MODFLOW-OWHM2 (Boyce and others, 2020) code. MODFLOW-OWHM2 is based on MODFLOW-2005 (Harbaugh, 2005) with an updated version of the Farm Process (FMP4; Boyce and others, 2020) and incorporates other model enhancements. The PVIHM uses FMP4 to simulate routing of precipitation and irrigation water at the land surface, and to estimate groundwater pumping for irrigation.

Other model input datasets, such as municipal and rural domestic pumping, wastewater flows for recycled water deliveries, are based either on public records or on estimates from land use analysis. Figure 2 illustrates key components and linkages of the PVIHM.

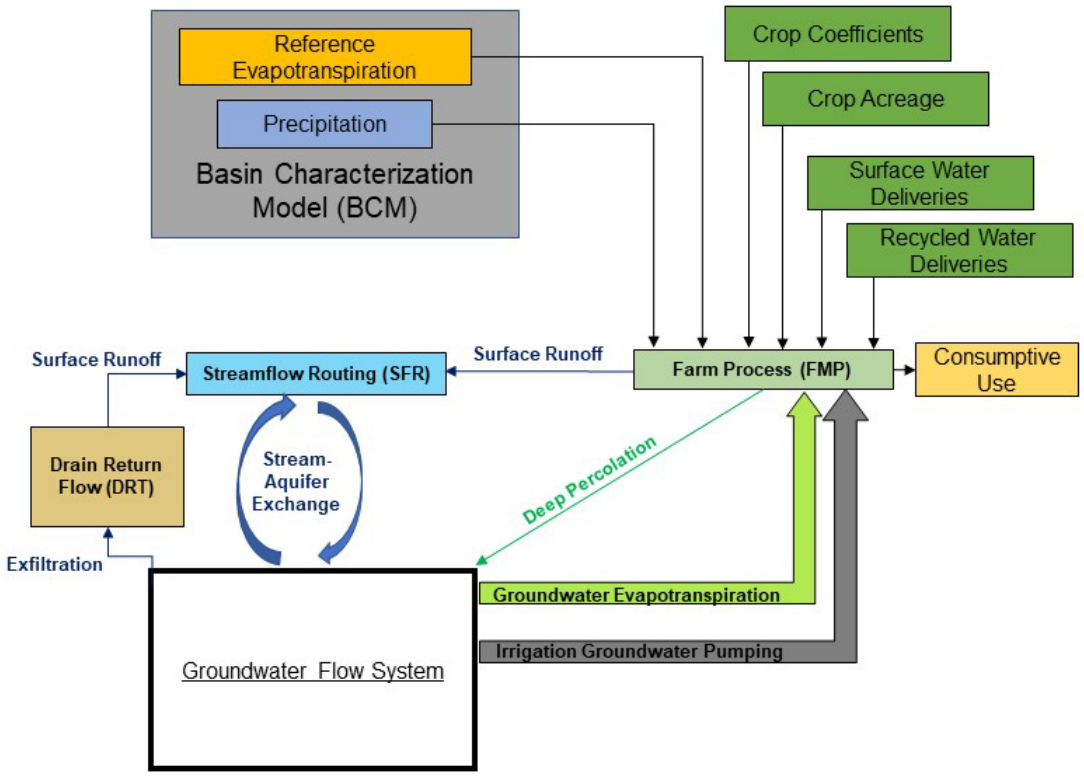


Figure 2: Schematic Illustration of PVIHM Processes

Reference ET and precipitation grids were extracted from Basin Characterization Model (BCM) inputs, and interpolated from the BCM grid to the PVIHM grid.

Model Evaluation and Use for GSP Development

A detailed model review and assessment was performed and concluded that, in general, the model is adequate for use during GSP development, for the following reasons:

- The model uses a public domain, and well documented modeling platform that includes capabilities adequate to develop robust water budgets and assess projects and actions.

- Most model input data were vetted with local information and assumptions follow local understanding of aquifer processes.
- The model was calibrated to historical data and is very well calibrated to the four categories of calibration datasets used (groundwater levels, vertical hydraulic gradients, streamflow, and streamflow gains and losses estimated from seepage runs).

