



Sea Engineering, Inc.

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May 09, 2017

Office of Conservation and Coastal Lands
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 96809

Attn: Brad Romine, PhD

Subject: SSBN MA-15-2, Berm Maintenance Authorization Request, Sugar Cove,
Spreckelsville, Maui, Hawaii, TMK (2) 3-8-002:003 (seaward)

Sea Engineering, Inc. (SEI), in cooperation with the Sugar Cove AOA (SC), is requesting permission to conduct the third berm maintenance activity at Sugar Cove, Spreckelsville, Maui, Hawaii, seaward of Tax Map Key (TMK) (2) 3-8-002:003. The Category II Small Scale Beach Nourishment (SSBN) permit, SSBN MA-15-2, authorizes up to 8,000 cubic yards of sand placement, to be placed as needed during the duration of the 10-year permit, through multiple berm maintenance efforts.

The first placement of sand, comprising 892 cubic yards of beach quality material, was in the fall of 2015, at the beginning of the North Pacific swell season in Hawaii. This 2015-2016 North Pacific swell season produced some of the largest and most consistent swell recorded by regional wave buoys. North Pacific swell was heavily influenced by strong El Nino conditions produced by one of the two most intense El Ninos ever observed in the Pacific. Stronger El Nino conditions result in larger and more frequent North Pacific swell impacting the Hawaiian Islands.

The second placement of sand, comprising 1,115 cubic yards of beach quality material, was in the fall of 2016. This effort was completed on September 06 and the morning hours of September 07, 2016. The second maintenance effort was undertaken due to the severe impacts of the El Nino winter compounding with the significant time delay between the nourishment effort in 2011 and the first maintenance event in 2015.

Though the previous two maintenance efforts, in 2015 and 2016, have begun to revitalize the littoral cell, it is still below optimal sand volume. Based on the long beach profile record for the site, the beach berm has been stable when there is sufficient volume to withstand seasonal fluctuations. This has typically occurred when the general berm elevation is at or just above +10 ft in elevation. An additional indicator of beach stability has been beach width in the middle of the cove at Transect 5. A width of 100 feet has been observed during periods of beach stability, regardless of season. Both of these physical characteristics have been identified as triggers for initiating beach maintenance at the site.

Currently, the average berm height is below +10 ft, except for a small area in the middle, and



beach width is just below 100 ft at Transect 5. Beach profiles are included as attachments. Profile 4+00 is near Transect 7; Profile 6+00 is near Transect 5; and Profile 7+50 is near Transect 3.

Elevation data is presented in map form for surveys conducted on 3/16/2016, 9/6/2016 (pre-maintenance #2), 9/7/2016 (post-maintenance #2), and 3/14/2017. These maps represent the first 6-month survey, before and after maintenance event #2 surveys, and maintenance #2 6-month survey, respectively.

On-going monitoring, as part of an adaptive management plan, is conducted as part of the maintenance authorization. Monitoring includes site visits and data collection conducted on a semi-annual basis. Water quality monitoring is a key component of the adaptive management plan.

The north shore of Maui is a highly energetic environment and ambient turbidity levels are relatively high during tradewind conditions. In addition, large North Pacific swell also creates significant nearshore turbidity. Ongoing water quality monitoring at the site has indicated that turbidity levels at Sugar Cove are generally less than those recorded at the Baldwin Beach area, and close to the values recorded in the Sprecklesville area. This is not surprising given the general nature of the fringing reef and nearshore during tradewind conditions in the summer and North Pacific swell events during the winter.

Moreover, the highest turbidity values for the region, as confirmed by aerial imagery, are generated from Baldwin Beach Park where Kailua Gulch drains into the ocean. The watershed for this gulch includes much of the upland agricultural lands and contains very high concentrations of terrigenous sediment and organic material. The September 2016 maintenance effort was conducted shortly after a rain event. Very high turbidity levels measured at Baldwin Beach, with decreasing values moving west (down current) are directly attributable to the sediment input from Kailua Gulch.

Water quality data collected since initiation of the maintenance plan indicates that nearshore waters near the project site are subject to regional water quality impacts; however, there are no recorded project-related impacts.

Date/Location	Sample 1	Sample 2	Sample 3	Average
11/9/2015				
Sugar Cove	5.32	5.54	4.97	5.28
Sprecklesville	10.4	8.90	7.54	8.95
Baldwin Beach	6.20	8.20	6.97	7.12
11/10/2015				
Sugar Cove	2.74	2.57	2.62	2.64
Sprecklesville	12.1	11.6	9.17	10.96

