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Water Supply Monitoring – Monthly Report

REPORTING PERIOD: October 2016

REPORT DATE: November 4, 2016

PA-DEP DROUGHT STATUS: Drought Warning (declared 11/3/2016)

This report has been prepared by Lehigh County Authority (LCA) to provide the public with important data related to water supplies that are utilized to serve customers with safe drinking water in the following primary service areas:

Allentown Division:

Approximately 33,000 customers located within the City of Allentown, with additional “bulk water” provided to neighboring townships and LCA’s Central Lehigh Division through water system interconnections.

Primary Water Sources:

Little Lehigh Creek
Schantz Spring
Crystal Spring
Lehigh River (emergency supply)

Central Lehigh Division:

Approximately 20,000 customers located in suburban areas of central and western Lehigh County, primarily in Upper and Lower Macungie townships, with additional customers located in surrounding townships.

Primary Water Sources:

Allentown Division interconnection (see above)
14 Wells located throughout the service area

Monthly Report Contents:

The information contained in this report is derived from data sources that LCA monitors as an overall indication of water supply adequacy and trends in supply status, along with customer usage. The information is displayed in graphical or tabular format for informational purposes only. By issuing this data publicly, LCA hopes to communicate its commitment to sharing vital environmental and public health information. While this report does not seek to share specific conclusions or recommendations, making data available in this manner is necessary to foster additional community dialog regarding appropriate and sustainable use of our precious natural resources.

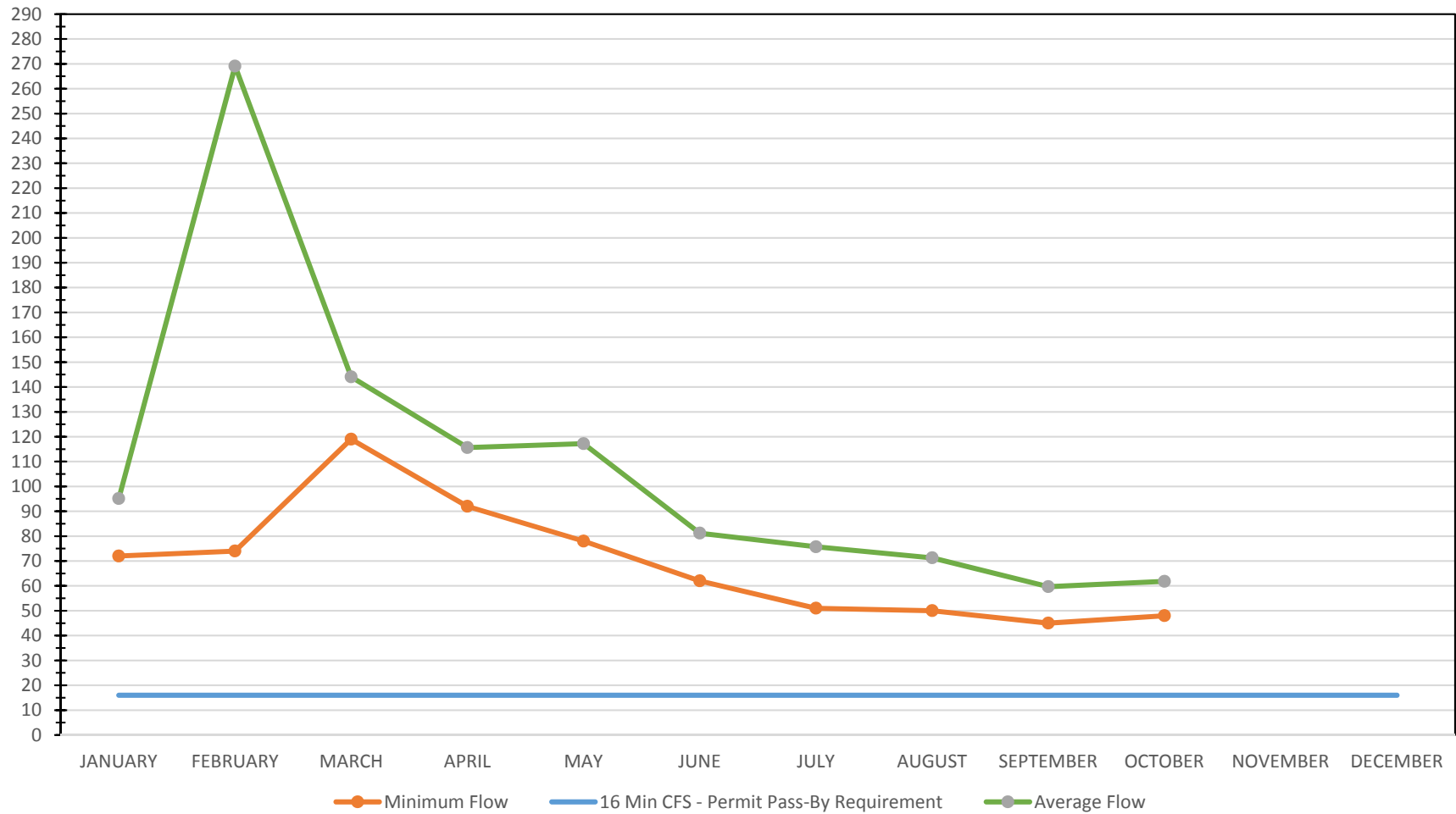
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Additional Water Supply Information:

As drought conditions may at times require that water supplies be monitored on a more frequent basis, or at a finer level of detail, additional reporting may be provided on a weekly basis to supplement this monthly report.

Every drop matters. Every customer counts.

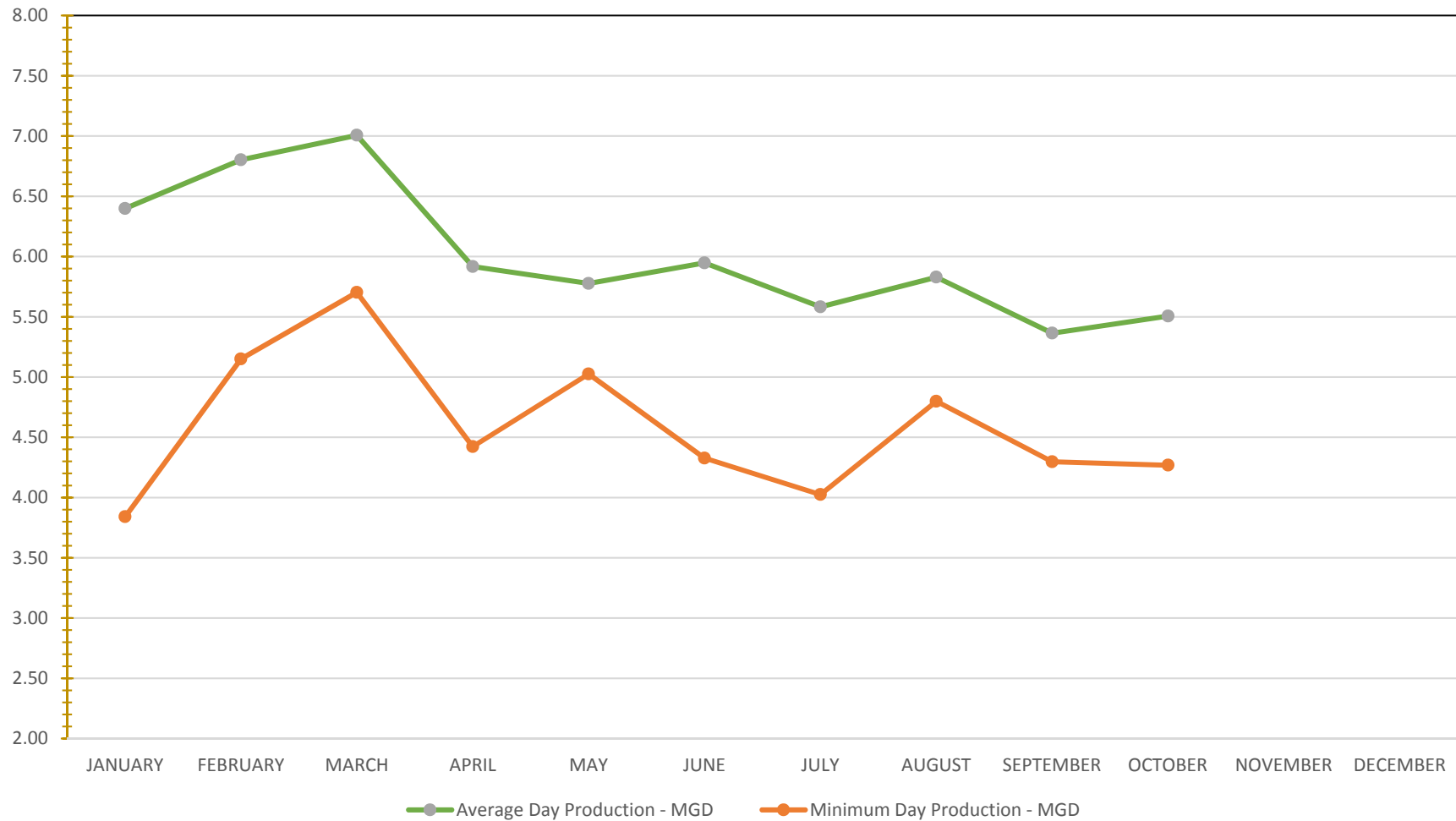
2016 Little Lehigh Creek Flows - Cubic Feet per Second (cfs)