Therefore, the model is an suitable tool to be used for SGMA application during GSP development and implementation.

Recommendations for improving the model were split between those critical for GSP development, and those that could be implemented during GSP implementation. The major recommended model revisions and refinements for GSP development include:

- Extend model simulation period to the end of Water Year (WY) 2018
- Review assumptions used to calculate rural domestic pumping and incorporate septic return flows
- Incorporate simulation of surface water diversions from streams consistent with simulated surface water deliveries to farms

Additional model input reviews, data evaluation, and updates, are recommended during GSP implementation, after additional information is collected. *A detailed plan for further model refinements is provided in the GSP Implementation Section of this GSP.*

Modifications to PVIHM

Rural Domestic Pumping and Septic Return Flows

The Sonoma County parcel database was filtered to locate rural residential parcels inside of the groundwater model domain. The yearly groundwater usage applied to each parcel was determined by the size of the parcel and the parcel type. The groundwater demand was estimated by:

$Q_{parcel} = Q_{indoor} + \%\ Irrigated \times I_d \times P_{av(i)}$

% Irrigated = 2.80%

I_d = 2.9 ft/year; Turf Irrigation Depth

$P_{av(i)}$ = Parcel area (acres)

Q_{indoor} (In-home use) = 0.24 AF/year

Parcel zoning use codes were used to determine if a parcel uses groundwater for indoor and outdoor, indoor only, or outdoor only. Parcels with outdoor and indoor uses are typically common residences, whereas indoor only parcels are those with a mixed residential and

agricultural zoning use code description. The assumption is that the agricultural demands will be satisfied by the Farm Package in MODFLOW-OWHM.

The start of pumping for a given parcel was determined from the year that the parcel database indicated the parcel was developed. Parcels are aggregated spatially by model cell for every stress period. The layers from which the parcels pump groundwater is determined from the reported domestic well depths. The reported well depths are provided by DWR's Well Completion Report Map which describes the number, maximum, minimum, and average depths for wells by township, range, and section. The layer assigned to a given parcel was selected based on the minimum, maximum and mean defined in the DWR dataset for that well's township, range, and section

Surface Water Diversions

Surface water irrigators in the Petaluma Subbasin divert water from streams during the winter into on-farm storage ponds for water use during the primary growing season (Traum et al. 2022). Consequently, there is a lag between the timing of surface water diversions from streams, and the use of surface water for irrigation. Use of surface water for irrigation is referred to as surface water delivery, meaning that the water is delivered to the point of use.

The PVIHM simulates surface water deliveries to farms as N on-Routed Deliveries (NRD), consisting of a monthly specified delivery volume. NRD volumes as specified as part of model inputs are based on data from the enhanced Water Right Information Management System (eWRIMS) (Traum et al. 2022).

The PVIHM simulates surface water diversions from streams as Semi-Routed Deliveries (SRD). For SRD, the timing and magnitude of surface water diversions is dependent on both simulated crop consumptive use requirements by the Farm Process and on simulated monthly streamflow upstream of the surface water point of diversion. The PVIHM is configured to simulate monthly diversions as SRD approximately equal to the corresponding monthly NRD volume. The PVIHM includes a cap on monthly surface water diversions calculated based on the annual delivery volumes, to ensure that simulated surface water diversions do not exceed the specified delivery volume, which is based on eWRIMS data (Jon Traum, January 2021, written communication).

Extending Simulation Period through Water Year 2018

Extending the simulation period to the end of WY2018 consisted of updating several PVIHM input datasets with the most recently available data. **Table 1** lists the input datasets that were updated, including the data source and the PVIHM package or process which requires the dataset.

