

**Basin Management Objective  
Glenn County  
Sub-area 5  
Orland-Artois Water District  
Revision March 2010**

**Basin Management Objective  
Glenn County  
Sub-area 5  
Orland-Artois Water District**

**Calendar Year:** 2010

**Glenn County Water Advisory Committee Representative:** Mike Vereschagin

**Objective:** To maintain the groundwater surface elevation at a level that will assure an adequate and affordable irrigation water supply. It is the intent of this objective to assure a sustainable agricultural water supply now and into the future. The objective is also to assure an adequate groundwater supply for all domestic users in the sub-area.

**Location of BMO Key Wells:** See attached map.

- Well # 1 – South of Road 31 and East of Road F
- Well # 2 – South of Road 35 and East of Road D
- Well # 3 – North of Road 39 and West of I-5
- Well # 4 – South of Road 35 and West of Road D
- Well # 5 – South of Road 33 and South-East of Road F (Discontinued)
- Well # 6 – North of Road 28 and West of Road F
- Well # 7 – South of Road 28 and East of Road D
- Well # 8 – South of Road 28 and East of Road F (Discontinued)
- Well # 9 – South of Road 20 and East of Road P
- Well # 10 – South of Road 25 and East of Road N
- Well # 11 – South of Road 25 and West of Road N
- Well # 12 – North of Road 21 and West of Road M
- Well # 13 – North of Road 30 and West of Road M
- Well # 14 – South of Road 27 and East of Road S (5<sup>th</sup> Ave.)
- Well # 15 – North of Road 30 and West of Road P
- Well # 16 – North of Road 30 and East of Road S (5<sup>th</sup> Ave.) (Discontinued)

**Groundwater Level Monitoring Network:** Department of Water Resources – Northern District

**Groundwater Level Measurements By:** Department of Water Resources – Northern District

**Period of Record:** 1976 - 2009

**Groundwater Level Monitoring Frequency:**

Semiannual.

Spring (March-April)

Fall (October-November)

## Groundwater Well Numbering Systems: State

Well Number	Well ID	Method	Ground Surface Elev.	Avg. Water Surface Elev./Depth*	Std Dev / 2 Std Dev	Stage 1 & 2 Elev./Depth*	Stage 3 Elev./Depth*	
1	21N03W31H01M	2	187.0	141.3/45.7	17.5/35.0	123.8/63.2	106.3/80.7	
2	20N03W07K03M	2	166.0	137.1/28.9	18.6/37.2	118.5/47.5	99.9/66.1	
3	20N03W17P01M	2	153.0	139.8/13.2	14.8/29.6	125.0/28.0	110.2/42.8	
4	20N04W12F02M	2	187.0	157.5/29.5	21.1/42.3	136.3/50.7	115.2/71.8	
5	21N03W31R02M	2	Discontinued					
6	21N03W18B02M	2	221.6	152.2/69.4	19.5/39.0	132.7/88.9	113.2/108.4	
7	21N04W24A02M	2	230.0	142.9/87.1	17.8/35.5	125.1/104.9	107.4/122.6	
8	21N03W20D02M	2	Discontinued					
9	22N02W31C01M	2	203.0	188.5/14.5	8.4/16.8	180.1/22.9	171.7/31.3	
10	21N03W12C02M	2	202.0	179.1/22.9	8.1/16.2	171.0/31.0	163.0/39.0	
11	21N03W11G01M	2	200.0	178.8/21.2	8.6/17.2	170.1/29.9	161.5/38.5	
12	22N03W34A01M	2	233.0	222.1/10.9	4.3/8.6	217.8/15.2	213.5/19.5	
13	21N03W22H01M	2	202.0	160.8/41.2	10.8/21.7	149.9/52.1	139.1/62.9	
14	21N02W09M02M	2	179.0	151.3/27.7	9.2/18.5	142.0/37.0	132.8/46.2	
15	21N03W24P01M	2	178.0	147.8/30.2	12.0/24.1	135.8/42.2	123.7/54.3	
16	21N02W20B01M	2	Discontinued					

\*Elev. = feet above mean sea level, Depth = Ground surface to groundwater surface

### **BMO Alert Stage Method and Definitions:**

#### **Method 2 – Standard Deviation**

All existing groundwater level monitoring wells within the BMO area were identified. For all wells with a record dating back to at least 1976<sup>1</sup>, groundwater levels were obtained using the Department of Water Resources' Water Data Library (WDL). The Spring data for groundwater surface elevation (WSE) was further analyzed. The average and standard deviation were then calculated for these data. The Stage 1 & 2 alerts were determined to be the average of the Spring data minus one standard deviation. The State 3 alert was the average minus two standard deviations.

The Glenn County Water Advisory Committee (WAC) upon a recommendation of its Technical Advisory Committee (TAC) shall declare a Stage 1, Stage 2, or Stage 3 Alert based on the technical criteria presented below. The technical criteria for the WAC to rescind the Stage 1, Stage 2, or Stage 3 Alert is also presented.

<sup>1</sup> In 1976 the Tehama-Colusa Canal became operational, changing the relative surface water supply and groundwater supply mix in sub-areas served by the canal. The Glenn County Technical Advisory Committee concluded that groundwater levels from this date forward are representative of recent historical conditions and when possible this historical period of record should be used for developing groundwater level BMOs in these sub-areas.

A Stage 1 Alert will be declared when any measured Spring groundwater surface elevation is below 1 Standard Deviation from the Average of the time of record utilized for the corresponding BMO Key Well.

A Stage 2 Alert will be declared on the second and subsequent sequential years, when any measured Spring groundwater surface elevation is below 1 Standard Deviation from the Average of the time of record utilized for the corresponding BMO Key Well.

A Stage 3 Alert will be declared when any measured Spring groundwater surface elevation is below 2 Standard Deviations from the Average of the time of record utilized for the corresponding BMO Key Well.

Stage 1, 2, and 3 Alerts shall be rescinded by the WAC when the measured groundwater surface elevations returns to an elevation above 1 Standard Deviation for the corresponding BMO Key Wells.

### **BMO Compliance Evaluation and Action Procedures:**

Compliance<sup>2</sup> with the BMO will be determined following the Spring groundwater level measurement periods. The groundwater surface elevations at each monitoring well will be compared against the corresponding compliance (condition) graph and stage definition criteria to determine if the groundwater surface elevations are above or below specific alert trigger levels. The TAC will perform this evaluation and report the results of the evaluation to the WAC.

### **Groundwater Management Actions**

**Stage 1.** Groundwater management actions to be undertaken following a Stage 1 condition shall be informational to the WAC and by notification to the public.

**Stage 2.** Groundwater management actions to be undertaken following a Stage 2 condition shall be informational and investigational. Upon identification of the Stage 2 condition, the noncompliance will be reported to the WAC and the public. Following review and concurrence, the WAC shall direct the TAC to initiate an investigation to determine the cause(s) of the noncompliance and make recommendations as to the nature of the noncompliance as well as how to address and possibly avoid similar conditions in the future. The TAC shall report their findings and recommendations back to the WAC in a timely manner to adequately reflect on the issue.

**Stage 3.** Groundwater management actions to be undertaken following a Stage 3 condition shall be informational, investigational, and actionable. Upon identification of the Stage 3 condition, the noncompliance will be reported to the WAC and the public. Following review and concurrence, the WAC shall direct the TAC to initiate an investigation to determine the cause(s) of the noncompliance and make recommendations as to the nature of the noncompliance as well as how to address and correct the noncompliance. The TAC shall report their findings and recommendations back to the WAC in a timely manner to adequately take action. The WAC will then work with the local and adjoining sub-areas to implement needed adaptive management

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<sup>2</sup> The use of the word "compliance" in County Code 20.03 should be regarded as "in agreement or conforms" with the "condition" that existed on the day groundwater levels were taken and not an exceedance of a regulatory objective.

activities necessary to correct the problem. Such adaptive management activities shall include, but not limited to, voluntary water conservation measures, redistribution or reduction of groundwater extraction, and/or other measure(s) referred to or identified in Ordinance 1115 as recommended by the WAC and approved by the Board of Supervisors.