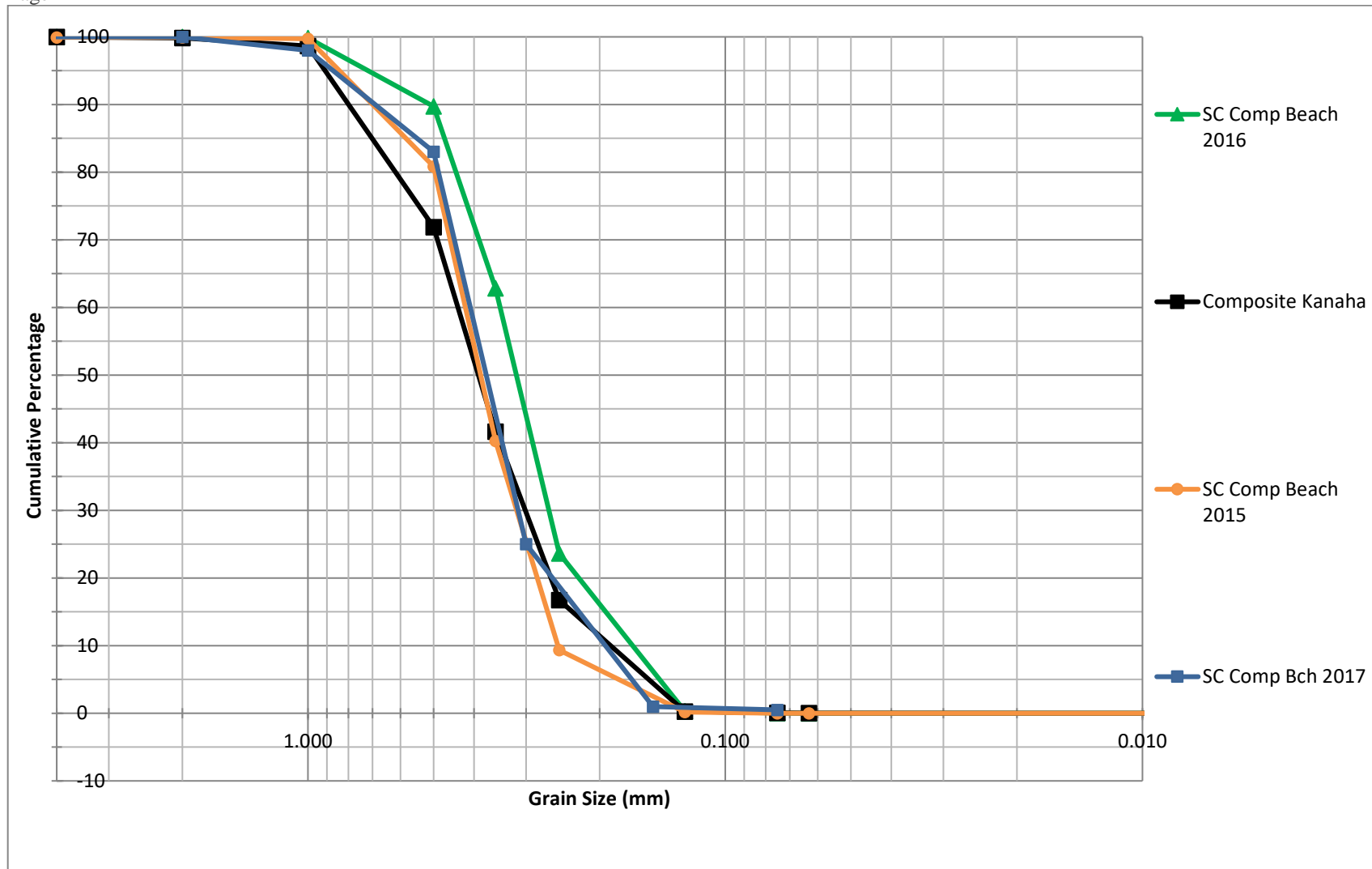


Date/Location	Sample 1	Sample 2	Sample 3	Average
Baldwin Beach	5.55	4.79	4.54	4.96
9/6/2016				
Sugar Cove	15.8	10.5	14.1	13.5
Sprecklesville	7.6	6.9	8.7	7.7
Baldwin Beach	42.9	41.9	41.8	42.2
9/7/2016				
Sugar Cove	5.35	6.55	4.58	5.5
Sprecklesville	8.99	8.37	6.79	8.1
Baldwin Beach	4.99	5.43	4.06	4.8
3/14/2017				
Sugar Cove	3.21	3.28	3.40	3.30
Sprecklesville	2.93	2.68	2.47	2.69
Baldwin Beach	2.53	2.86	2.13	2.51