Table 1. PVIHM Input Datasets Used to Extend Simulation Period

Input Dataset	Data Source	PVIHM Package
Recycled water deliveries to farms	City of Petaluma Records	FMP4
Surface water diversions and deliveries to farms	Estimated based on eWRIMS records	NRD
Municipal pumping	City of Petaluma records	MNW
Rural domestic	WY 2015 values repeated through WY 2018	WEL
Land use and irrigation status	LandIQ / CA DWR	FMP
Spatially distributed climate data	BCM v65 inputs obtained from USGS	FMP4
Interbasin flow	Heads in adjacent basins estimated based on historical records	GHB

Recycled Water Deliveries

Total annual recycled water (RW) deliveries to farms were provided by City of Petaluma for calendar years 2015 through 2018 to include in the model. Since only an annual total for all RW customers was provided, deliveries were distributed by month and by water balance subregions. Monthly deliveries for years with similar water year classifications were used to calculate percentages of the annual total to distribute totals by month and by water balance subregion for the update period. Calendar year 2014 proportions were used to allocate deliveries for calendar year 2016 and 2018. Calendar year 2012 proportions were used to allocate deliveries for calendar year 2017. Proportions from October through December 2013 were used to allocate the remainder of deliveries for 2015. **Figure 3** shows total RW deliveries in the historical and update periods.

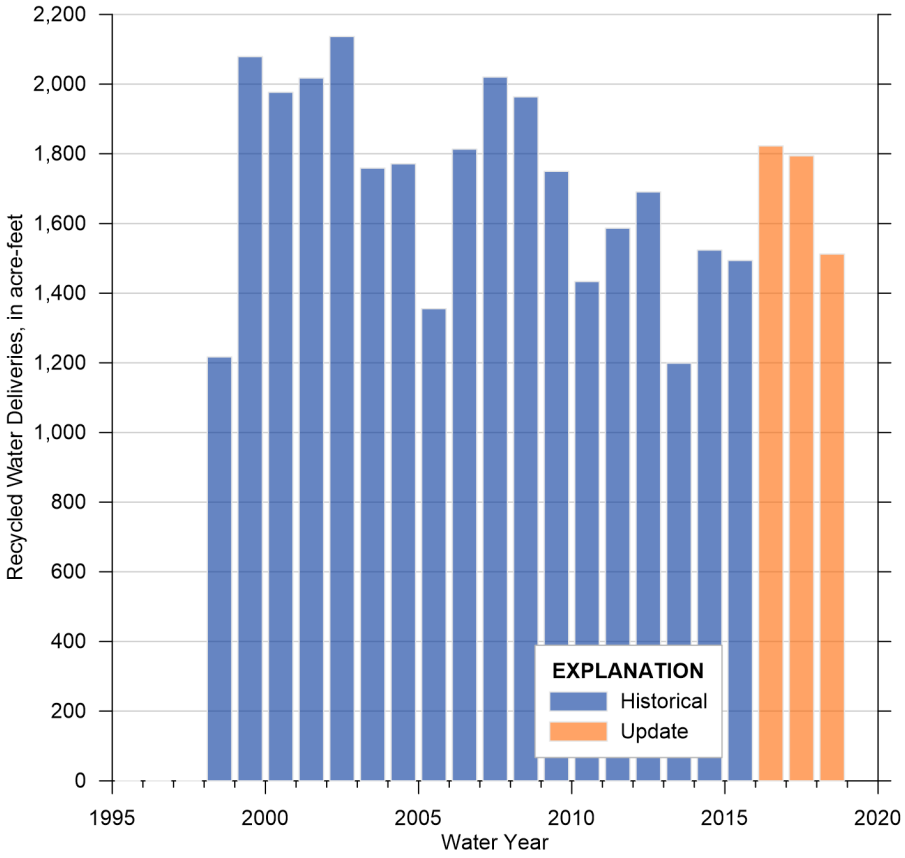


Figure 3. Recycled Water Deliveries for the Historical and Update Periods.

Surface Water Diversions and Deliveries

Surface water deliveries were calculated by repeating values from water years with similar water year classifications. Monthly surface water deliveries for WY 2016 and 2018 used repeated values from WY 2014. WY 2017 used repeated values from WY 2012. Figure 4 shows total surface water deliveries to farms for the historical and update periods.

