Managing Water Supply – Changing our View Point

April 6, 2018

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Stewards of the Environment ™

What can a Summer Drought Do?

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Creating Resiliency in Water Supply

- Review of Water Demands by System and User Class
  - Water Conservation Study by Amy Vickers

- Implementation of Conservation (Irrigation – 2 days a week)
  - Darien, Greenwich, New Canaan, Newtown, Stamford, and Westport for 2018. Additional communities will be added in the future.

- Tracking Short-term and Long-term Rainfall Patterns, Stream Flows, Groundwater Levels, and Drought Levels

- Development of Predictive Models for Reservoirs in South West Fairfield County (SWFC)

- Development of New Drought Triggers

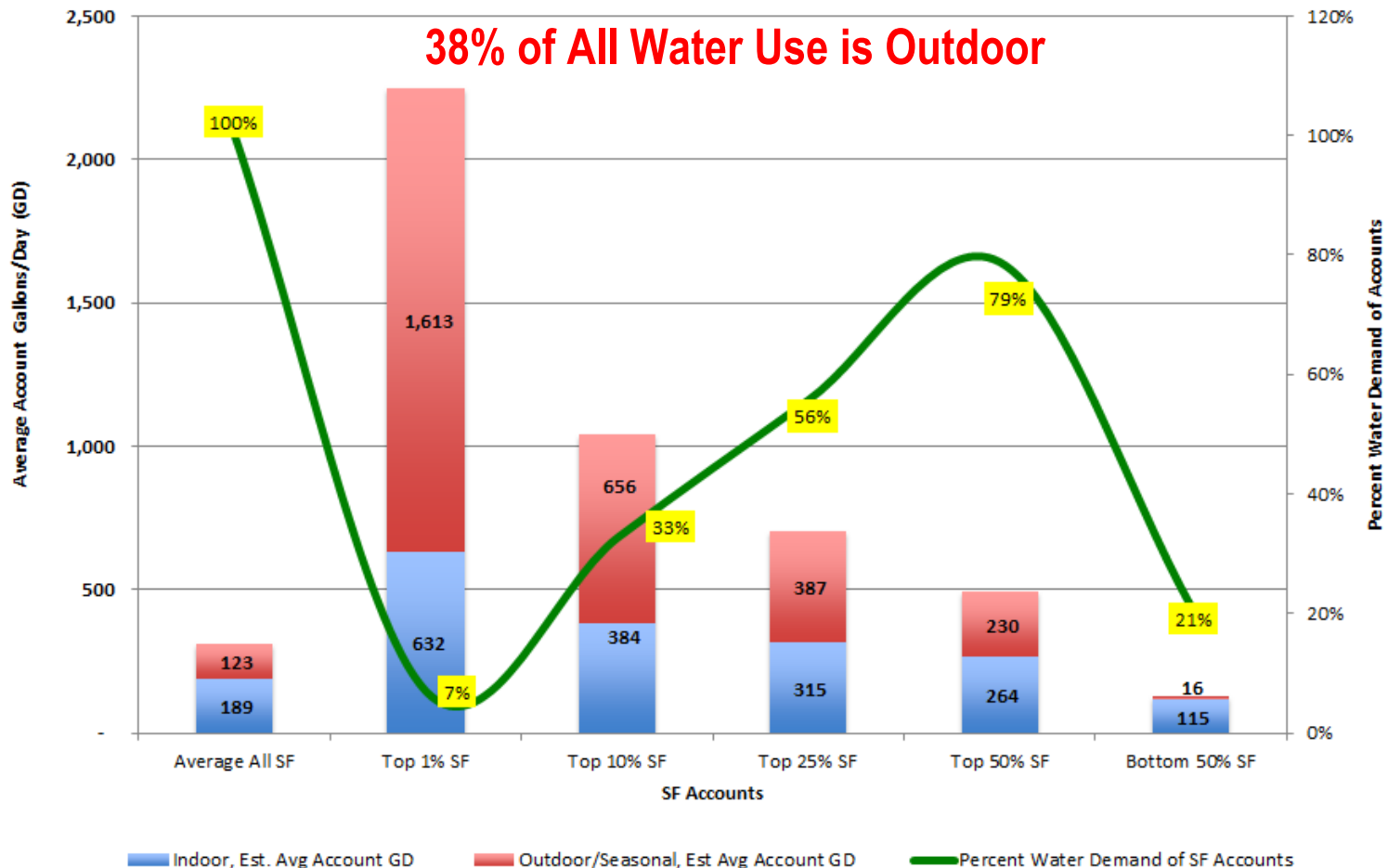- Diversification in Water Supply and Interconnection of Water Systems