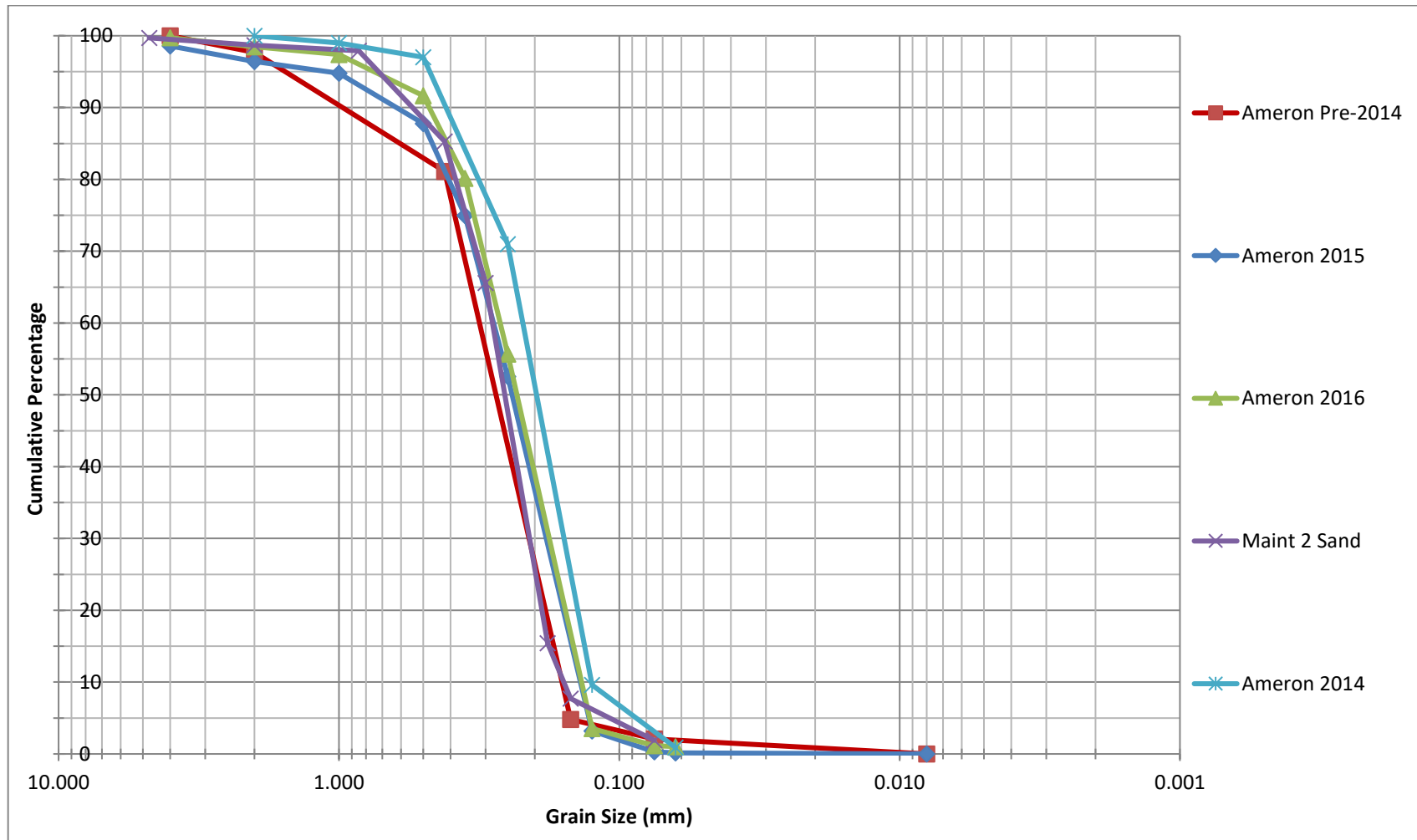
Water Quality monitoring results (NTUs) for Maintenance Effort #1, Maintenance Effort #2, and March 2017 Assessment.

- November 2015 maintenance conducted during typical tradewind conditions with a moderately large north event. Turbidity values seem to increase at Spreckelsville compared to the other sites under higher north swell conditions.
- Rain event was observed just before the 9/6 Maintenance effort, leading to much higher readings near Baldwin. Tradewind waves were moving the regional current east to west, moving turbidity toward Sugar Cove and Spreckelsville. Turbidity values were decreasing as the current moved west.
- High tradewinds and waves were observed on 9/6, with light trades and smaller waves on 9/7.
- March 2017 monitoring was conducted with mixed, small wave conditions from a remnant north swell and light tradewinds. Sugar Cove was the most energetic site, with waves breaking at both headlands, the outer sandbar, the inner sandbar, and the shoreline. All values were low during this site visit.