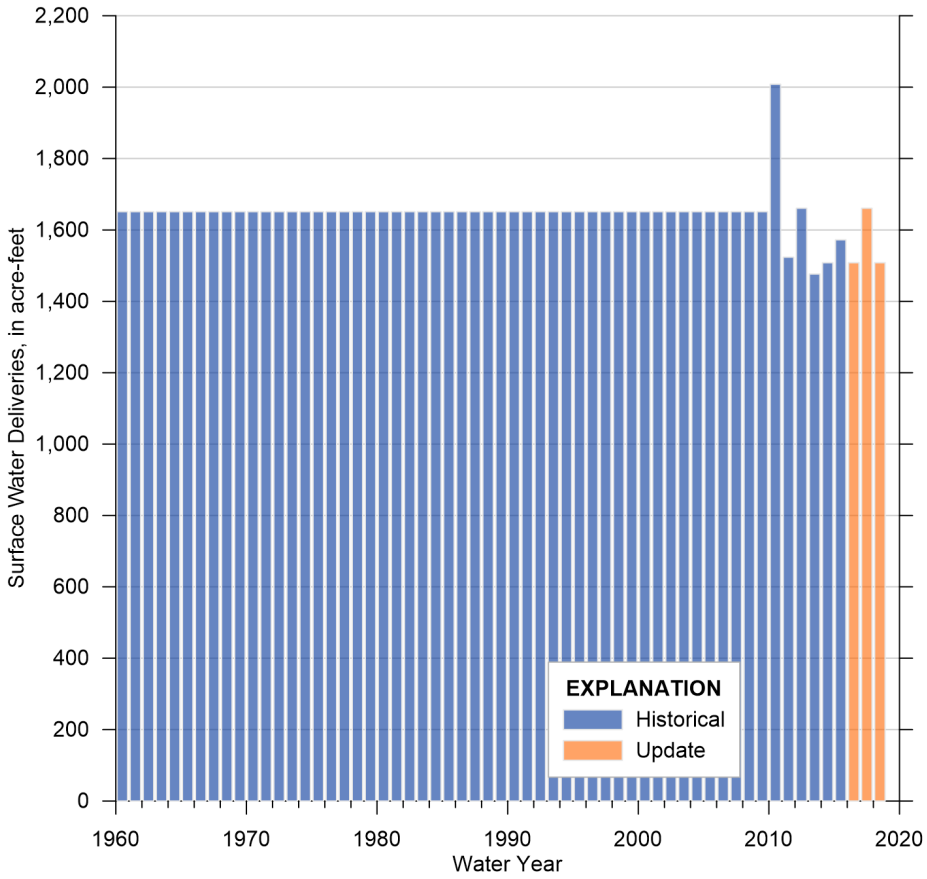


Figure 4. Surface Water Deliveries for Historical and Update Periods.

Simulation of surface water diversions as SRD during WY2015-2018 is consistent with the original PVIHM, with monthly diversion volumes calculated based on both the simulated streamflow, and simulated crop demands. The cap, or upper limit, on surface water diversions was extended over WY2015-2018 using a similar approach to farm deliveries by substituting the equivalent monthly limit from similar water years, as described above.

Groundwater Pumping

Groundwater use in the Subbasin includes pumping by public water systems and by rural water users for both domestic and agricultural irrigation uses.

Municipal Pumping

Total monthly pumping data were provided by City of Petaluma. Two wells, the Stony Point and Frietas wells, supply the total groundwater demand, pumping approximately the same volume. Municipal groundwater pumping rates were simulated using the MODFLOW Multi-Node Well (MNW2) package on a monthly stress period and are displayed in **Figure 4**.