**Monitoring Recommendations:**

Efforts should be made to identify possible additional wells that could be added to the existing monitoring well network in the northern and southern portions of the sub-area to improve the overall coverage within the region.

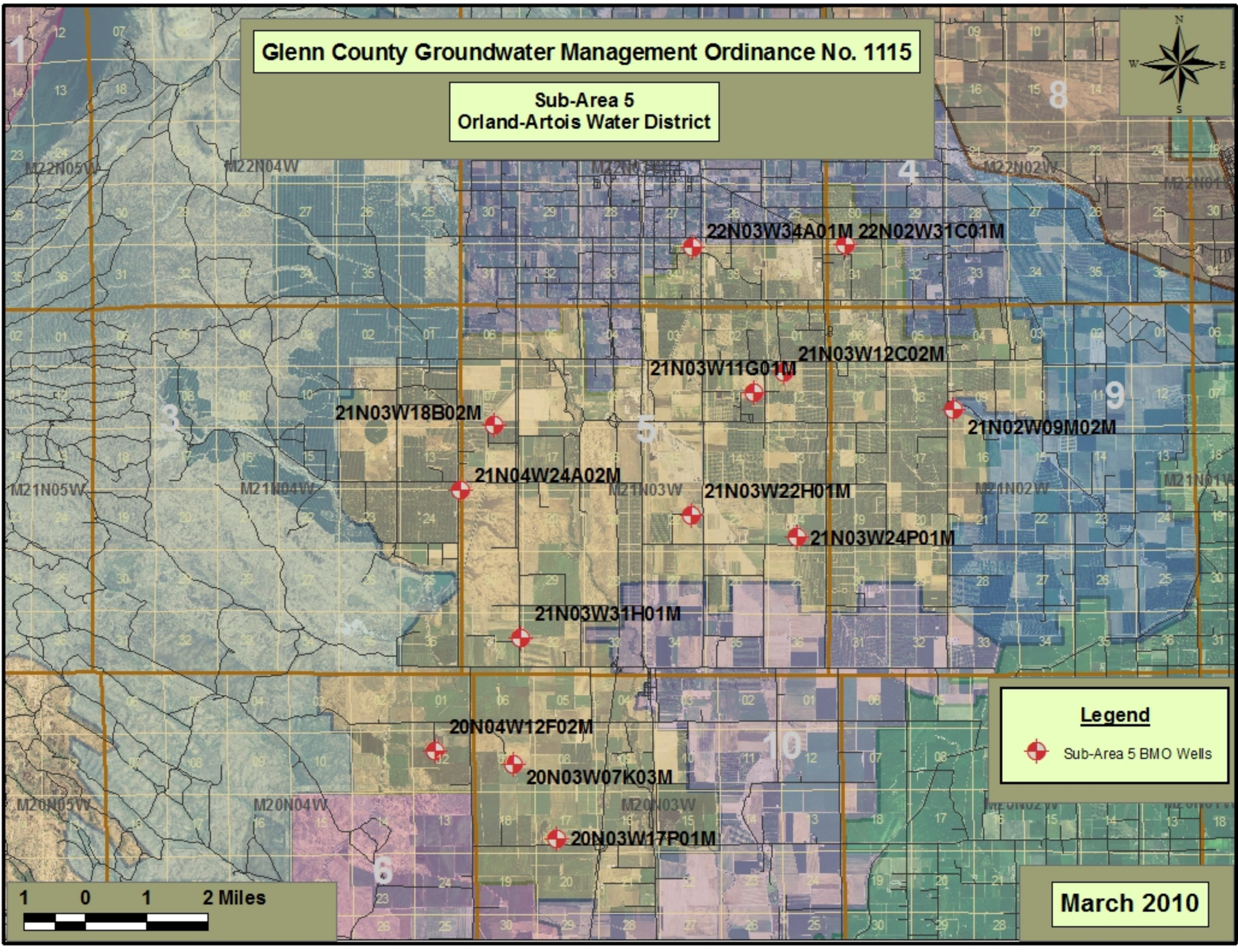
In the summer of 2007 interim summer BMOs for groundwater level were adopted by the Board of Supervisors. These BMOs utilize the existing dedicated monitoring network. In Sub-area 5 there have been three dedicated wells that have been selected to this effort. At a time in the future, more zones of more wells will be added to the network for summer measurements and ultimately will replace the wells originally designated as BMO wells in 2001.