Little Lehigh Creek flows are measured at a US Geological Service gage located immediately downstream of LCA's raw water intake located in Allentown. The water supply permit for this water source includes a requirement that a minimum flow of 16 cubic feet per second must pass by LCA's intake, or water withdrawals must be restricted.

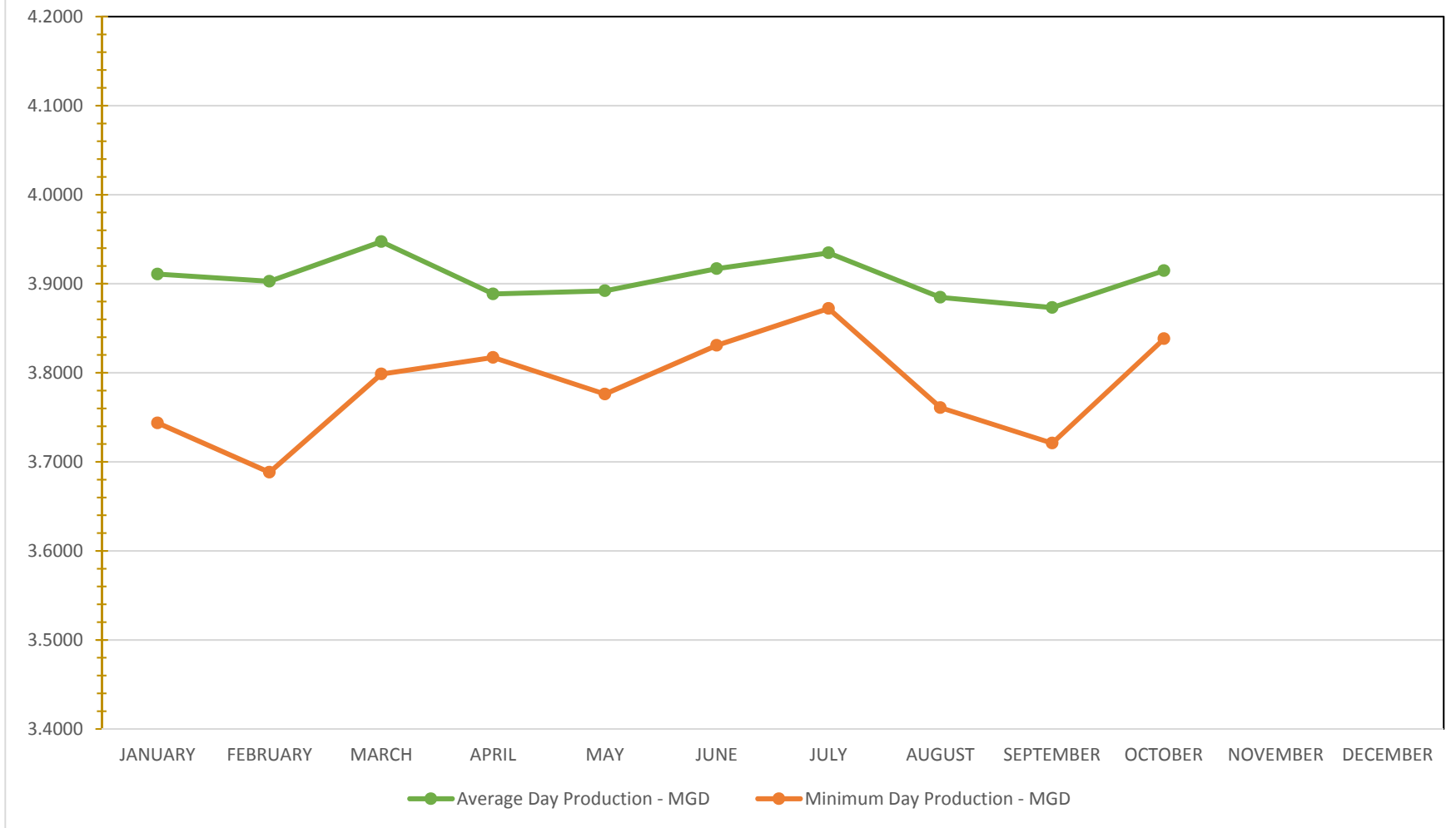
LCA records indicate the lowest recorded level occurred during the Drought Emergency of 1999, when the gaging station recorded flows as low as 33 cubic feet per second.