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CT Single-Family Customer Water Use Analysis

City / Town	Avg # Accounts	% Water demand of all accounts	Avg winter/ indoor use gpd	Avg Seasonal/ outdoor use gpd	Avg GPDC
Weston	95	0%	232	274	194
Greenwich	14,101	15%	205	177	146
Darien	5,770	6%	184	156	130
Westport	8,868	8%	178	146	124
New Canaan	3,123	3%	176	107	108
Stamford	16,914	12%	194	50	93
Easton	1,081	1%	168	63	88
Fairfield	18,335	11%	163	55	84
West Suffield	214	0%	-	-	81
Simsbury	5,014	3%	145	51	75
Ridgefield	2,693	1%	159	29	72
Bridgeport	20,129	11%	178	6	70
Trumbull	12,087	6%	150	31	70
Wilton	899	0%	141	40	69
Monroe	3,853	2%	145	26	66
Shelton	10,576	5%	148	22	65
Stratford	16,133	8%	153	10	62
Beacon Falls	1,127	1%	144	16	61
Seymour	3,327	1%	141	13	59
Bethel	542	0%	146	7	59
Salisbury	818	0%	113	22	52
Newtown	1,734	1%	109	26	52
Litchfield	944	0%	120	12	50
Mystic	3,704	1%	107	20	49

Above

National Average

Below

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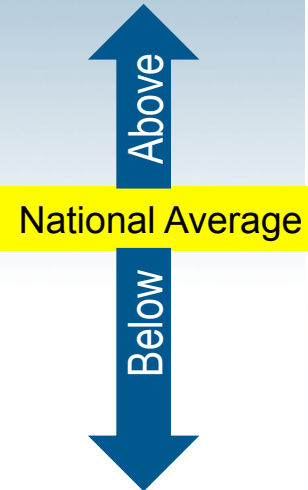
Single Family Use