**Attached Supporting Data:** \* - Hydrographs




# Glenn County Groundwater Management Ordinance No. 1115

## Sub-Area 5 Orland-Artois Water District



### Legend

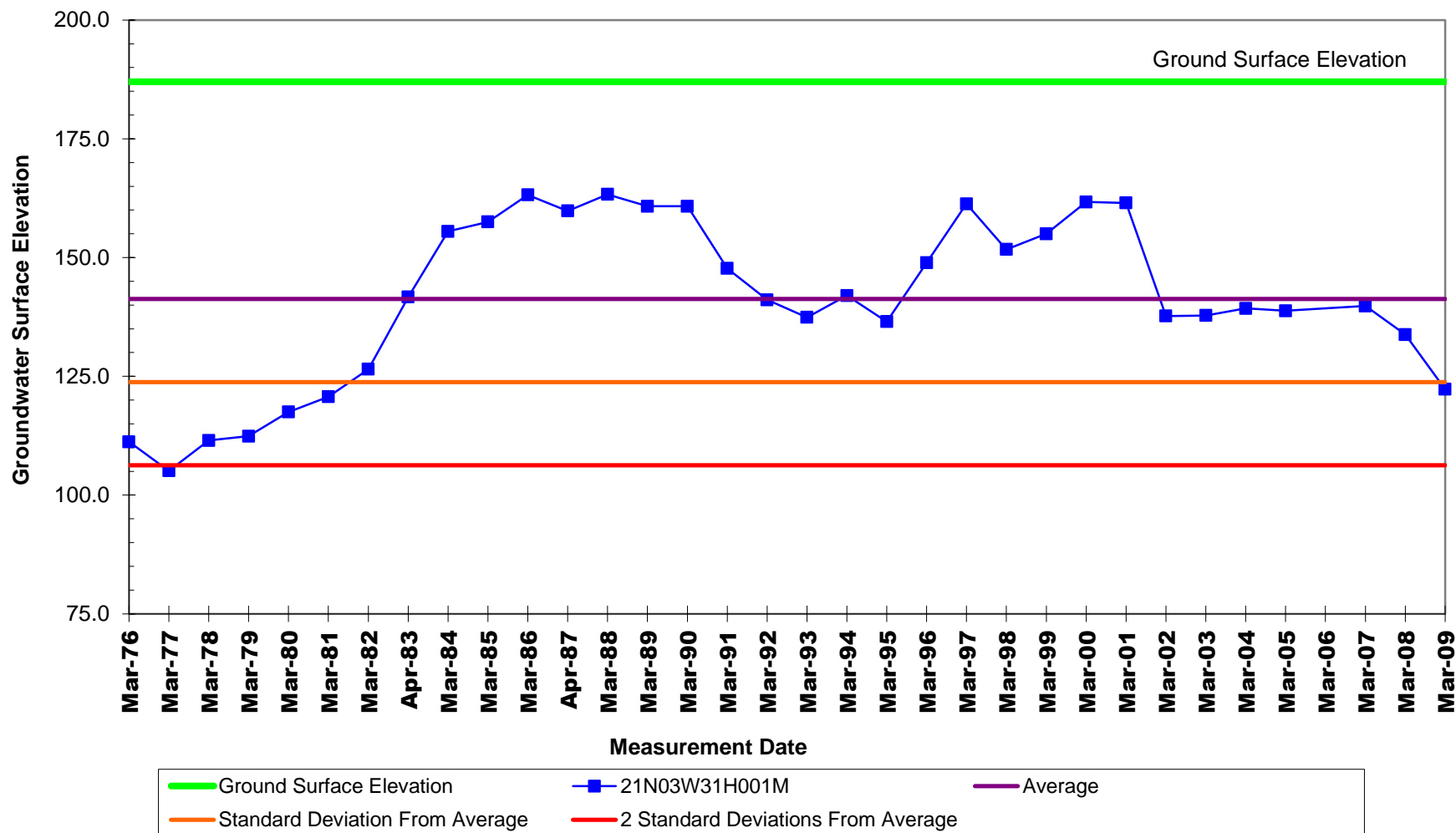
 Sub-Area 5 BMO Wells

1 0 1 2 Miles