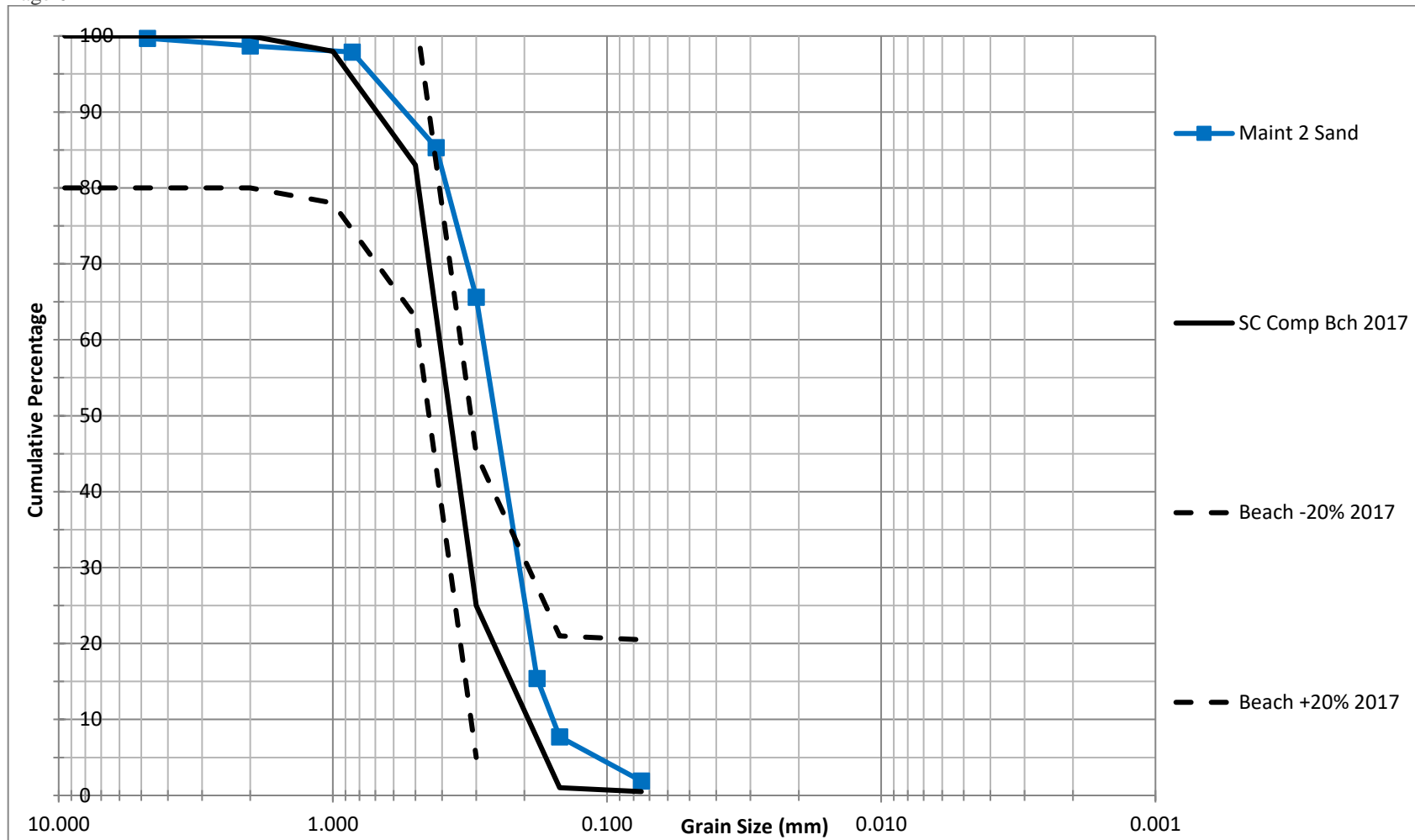
Grain size analysis has been conducted routinely for beach and fill sand. Beach sand samples have been stable over the past several years, as has the fill material. Below are grain size comparisons for the beach, for the fill sand, and for the fill sand compared to the current beach.



Comparison of Sugar Cove nourished beach sand (2015, 2016, and 2017) and Kahana Beach native sand.



Comparison of fill sand for Sugar Cove maintenance (pre-2014, 2014, 2015, 2016, and Maintenance 2 fill sand).



Comparison of 2017 Sugar Cove nourished beach sand and proposed fill sand (from same source as Maintenance #2 effort).



The sand evaluated and approved for Maintenance #2 was a good match for the current (2017) Sugar Cove beach sand. We propose using the same sand source for Maintenance #3. The calculated overfill factor is 1.21, which is a consistent match for the previous maintenance events, each of which performed well.

At this time, the placed sand has been consumed and the berm elevation, in general, is less than +10 feet in elevation. This is an identified trigger, in the plan and the permit, for berm maintenance. In addition, the Transect 5 beach width trigger has also been reached, as the 0-foot contour is within 100 feet of the steps.

Via this letter, SEI and SC are requesting permission to conduct the next berm maintenance effort on the week of September 18, 2017. Tides are favorable later in this week. The summer months typically result in sand migration to the west, as waves and longshore currents generated from tradewinds move sand across the cove, so placement will likely be focused in the middle and western end of the cove.

Sand delivery operations have been slower than anticipated due to traffic related delays impacting the turnaround speed for each delivery truck. We also request permission to conduct operations for 1.5 days, rather than the previously stated 1.0 days, due to this unavoidable slowdown in production rate.

Please contact me directly with any questions or comments. You can reach me at 259-7966, ext. 26, or by email at cconger@seaengineering.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Conger", written in a cursive style.

Chris Conger
Project Manager

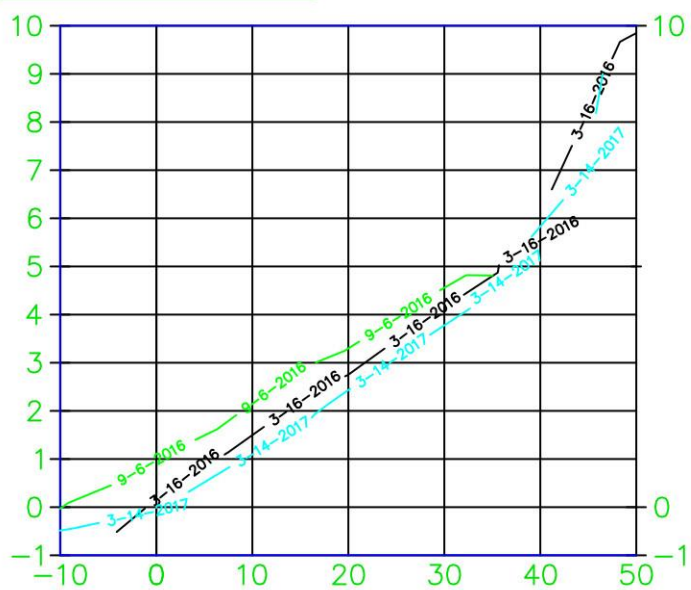
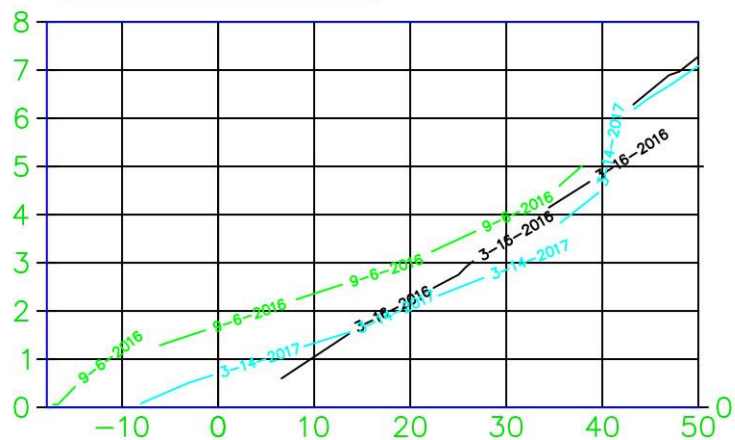
Enclosure