Combined Greenwich, Stamford, Darien and New Canaan
Single-Family (SF) Customer Accounts: Average and Percentile Indoor and Outdoor/Seasonal Gallons Per Account Per Day, 2012-2014
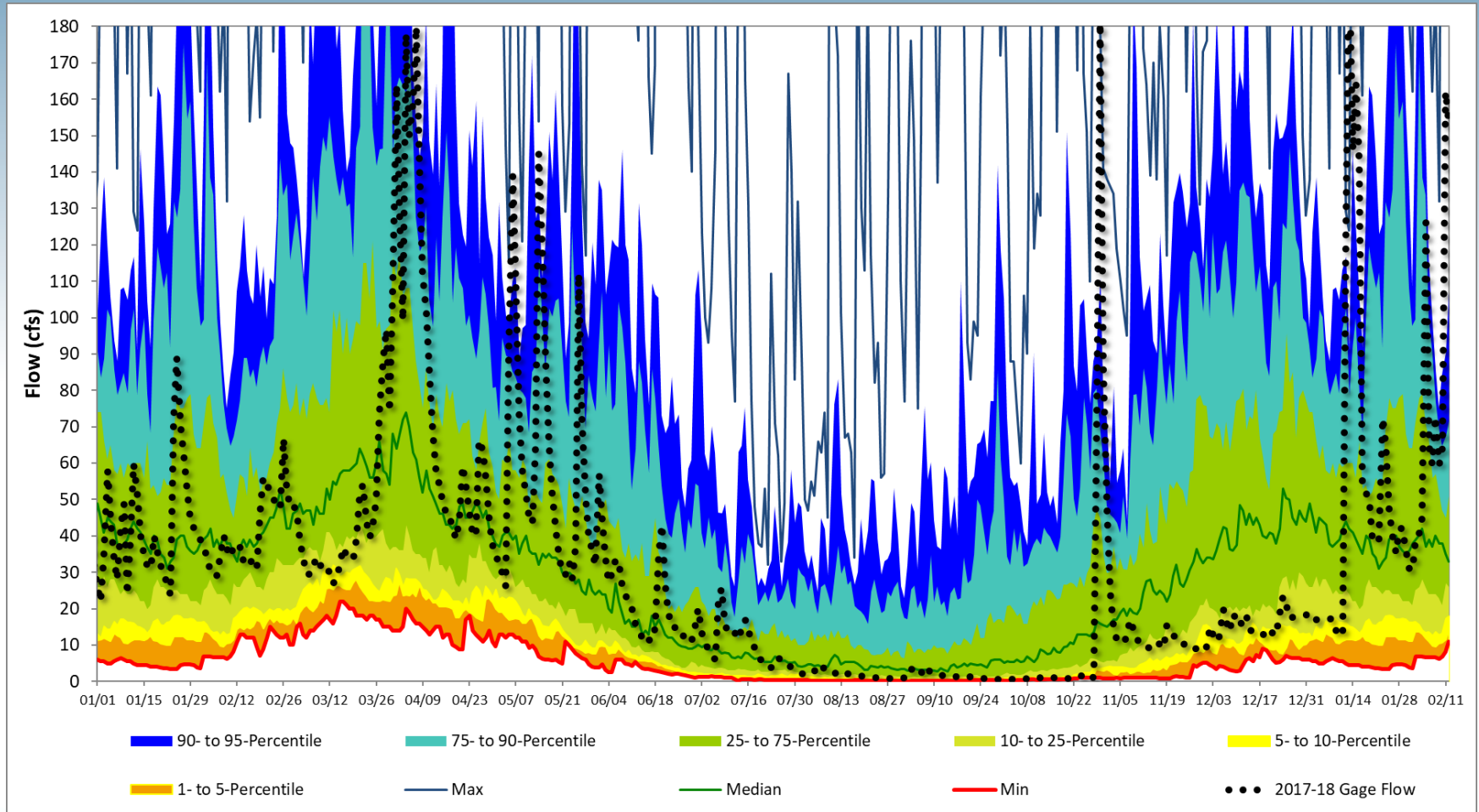
38% of All Water Use is Outdoor

Indoor, Est. Avg Account GD   Outdoor/Seasonal, Est Avg Account GD   Percent Water Demand of SF Accounts