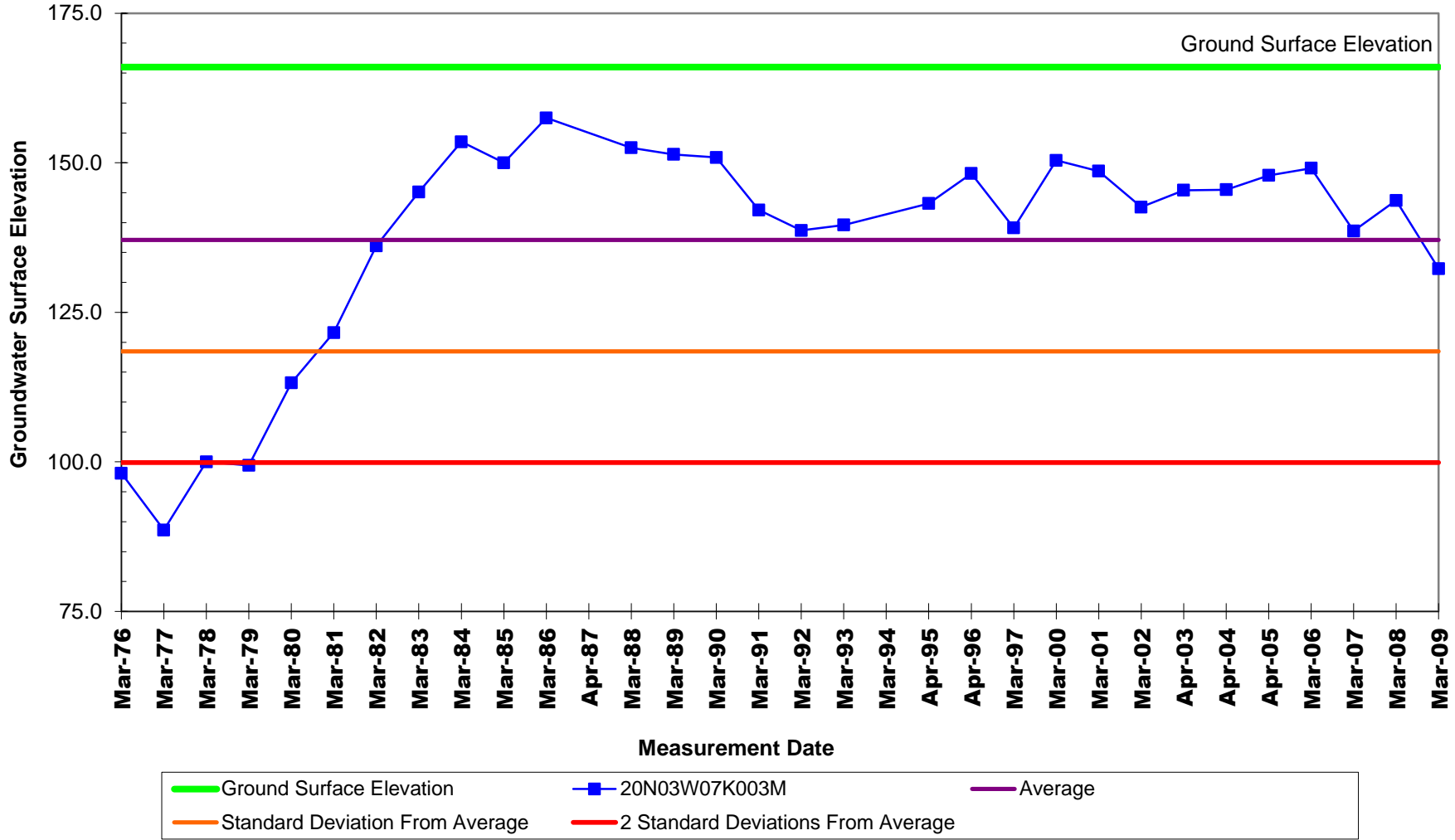
March 2010



**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 1**  
**21N03W31H01M**  
**South of Road 31 and East of Road F**

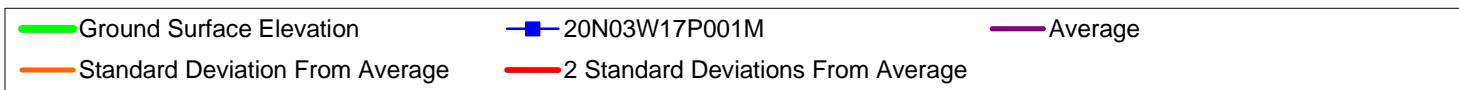
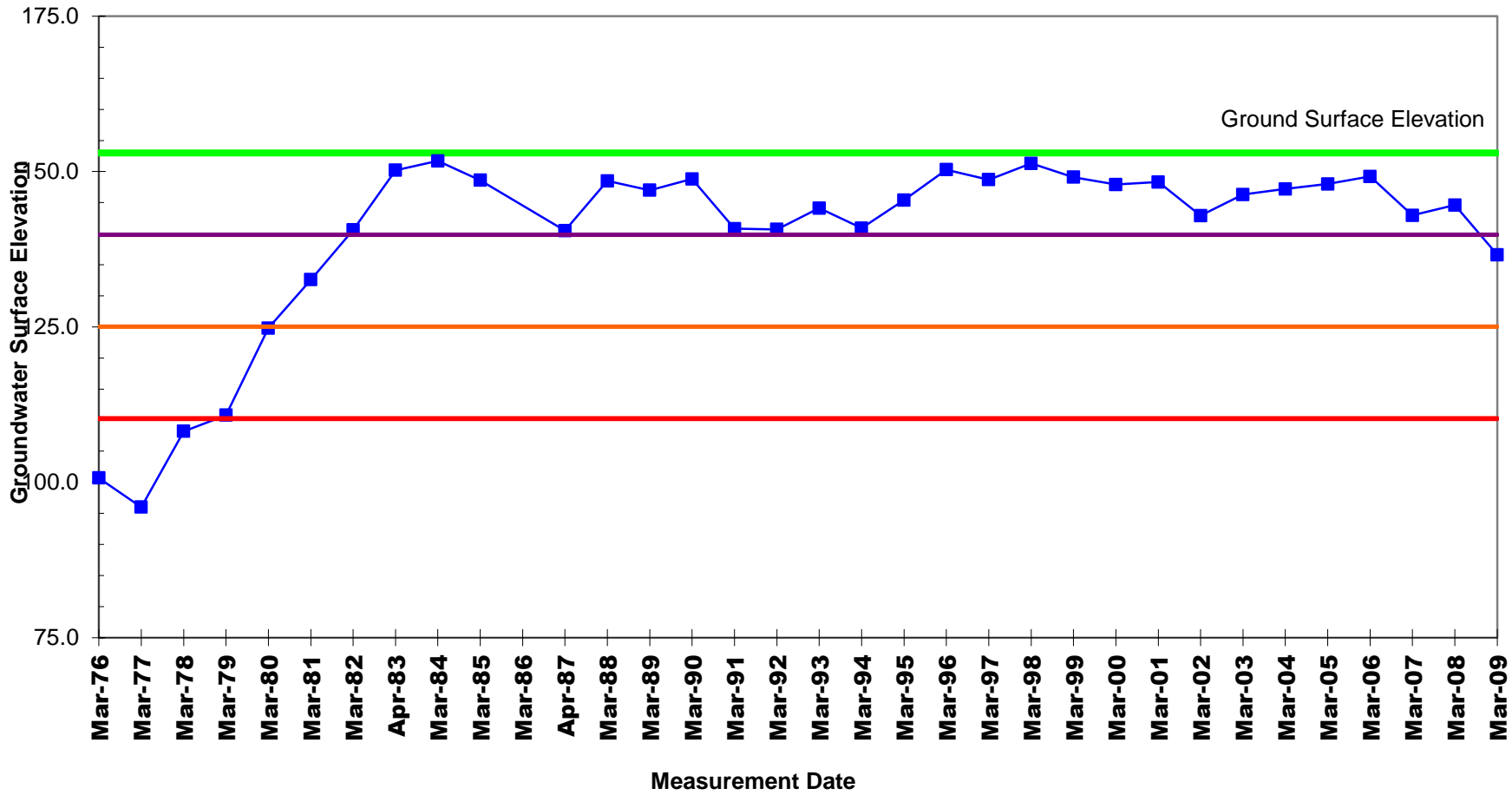