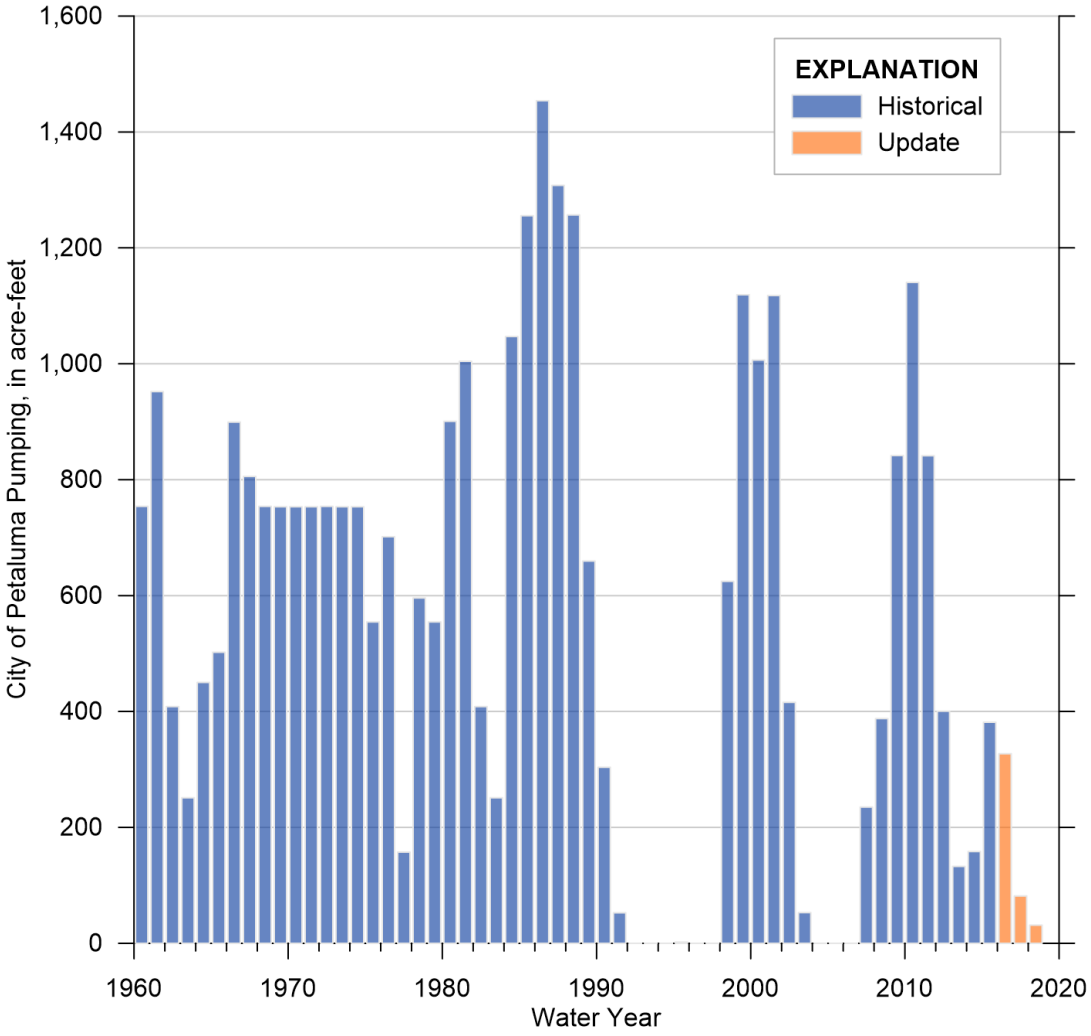


Figure 5. City of Petaluma Groundwater Pumping for the Historical and Update Periods

Farm Process Input Datasets

Datasets required to update the Farm Process in the PVIHM include land use, and monthly, spatially distributed climate variables (precipitation and reference evapotranspiration).

Land Use

Land use simulated by the original PVIHM (Traum et al. 2022) relied on DWR land use datasets for Sonoma County and Marin County. DWR specification of irrigation status (irrigated or non-irrigated) of agricultural lands was also incorporated into the original PVIHM.

Land use data developed by LandIQ (LandIQ, 2017) were used to update FMP inputs from September 2015 through 2018. Land use data for a given year were repeated until new data became available. Two snapshots were available from LandIQ, one for 2014 land use and one for 2016 land use. **Table 2** lists time periods in the PVIHM associated with each land use dataset, for the original model and the update portion.