2016 Schantz Spring Flows - Average Production - Million Gallons per Day (MGD)



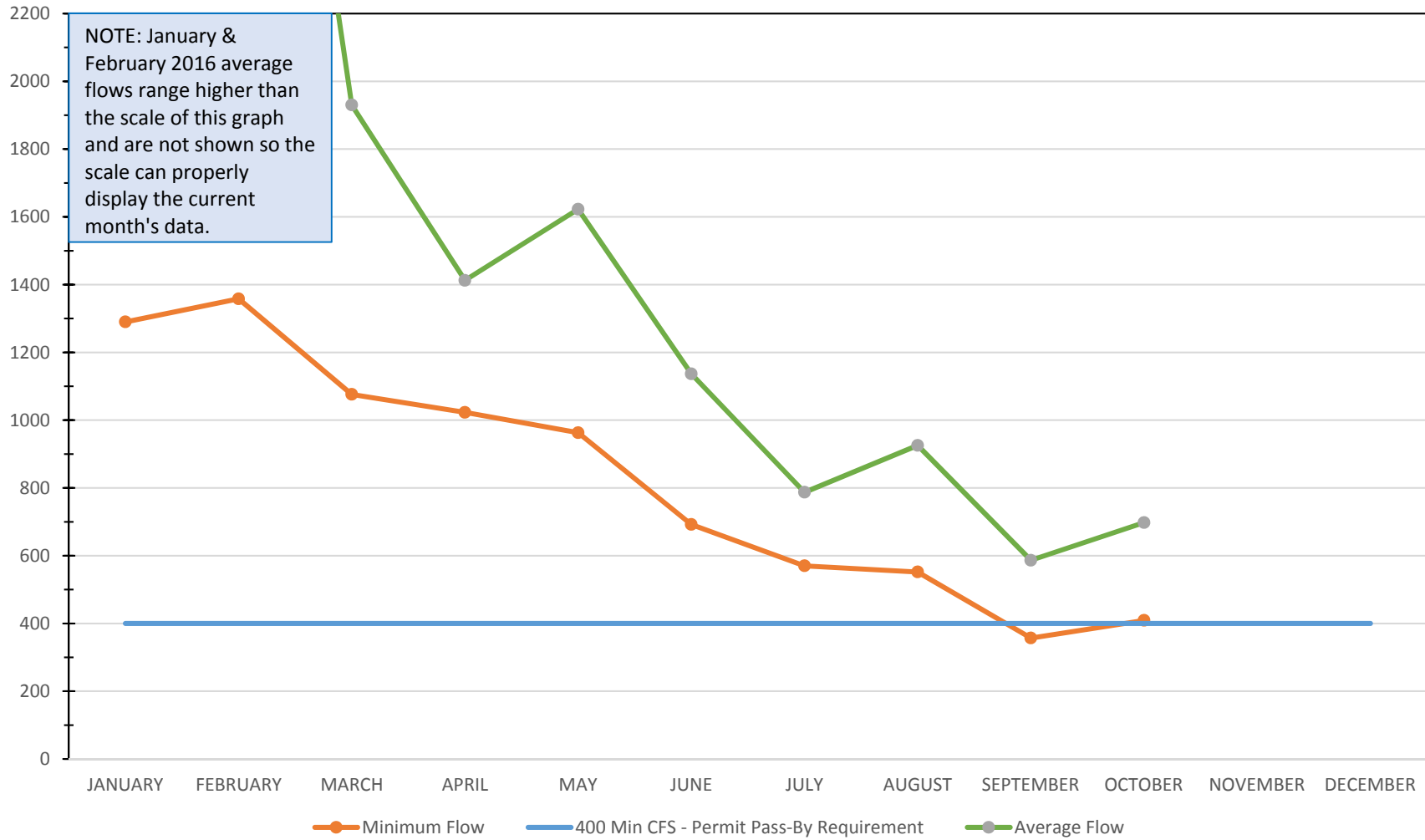
Schantz Spring produces water at a relatively steady rate, and the water flows into LCA's collection system for transportation to the water treatment plant in Allentown. Flows shown on this graph represent the flow of water from the spring as it enters LCA's system. As the spring produces more or less water, LCA's system captures a corresponding increasing or decreasing amount of that water for distribution to customers in Allentown.