**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 2**  
**20N03W07K003M**  
**South of Road 35 and East of Road D**

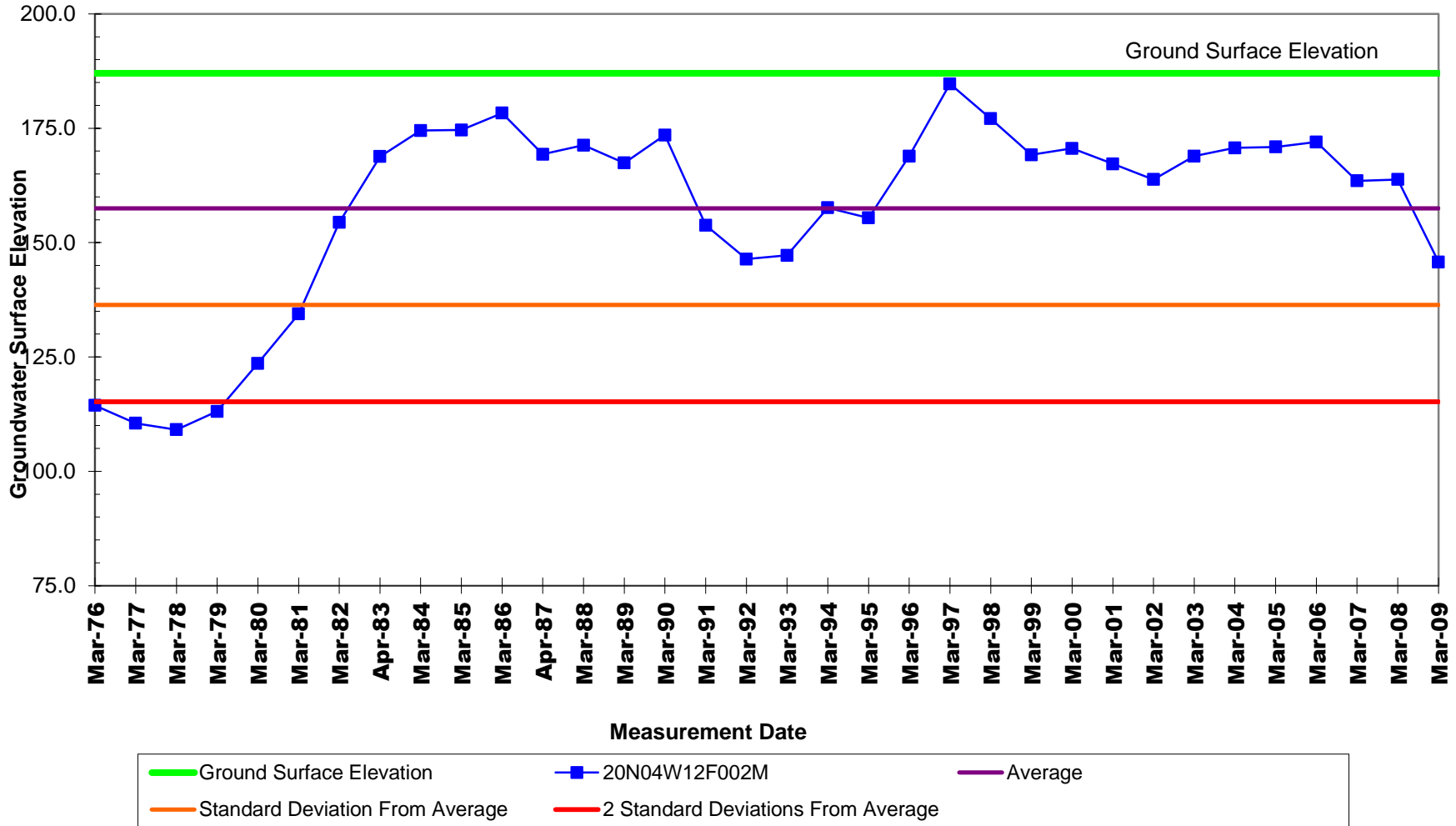




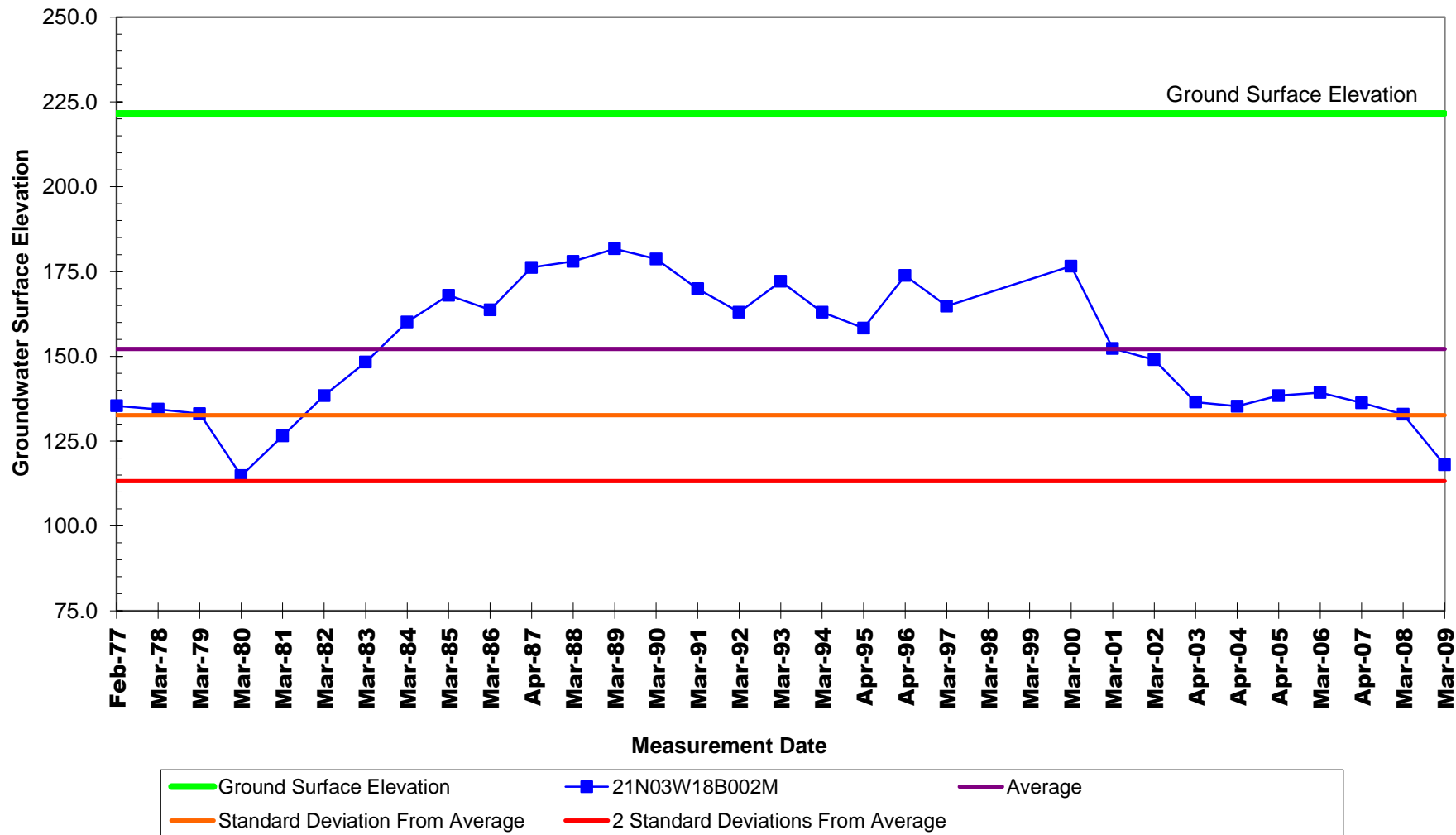
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**Orland-Artois Water District**  
**Well # 3**  
**20N03W17P001M**  
**North of Road 39 and West of I-5**



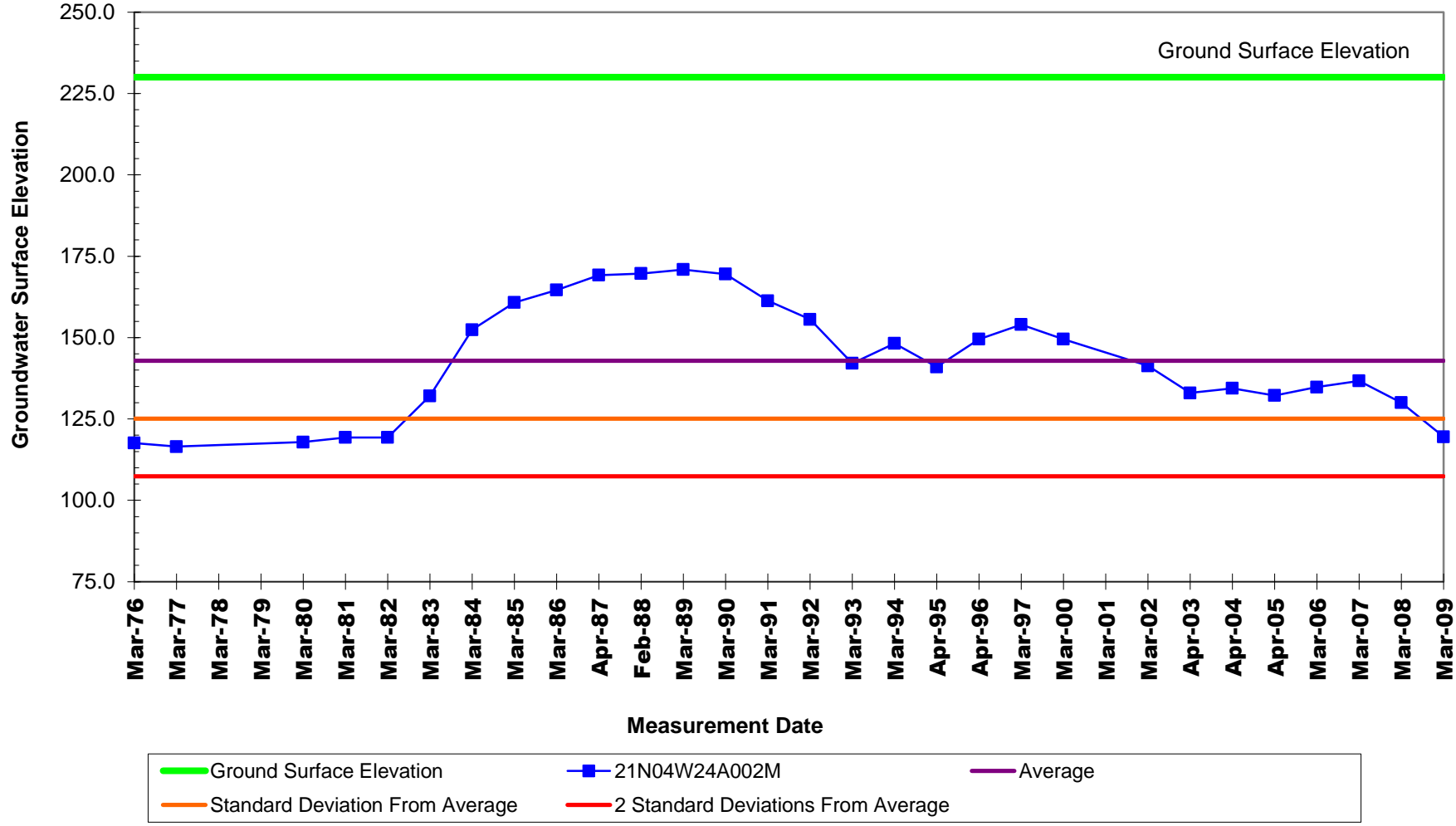
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**Orland-Artois Water District**  
**Well # 4**  
**20N04W12F002M**  
**South of Road 35 and West of Road D**