Table 2. Land Use Data Sets in PVIHM

Land Use Data Set Year	Data Source	Water Years Represented by Land Use Dataset
1959	DWR	1959 - 1978
1979	DWR	1979 – 1985
1986	DWR	1986 – 1998
1999	DWR	1999 – 2011
2012	DWR	2012 – 2013
2014	LandIQ	2014 – 2015
2016	LandIQ	2016 – 2018

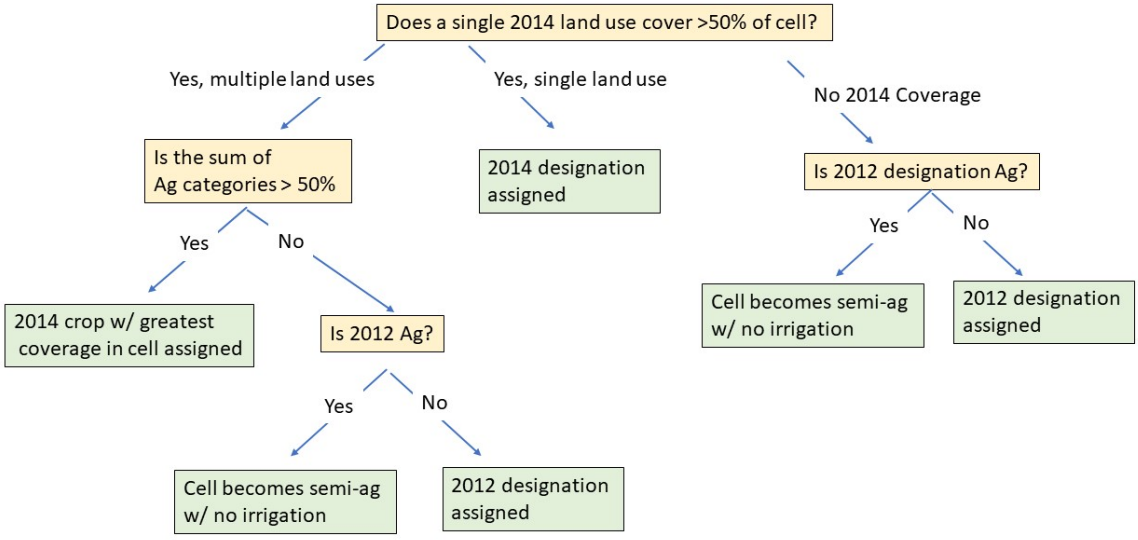
Specification of PVIHM land use during WY2014-2015 differs between the original PVIHM and the temporal update. Land use during WY2014-2015 was based on 2012 DWR data for the original PVIHM, and was updated to use the 2014 LandIQ data in the PVIHM temporal update.

Land use for each model cell was determined based on the spatial land use data described above. Figure 6 shows a flow chart describing how land use was updated based on the 2014 LandIQ dataset. The same methodology was followed for the 2016 LandIQ dataset, except the comparison was made between 2014 and 2016, rather than 2012 and 2014 datasets.

Table 3 illustrates the correspondence between land use categories from the 2014 and 2016 LandIQ datasets, and land use categories simulated by the PVIHM.

Table 3. Correspondence between LandIQ Land Use and PVIHM Land Use Categories

2014 & 2016 LandIQ Land Use Categories	PVIHM Land use Category
Flowers, Nursery and Christmas Tree Farms	Truck
Grapes	Vineyards
Greenhouse	Truck
Idle	Idle
Managed Wetland	Riparian
Miscellaneous Deciduous	Orchard
Miscellaneous Grain and Hay	Grain
Miscellaneous Grasses	Pasture
Miscellaneous Truck Crops	Truck
Mixed Pasture	Pasture
Olives	Orchard
Strawberries	Truck
Urban	Urban
Walnuts	Orchard
Young Perennials	Truck
Apples	Orchard



Irrigation Status of Agricultural Land

The PVIHM requires that the irrigation status of agricultural lands be specified as part of the calculations of groundwater pumping for irrigation to satisfy farm demand. LandIQ land use snapshots for 2014 and 2016 do not define the irrigation status of agricultural lands. Initially, irrigation status arrays for WY 2015 through 2018 were defined based on a combination of land use and the 2012 irrigation status. Specifically, initial assumptions with respect to grain and pasture were as follows:

- Any parcels with mapped land use of grain were simulated as irrigated grain if they were also simulated as irrigated grain in 2012
- All pasture acreage was simulated as irrigated

During subsequent discussions with the Petaluma Valley GSA Advisory Committee, additional feedback received, and based on supplemental data on the 2016 irrigation status of grain, pasture, and miscellaneous grasses in the Petaluma Valley Basin (Tad Bedegrew, CA DWR, written communication, February 2021), it was determined that this approach likely overestimated the acreage of irrigated pasture.