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Precipitation Data

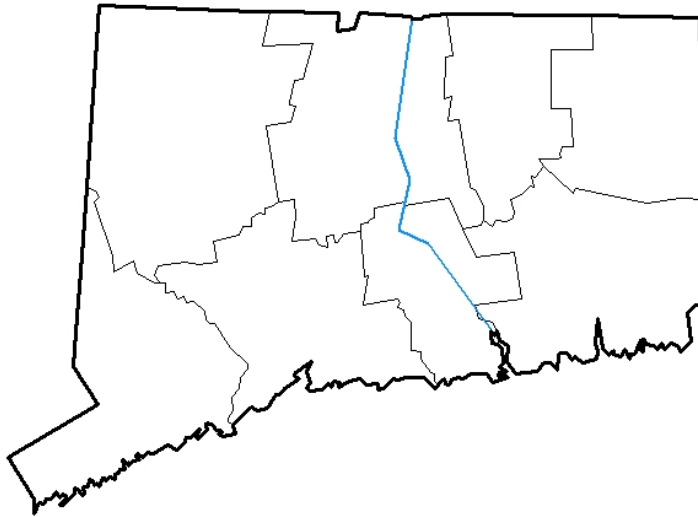Connecticut, Climate Division 3, Precipitation, 36-Month Period Ending in February
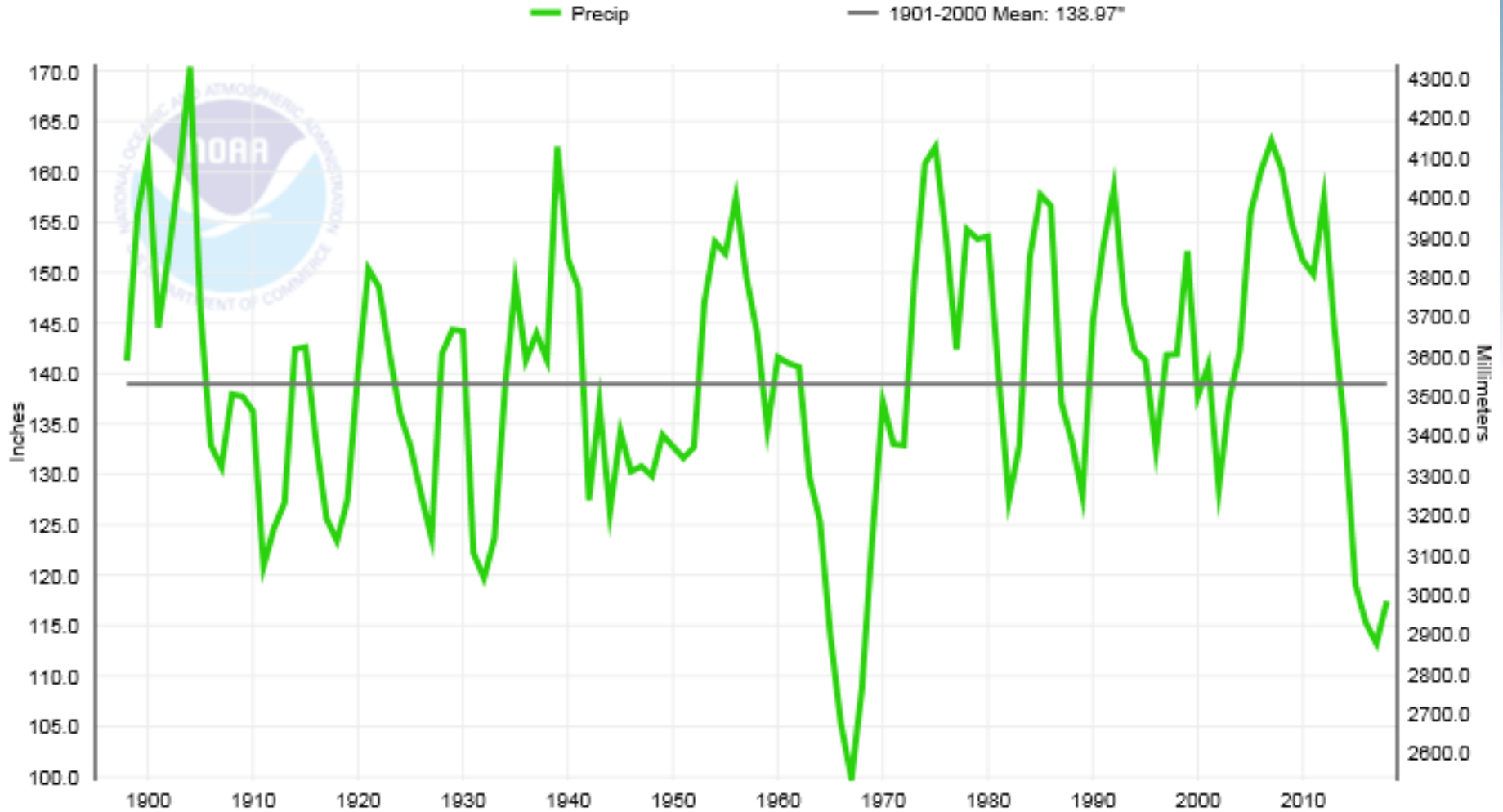
Saugatuck River Current Gage Flow (1964 to 2018)

Drought Monitor

U.S. Drought Monitor
Connecticut

April 3, 2018
(Released Thursday, Apr. 5, 2018)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week 03-27-2018	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago 01-02-2018	70.54	29.46	0.00	0.00	0.00	0.00
Start of Calendar Year 01-02-2018	70.54	29.46	0.00	0.00	0.00	0.00
Start of Water Year 09-26-2017	33.20	66.80	0.00	0.00	0.00	0.00
One Year Ago 04-04-2017	10.26	89.74	74.81	33.95	0.00	0.00