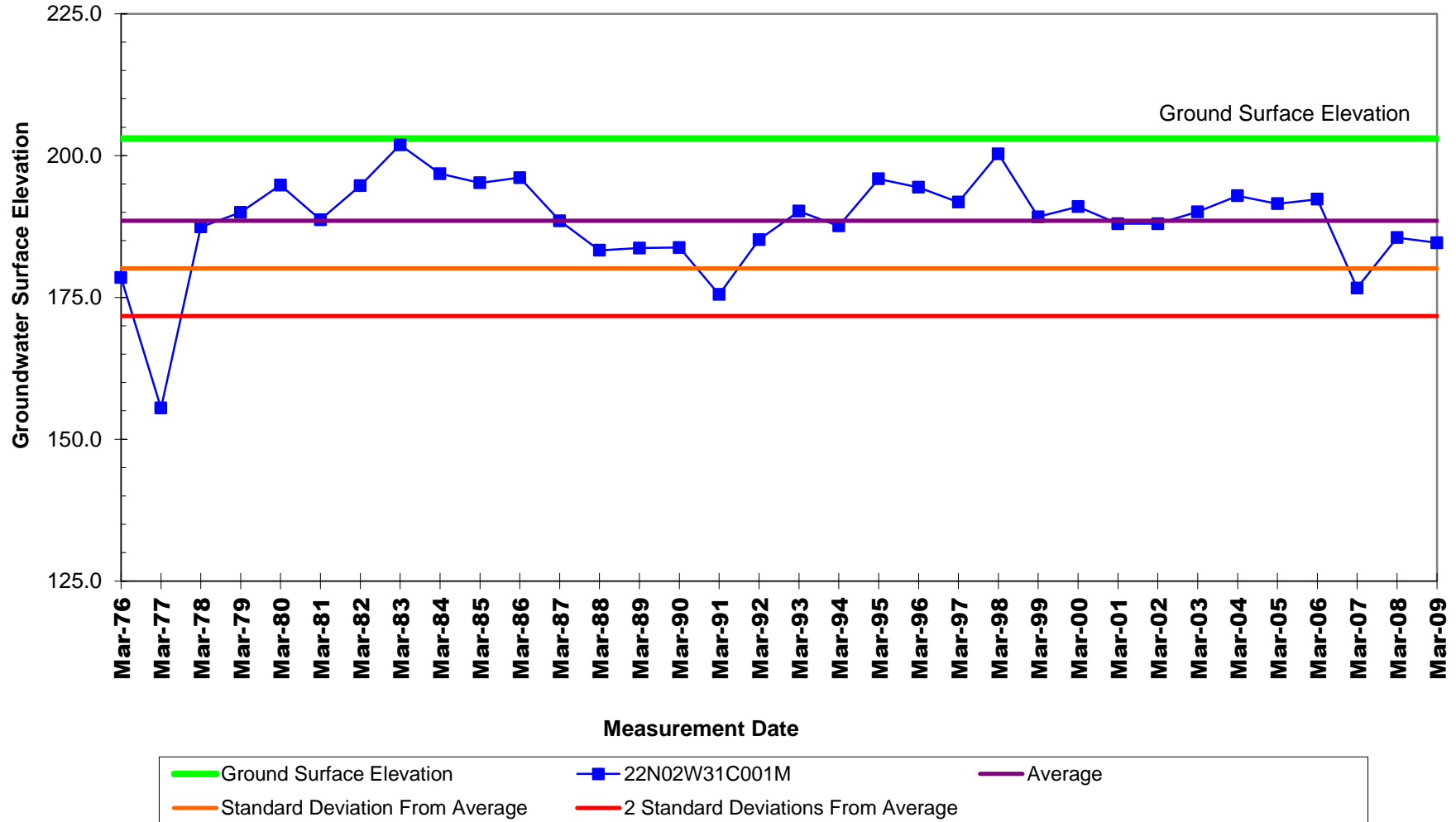
**Sub-Area 5  
Orland-Artois Water District  
Well # 6  
21N03W18B002M  
North of Road 28 and West of Road F**



**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 7**  
**21N04W24A002M**  
**South of Road 28 and East of Road D**

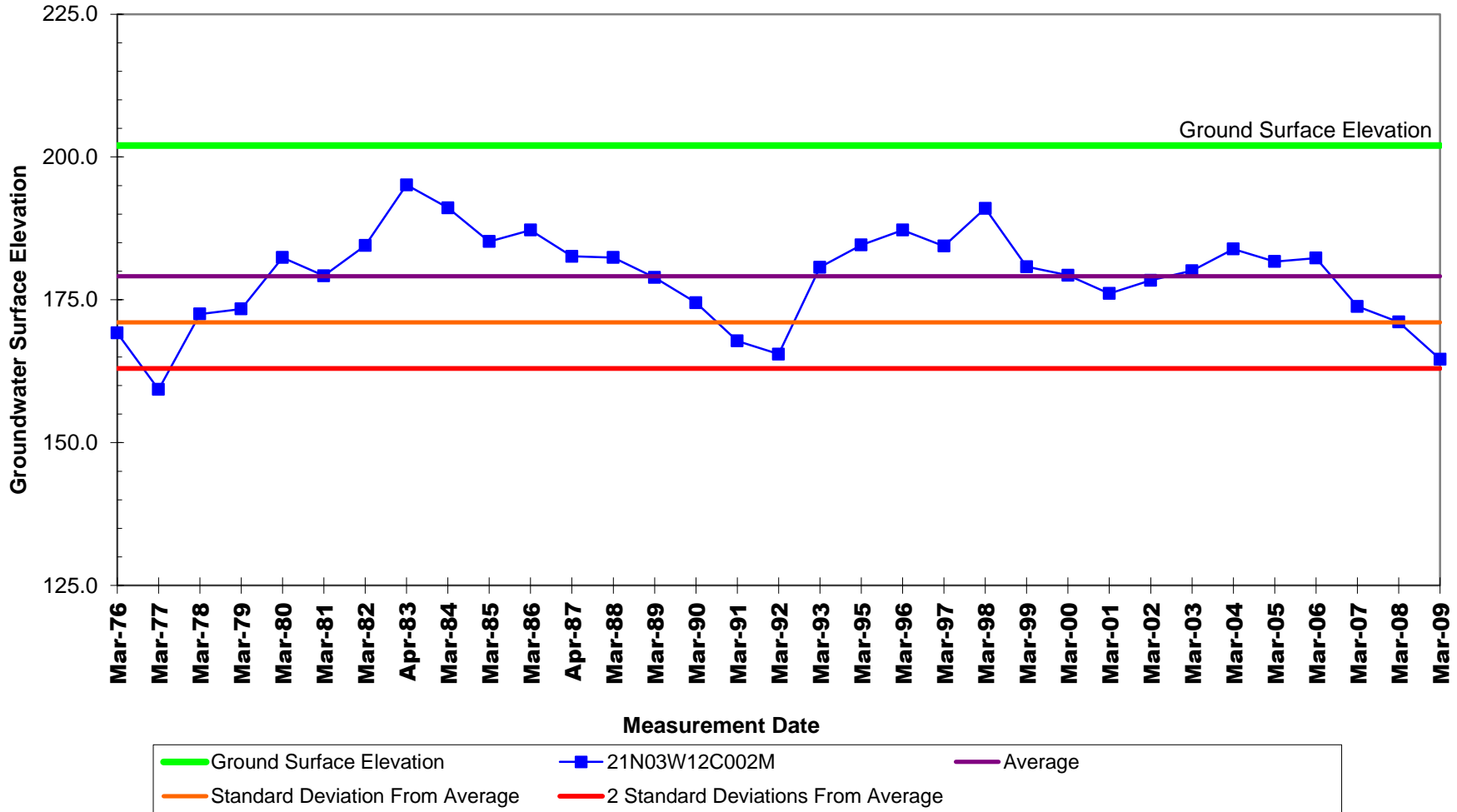


**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 9**  
**22N02W31C001M**  
**South of Road 20 and East of Road P**