The irrigation status of grain and pasture land use as specified in PVIHM inputs for 2015-2018 was modified for consistency with supplemental data provided by DWR, as shown in Table 4. Revisions to irrigation status were based on review of recent NDVI and aerial imagery to select parcels mapped as either grain, miscellaneous grasses, or pasture, but which could be visually identified as non-irrigated.

The final total areas of irrigated and non-irrigated grain and pasture land uses simulated by the PVIHM are shown in Table 4. The irrigated acreages are reasonably close to the estimates or irrigated and non-irrigated acreage provided by DWR for the purposes of GSP development.

Table 4. 2016 Acreage in Petaluma Valley Basin of Select Grass Crops by Irrigation Status Compared with Representation in PVIHM

	DWR Supplemental Data		PVIHM grid cell area	
Crop	Irrigated, acres	Not Irrigated, acres	Irrigated, acres	Not Irrigated, acres
Grain	125	4533	534	4025
Pasture[1]	457	1704	267	1846
Total	582	6237	801	5871

[1] **Total acreage of pasture and miscellaneous grasses land use**

Precipitation and Evapotranspiration

To update the model through 2018, monthly gridded precipitation and evapotranspiration datasets were used as inputs to FMP4. The update used input datasets to the BCM for both precipitation and evapotranspiration, consistent with the approach used for the original PVIHM (Traum et al. 2022). Historical gridded precipitation and evapotranspiration data for the update period were provided by the USGS.

Interbasin Groundwater Flow

The PVIHM simulates exchange between the Santa Rosa Plain Subbasin and the portion of the Wilson Grove Basin outside the PVIHM active extent using General Head Boundaries (GHB). GHB reference heads for the original PVIHM were calculated based on water levels measured in nearby wells (Traum et al. 2022). GHB reference heads were extended through WY2018 based on Water Year type, using the same correlations described in the section 'Surface Water Deliveries and Diversions'.

DEVELOPMENT OF MODEL INPUTS FOR FUTURE PROJECTED BASELINE SCENARIO

The PVIHM was modified as part of GSP development to simulate a future projected baseline scenario for the purpose of establishing projected water budgets under baseline conditions considering climate change, and projected land use and water demand changes, and to provide a benchmark scenario for evaluating Projects and Management Actions.

Projected Climate Inputs

Based on the results of a separate evaluation of General Circulation Models (GCMs) to use for GSP development, the HadGEM2-ES GCM was selected to develop projected climate inputs for the future projected baseline scenario (see GSP Section 3 and Appendix 3-E). Two Representative Concentration Pathways (RCPs) were reviewed by the Petaluma Valley GSA Advisory Committee, and the RCP 8.5 emissions scenario was selected.

GCM outputs from the HadGEM2-ES model forced by the RCP 8.5 emissions scenario were sampled to the Basin Characterization Model (BCM) grid over the Russian River watershed on a monthly time scale. The PVIHM grid does not align exactly with the BCM grid; therefore, monthly gridded precipitation and reference ET were interpolated from the BCM to the PVIHM grid to prepare model inputs for the future projected baseline scenario.

Surface Water Diversions and Deliveries to Farms

Surface water deliveries to farms simulated as NRDs were defined using a similar approach as used for extending the historical simulation through 2018 and described in the section 'Extending Simulation Period through Water Year 2018'. Each year of the future period was assigned a water year type, and monthly surface water deliveries for each year were set equal to monthly surface water deliveries from a historical year with the same water year type, and for which data on surface water deliveries are available. Table 5 lists the reference water years used to assign monthly surface water diversions in the projected baseline scenario.

Table 5. Reference Water Years Used to Assign Surface Water Diversions and Deliveries in Future Projected Baseline Scenario

Future Water Year Type	Reference Historical Year
Very Dry	1977
Dry	2014
Normal	2012
Wet	2011
Very Wet	1998

Surface water diversions from streams simulated as SRDs used the same approach as for the historical period; however, the upper limit on monthly surface water diversions was assigned based on future water year type, with the same correlations to reference historical years shown in Table 5.