2016 Crystal Spring Flows - Average Production - Million Gallons per Day (MGD)

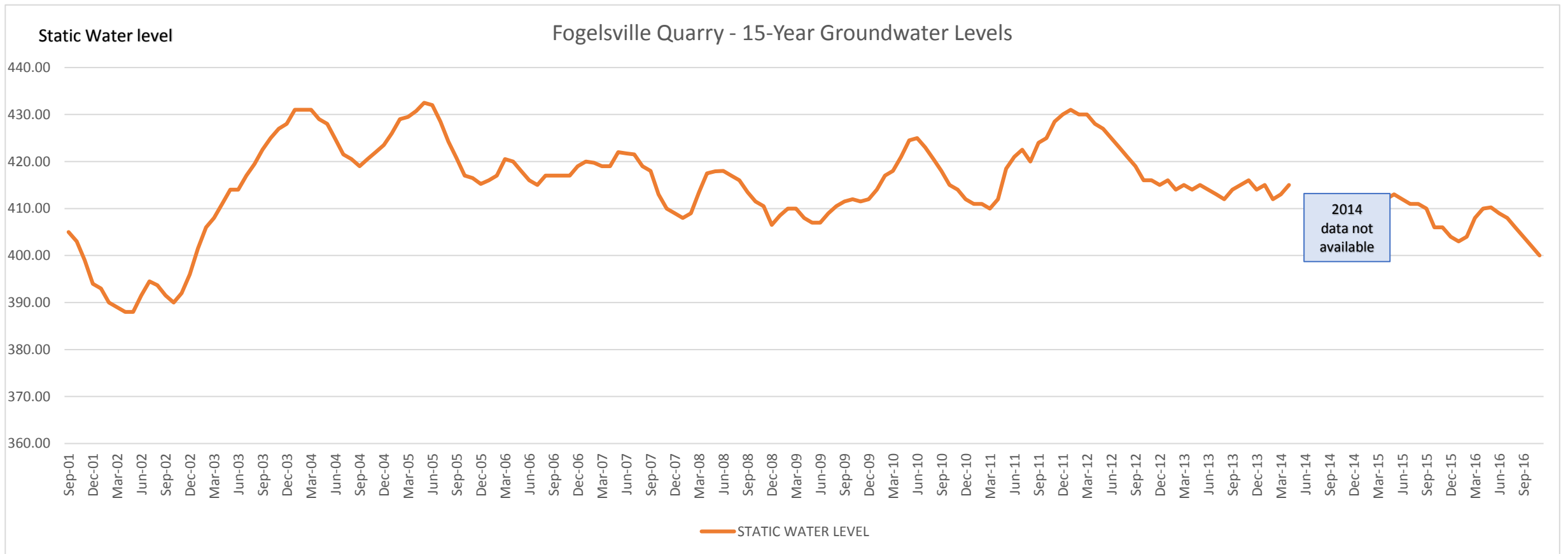


Crystal Spring produces water at a relatively steady rate, and the water flows into LCA's collection system located directly adjacent to the water treatment plant in Allentown. Flows shown on this graph represent the flow of water from the spring as it enters LCA's system. As the spring produces more or less water, LCA's system captures a corresponding increasing or decreasing amount of that water for distribution to customers in Allentown.

2016 Lehigh River Flows - Cubic Feet per Second (cfs)



Lehigh River flows are measured as a combination of several US Geological Service gages located upstream and downstream of LCA's raw water intake located in Allentown. The water supply permit for this water source includes a requirement that a minimum flow of 400 cubic feet per second must pass by LCA's intake, or water withdrawals must be restricted.