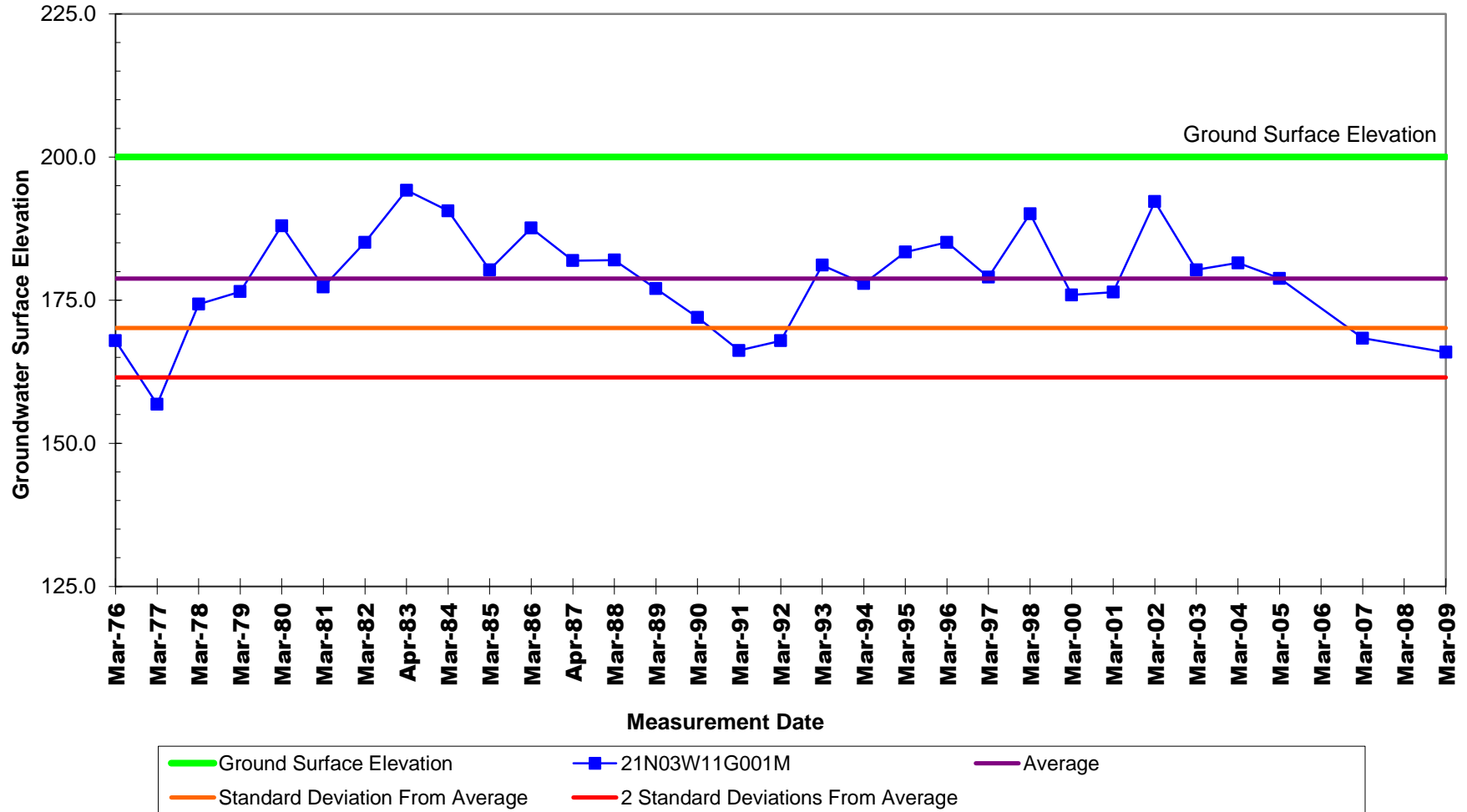




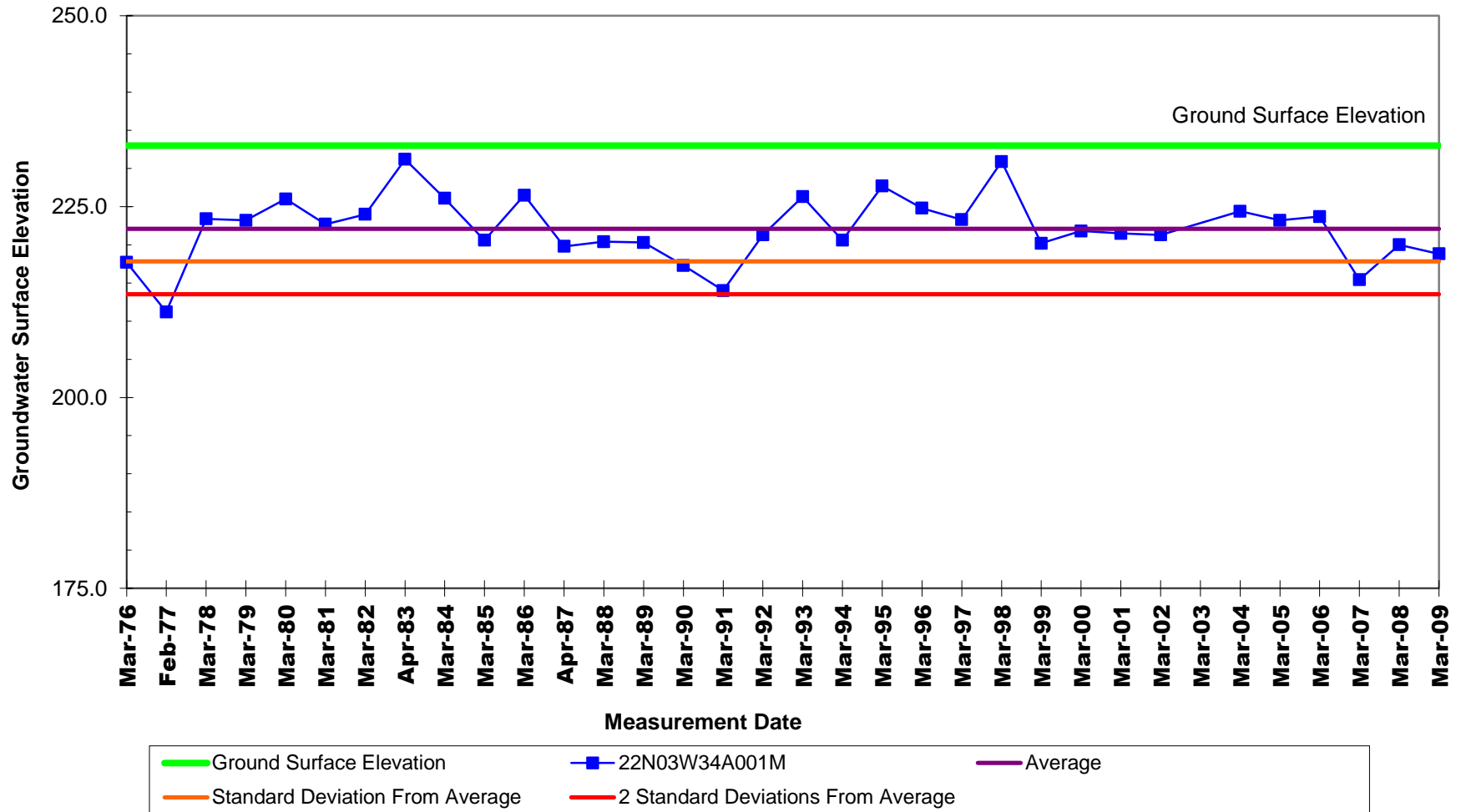
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**Orland-Artois Water District**  
**Well # 10**  
**21N03W12C002M**  
**South of Road 25 and East of Road N**