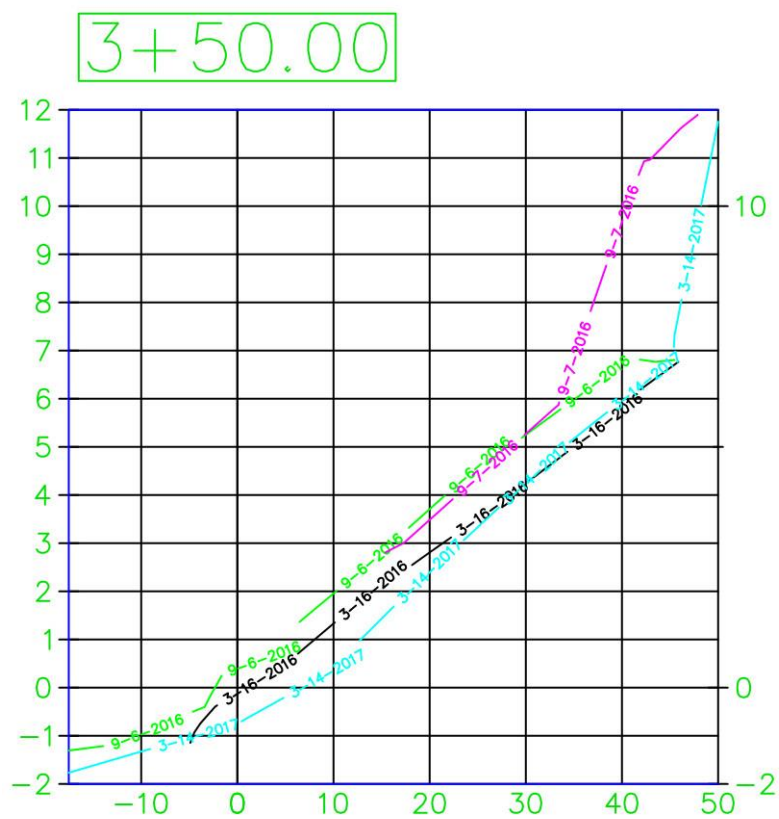
Cc: Richard Salem, Sugar Cove AOA President

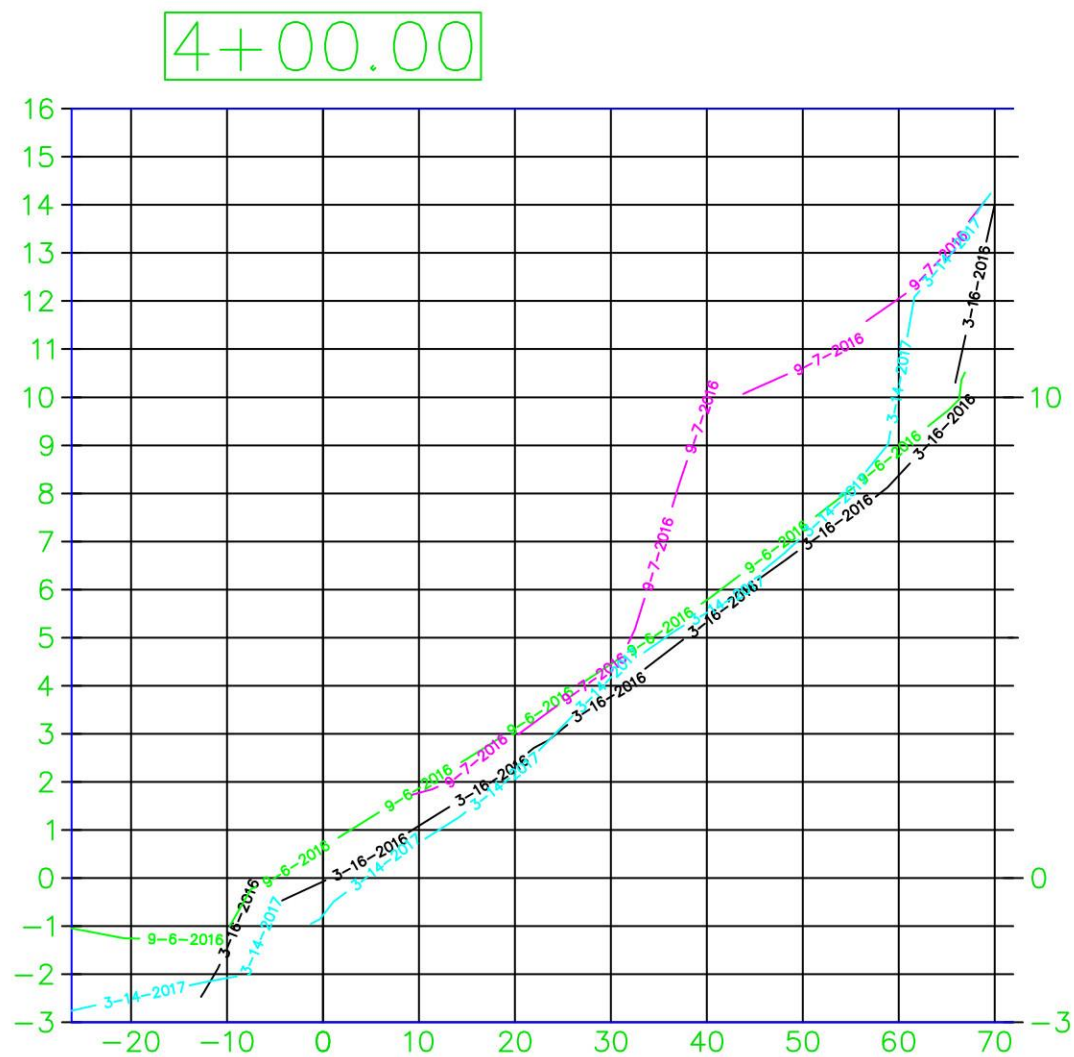
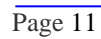