Intensity:

D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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USDA NDMC NOAA

http://droughtmonitor.unl.edu/

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Water Supply Forecasting

- Reservoir Model Development
    - Historical Precipitation Data
    - Inflows, Demands, Releases and Precipitation
    - Operational Rules
    - Monthly and Seasonal Water Treatment Production Patterns and Impact on Reservoir Levels

- Uses for Aquarion
    - Development of Drought Triggers
    - Evaluation for Stream Flow Releases
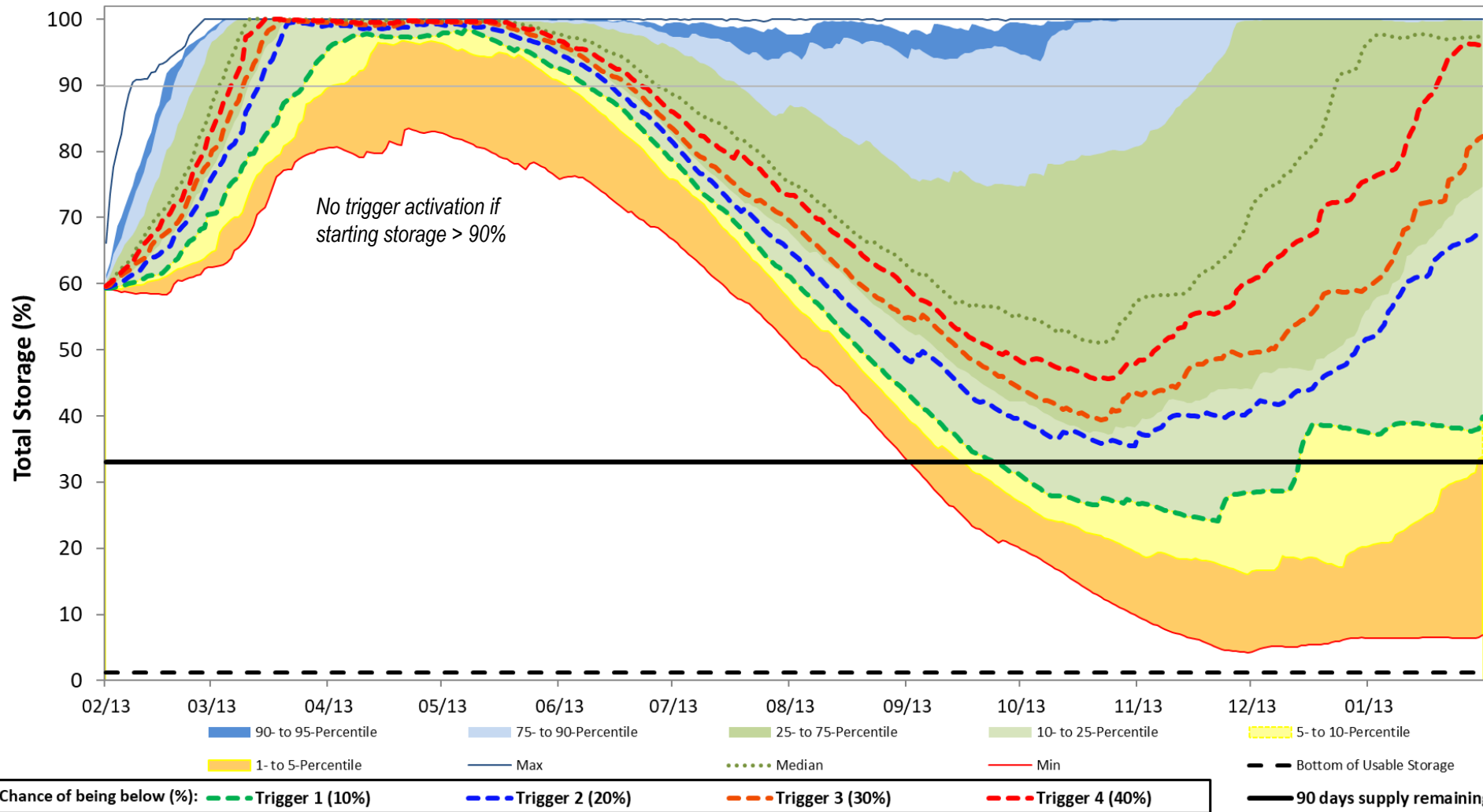   - Current and Future Available Water Supply