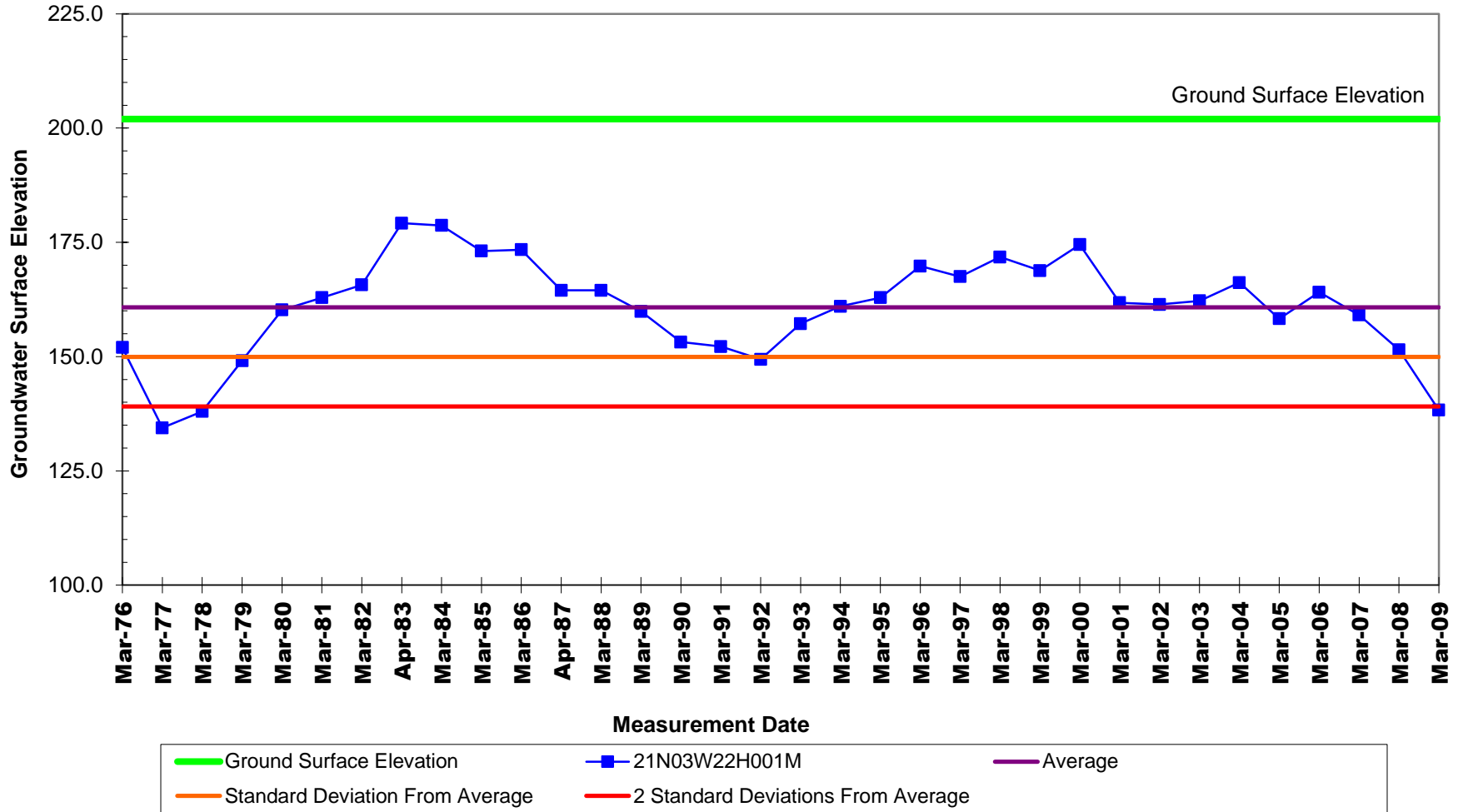
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**Orland-Artois Water District**  
**Well # 11**  
**21N03W11G001M**  
**South of Road 25 and West of Road N**



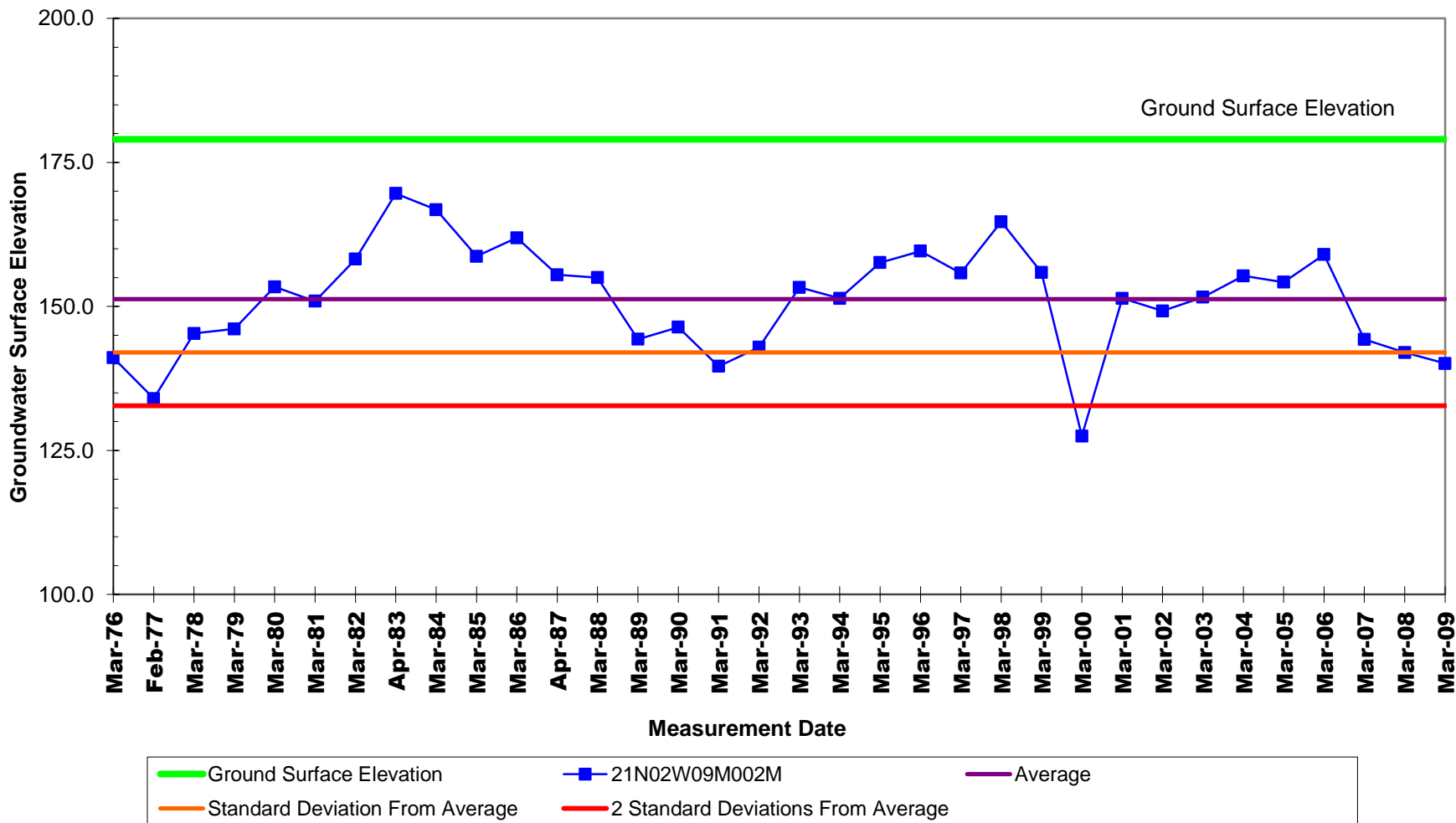
**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 12**  
**22N03W34A001M**  
**North of Road 21 and West of Road M**



**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 13**  
**21N03W22H001M**  
**North of Road 30 and West of Road M**



**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 14**  
**21N02W09M002M**  
**South of Road 27 and East of Road S (5th Ave.)**





**Sub-Area 5**  
**Orland-Artois Water District**  
**Well # 15**  
**21N03W24P001M**  
**North of Road 30 and West of Road P**