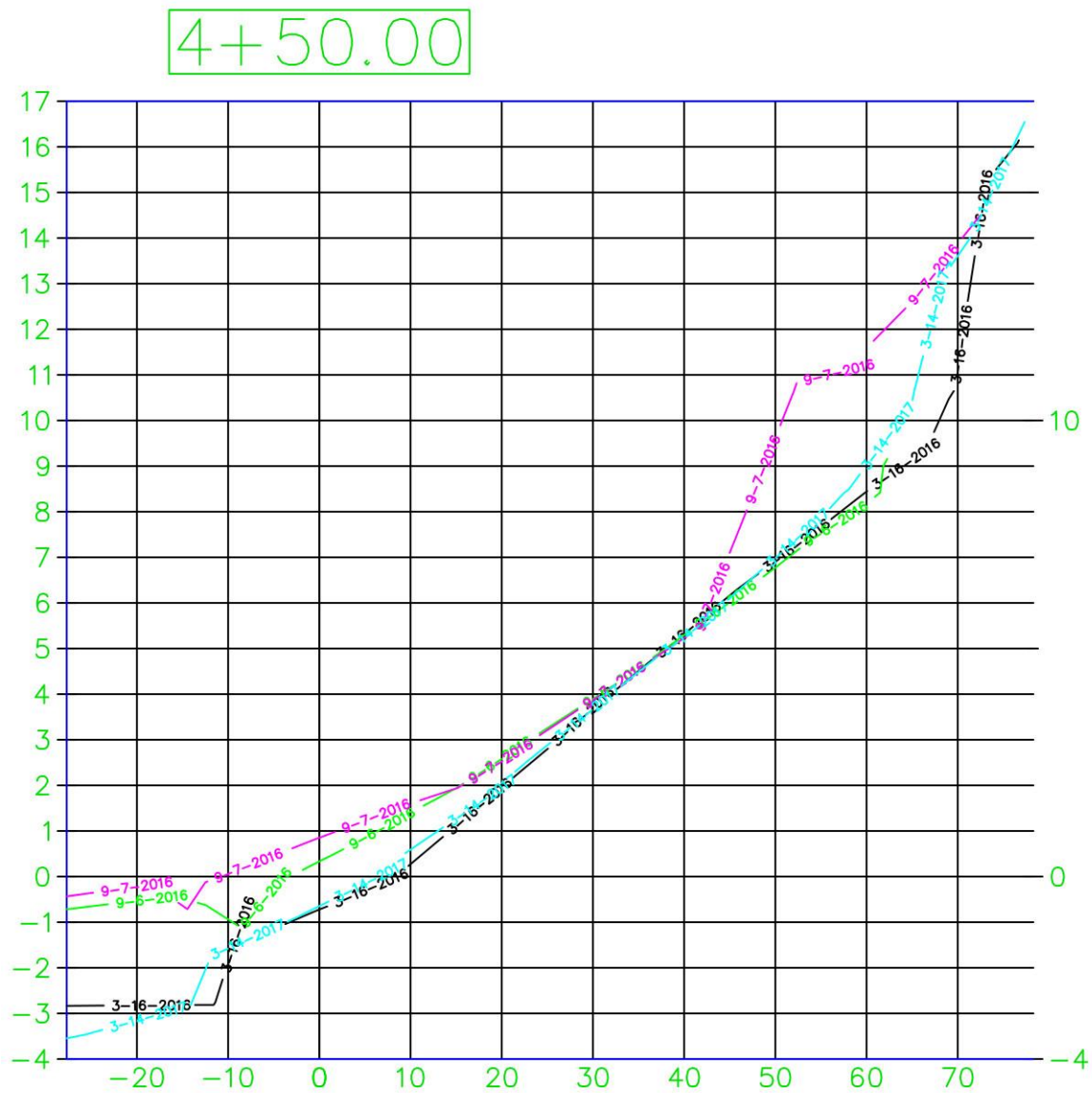
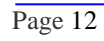
ATTACHMENTS