The quarry in Fogelsville is an abandoned mining operation that has exposed the local aquifer / water table for easy monitoring and viewing. Water in the quarry is derived from groundwater that is also interconnected underground with all other LCA water supply wells located throughout Lehigh County. Because this quarry is no longer being used and groundwater withdrawals are somewhat limited in the general vicinity of this location, water levels here are generally indicative of overall groundwater levels throughout the Little Lehigh Creek drainage basin. Measurements shown on this graph are shown in feet / depth in comparison to sea level to illustrate static groundwater levels.

Lehigh County Authority - Total Water System Usage - Monthly Report

2016	LCA - Central Lehigh Division: <u>Average Day Demand</u>	LCA - Allentown Division: <u>Average Day Demand</u>	<u>Total System Demand *</u>
January	8,123,681	19,861,558	21,936,408
February	8,287,696	20,723,621	23,237,634
March	8,658,323	20,027,410	22,375,680
April	9,154,195	19,997,130	23,122,283
May	9,753,913	20,158,368	23,869,627
June	10,517,385	21,408,993	25,549,515
July	11,153,157	21,643,955	26,519,116
August	10,310,811	20,619,010	24,876,768
September	10,006,371	20,617,000	24,566,700
October	8,845,507	20,170,600	23,002,882

* **Total System Demand** includes a subtraction for water produced by the Allentown Division and sold to the Central Lehigh Division. This is approximately 6,000,000 gallons per day that is accounted for in both systems and therefore must be subtracted from the total to calculate Total System Demand.

NOTE: All figures are shown in average gallons per day.

Lehigh County Authority - Central Lehigh Division - Primary Water Sources / Uses - Monthly Report

LCA Water Sources	January Daily	%	February Daily	%	March Daily	%	April Daily	%
Well # WL8R	130,415	2%	129,818	2%	162,257	2%	290,726	3%
Well # WL12R	225,808	3%	300,228	4%	-	0%	63,048	1%
Allentown Interconnection	6,048,832	74%	5,773,682	70%	6,310,053	73%	6,029,042	66%
Other Groundwater Sources	1,718,627	21%	2,083,968	25%	2,186,013	25%	2,771,379	30%
TOTAL CENTRAL LEHIGH SYSTEM DEMAND	8,123,681	100%	8,287,696	100%	8,658,323	100%	9,154,195	100%

NOTE: All figures are shown in average gallons per day.

LCA utilization of wells WL8R and WL12R are shown here due to public concerns about over-utilization of groundwater supplies in locations near the Little Lehigh Creek, and potential impact of such withdrawals on stream flows in our area. Monitoring data has shown that these wells do not have a significant impact on overall groundwater levels in this region, but LCA continues to monitor closely.

Wells WL8R and WL12R are permitted for pump rates of up to about 2.8 million gallons per day. LCA keeps pump rates at a very small fraction of this amount in an effort to utilize the most efficient, cost-effective and environmentally friendly water sources possible.

Lehigh County Authority - Central Lehigh Division - Primary Water Sources / Uses - Monthly Report

LCA Water Sources	May Daily	%	June Daily	%	July Daily	%	August Daily	%
Well # WL8R	402,337	4%	450,751	4%	618,583	6%	307,732	3%
Well # WL12R	40,703	0%	423,040	4%	324,008	3%	605,922	6%
Allentown Interconnection	6,042,654	62%	6,376,863	61%	6,277,997	56%	6,053,053	59%
Other Groundwater Sources	3,268,219	34%	3,266,731	31%	3,932,570	35%	3,344,104	32%
TOTAL CENTRAL LEHIGH SYSTEM DEMAND	9,753,913	100%	10,517,385	100%	11,153,157	100%	10,310,811	100%

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Lehigh County Authority - Central Lehigh Division - Primary Water Sources / Uses - Monthly Report

LCA Water Sources	September Daily	%	October Daily	%	2016 Year-to-Date Daily	% of Total
Well # WL8R	369,113	4%	510,745	6%	338,284	4%
Well # WL12R	637,436	6%	1,365	0%	260,801	3%
Allentown Interconnection	6,056,671	61%	6,013,225	68%	6,099,784.42	64%
Other Groundwater Sources	2,943,151	29%	2,320,173	26%	2,786,012	29%
TOTAL CENTRAL LEHIGH SYSTEM DEMAND	10,006,371	100%	8,845,507	100%	9,484,882	100%

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