Projected Pumping

Irrigation pumping

Irrigation pumping during the future period was simulated using the Farm Process using the same approach as in the historical simulation.

Municipal and Industrial (M&I) Pumping

Groundwater pumping by the City of Petaluma was projected over the future, as described in Appendix 3-D.

Annual groundwater demand was distributed to monthly pumping rates based on average monthly pumping distribution in historical pumping records. City of Petaluma pumping was assumed to be distributed among six pumping wells, shown in Table 6.

Table 6. Distribution of City of Petaluma pumping by supply well in future projected baseline scenario

Well	Percentage of City of Petaluma pumping served by well
Stony Point	50%
Airport Well	10%
Cross Creek Well	10%
Frates Well	10%
La Tercera Well	10%
Park Place Well	10%

As of 2020, City of Petaluma groundwater pumping was equally split between the Stony Point and Frates Wells (Kent Carothers, personal communication, September 2020). Preliminary simulation results based on equally splitting future projected City of Petaluma demand indicated that the Frates well could not reliably supply 50% of projected demand due to simulated drawdowns past the well screen. It was therefore assumed that half of the City's groundwater demand will be supplied by the Stony Point well, and the remaining half would be evenly distributed among the Airport, Cross Creek, Frates, La Tercera, and Park Place Well (Table 6).

Rural domestic pumping

Rural domestic pumping was projected over the future simulation period, as described in Appendix 3-D.

Projected land use

Agricultural land use changes were projected over the future simulation period, as described in Appendix 3-D.

Interbasin groundwater flow

Future projected groundwater flow between the PVIHM active extent and adjacent basins was simulated using the same approach as in the historical simulation, using GHB cells. GHB reference heads were defined through the future period using the correlations between future water year type and reference historical years shown in Table 5.

Exchange between aquifer and San Pablo Bay

Future sea level rise due to climate change may impact groundwater conditions beneath and upgradient from San Pablo Bay. Sea-level rise guidance provided by the California Natural Resources Agency (CNRA, 2018) was used to provide a sea-level rise trajectory to be simulated. The PVIHM was modified to simulate the 1-in-200 change (0.5% probability) sea level rise trajectory under the high emissions

scenario, which results in a projected sea level rise of 3.5 feet at the end of the projected 50-year water budget. The choice of the 1-in-200 change scenario is consistent with: (1) the choice of emissions scenario considered for future climate to be simulated by the model; and (2) sea level rise assumptions used for the Sonoma Creek Baylands Strategy (Sonoma Land Trust and San Francisco Bay Restoration Authority, 2020). Exchanges between the aquifer and San Pablo Bay, and between the aquifer and the tidally-influenced Petaluma River are simulated in both the historical and future period as a head-dependent flow using the General Head Boundary (GHB) package. Future sea-level rise was simulated by converting the sea level rise trajectory to freshwater equivalent head, and adding to the historic freshwater equivalent head used to represent both the Bay and the tidally-influenced Petaluma River in the PVIHM future simulation.

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Appendix 3-D
Future Groundwater Demands and Land Use Changes

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Projection of Future Water Demands for Rural Residential and Municipal Water Users, and Changes in Agricultural Land Use for the Groundwater Sustainability Plans of the Santa Rosa Plain, Sonoma Valley, and the Petaluma Valley Subbasin

Future Groundwater Demands and Land Use Change

Santa Rosa Plain GSA, Sonoma Valley GSA, and Petaluma Valley GSA

The Petaluma Valley, Santa Rosa Plain, and the Sonoma Valley Groundwater Sustainability Agencies are required to incorporate projections of future groundwater use as part of their groundwater sustainability plan (GSP) development. This document details the methods and data used to make such projections. The documents contained herein were presented to the Advisory Committee for each GSA during the development of the GSP. The documents detail the projected changes in 1) land use for agriculture, 2) new housing units requiring groundwater for supply, and 3) municipal groundwater demand projections. The outputs from these projections are incorporated into the groundwater model for each groundwater subbasin,. The simulations cover the time period from October 2020 to September 2071.