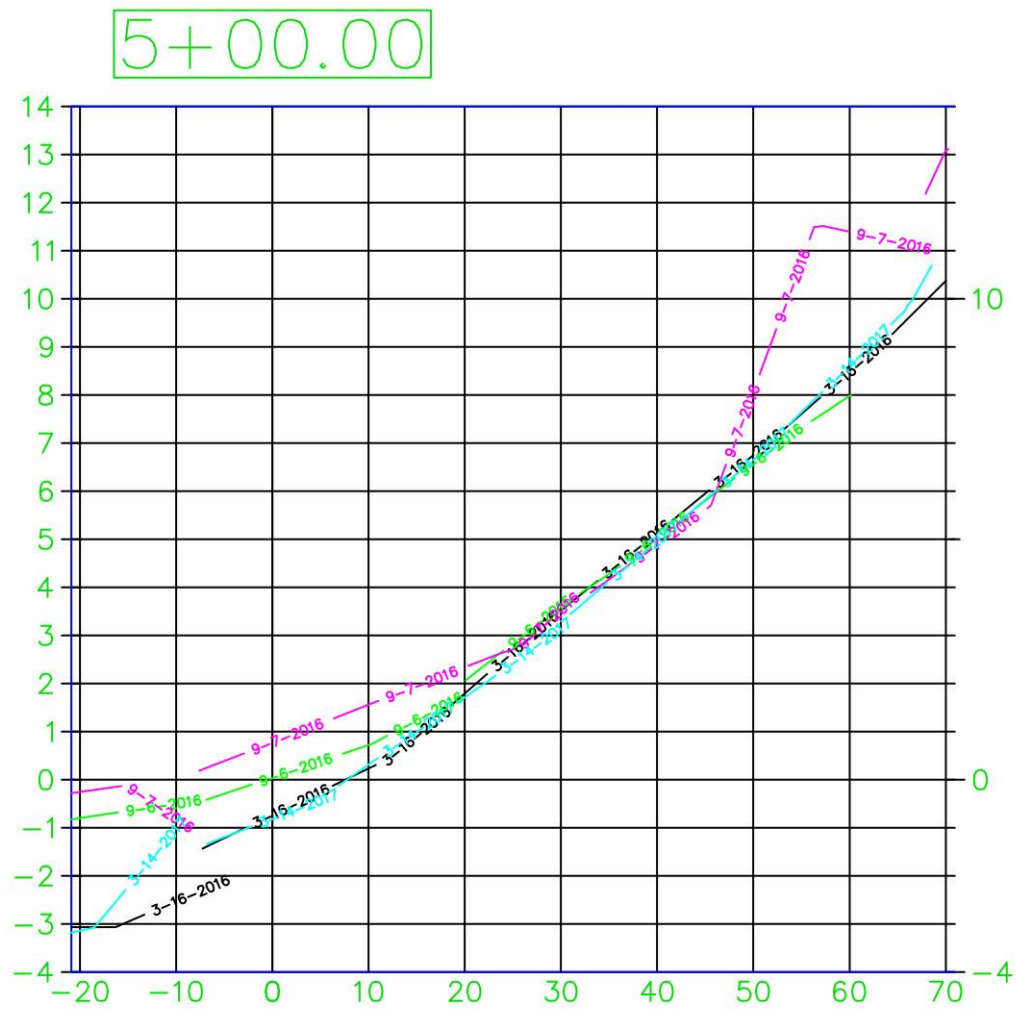
BEACH PROFILES



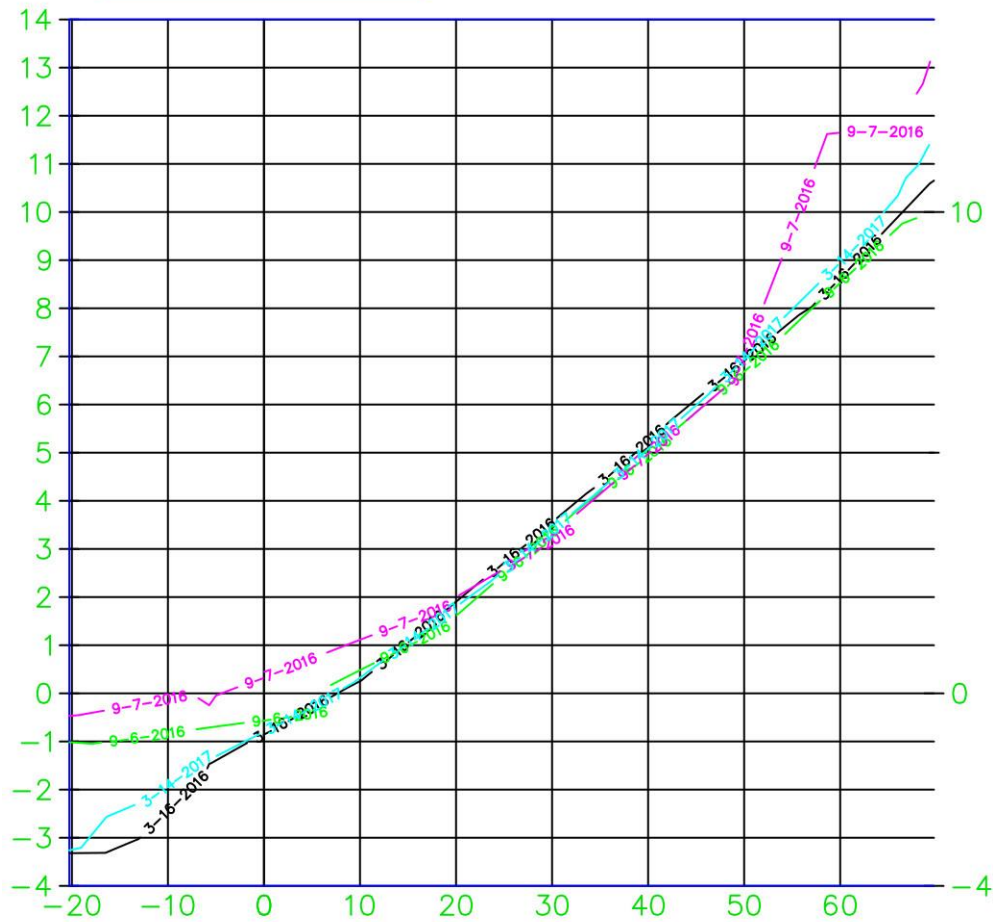