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We Understand Today and the Past
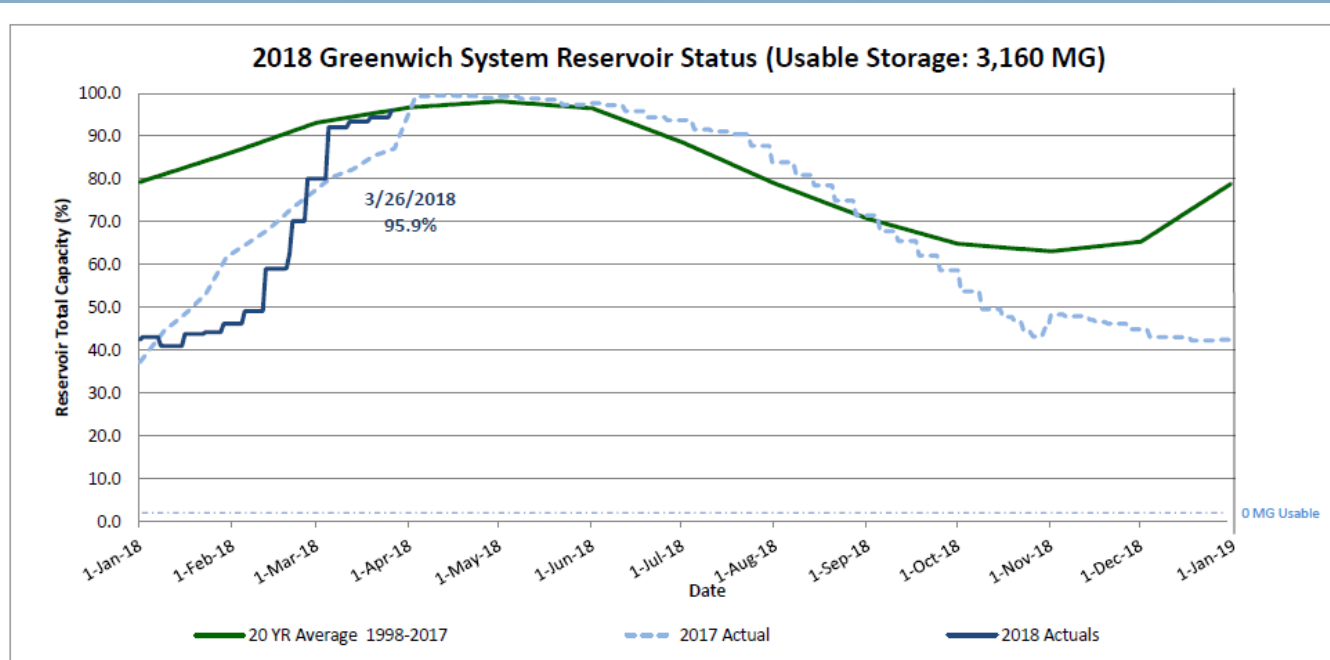
2018 Greenwich System Reservoir Status (Usable Storage: 3,160 MG)
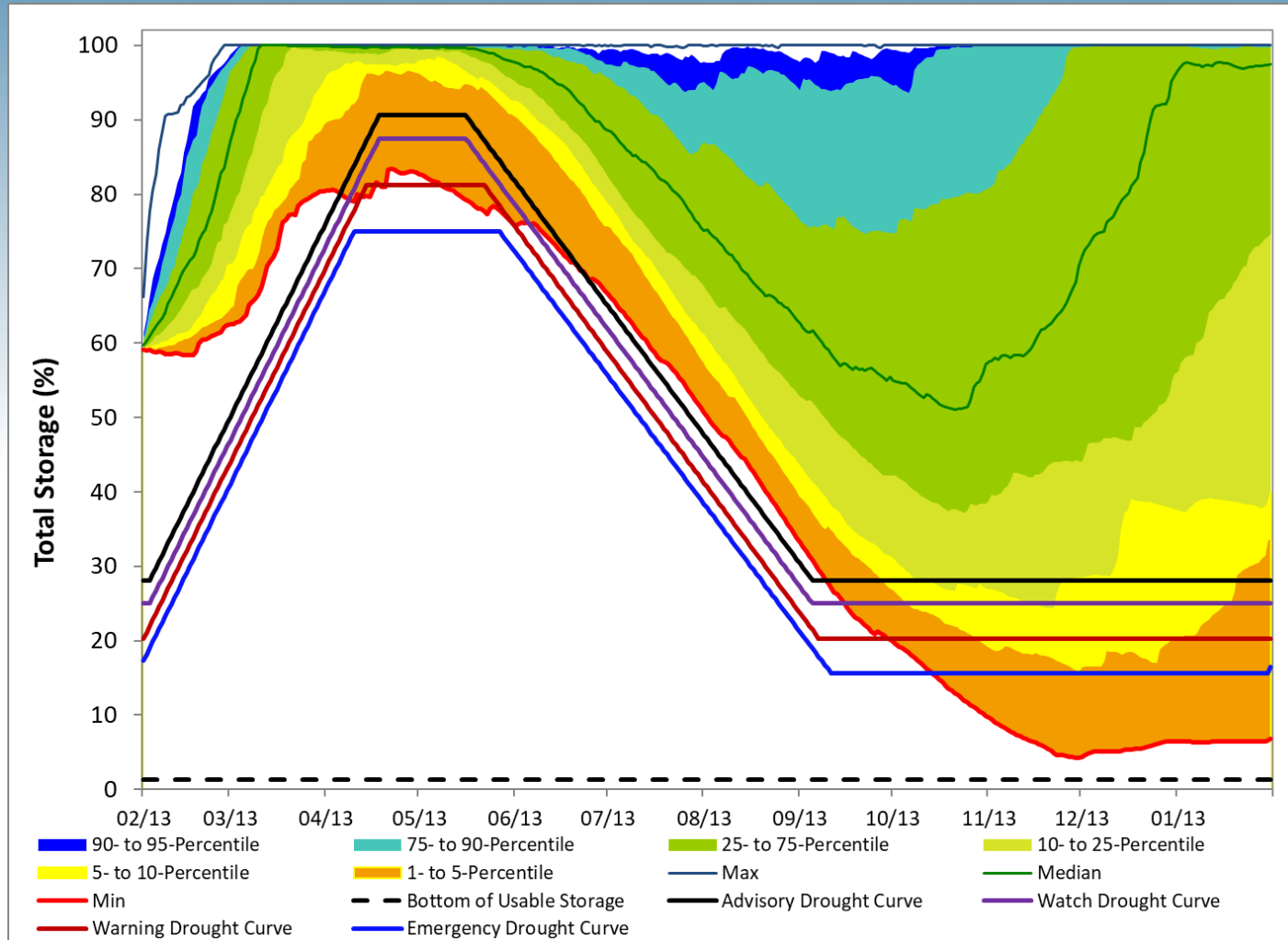
Greenwich Reservoirs – Forecasting Model

Drought Triggers - Reservoir Forecast Based

Drawdown (for invoking triggers)
- Trigger 1 = 10% chance of storage < 90 days supply within 12 months
- Trigger 2 = 20% chance of storage < 90 days supply within 12 months
- Trigger 3 = 30% chance of storage < 90 days supply within 12 months
- Trigger 4 = 40% chance of storage < 90 days supply within 12 months

No activation if starting storage >= 90%
Trigger 1 activation has no waiting period. Others have 14 day waiting period.

Refill (for lifting triggers)
- Trigger 4 = 40% chance of storage >= 90% within 2 months
- Trigger 3 = 50% chance of storage >= 90% within 2 months
- Trigger 2 = 60% chance of storage >= 90% within 2 months
- Trigger 1 = 70% chance of storage >= 90% within 2 months

No action until storage > 50%
All triggers lifted if storage reaches 90

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