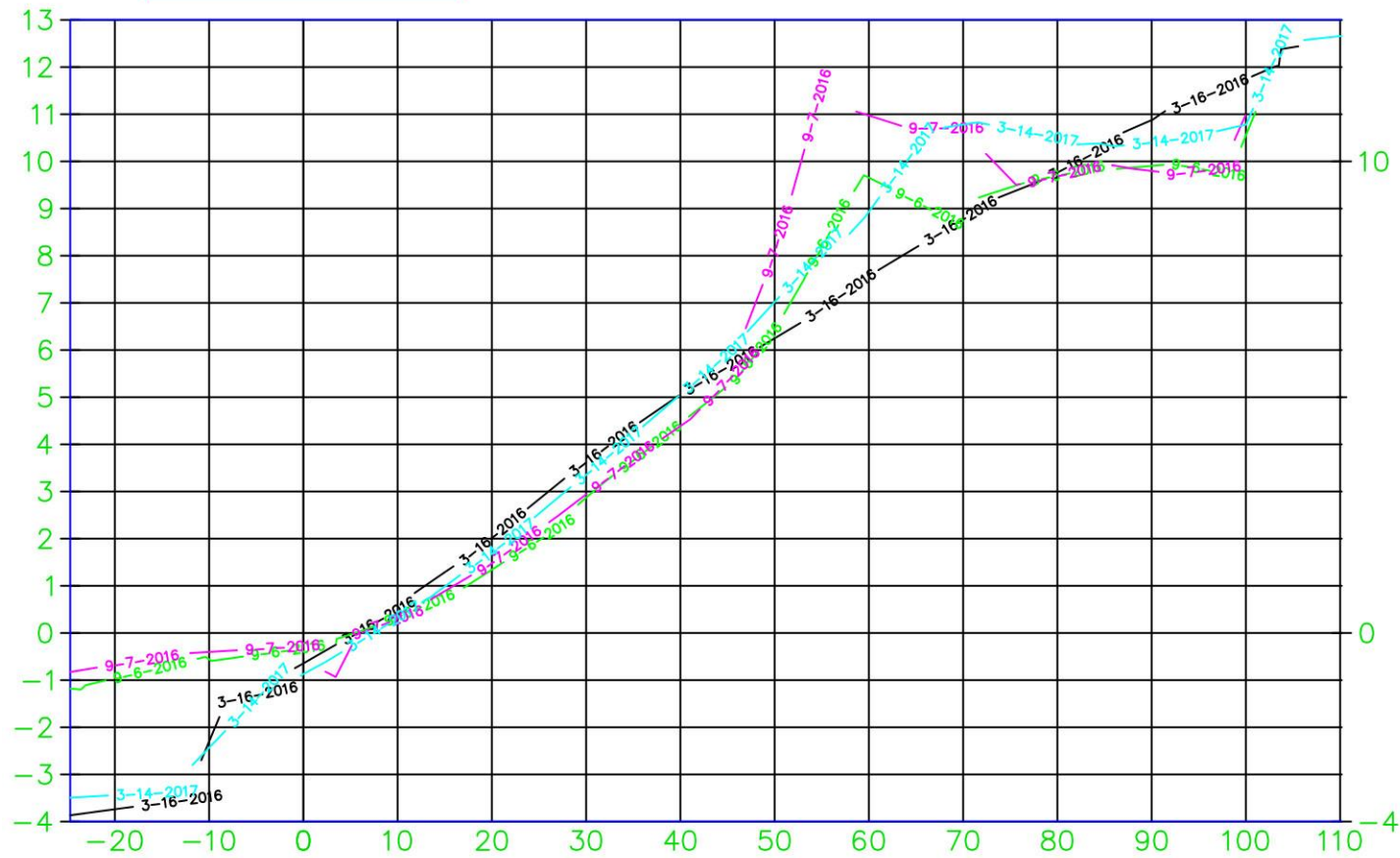


$$5 + 50.00$$

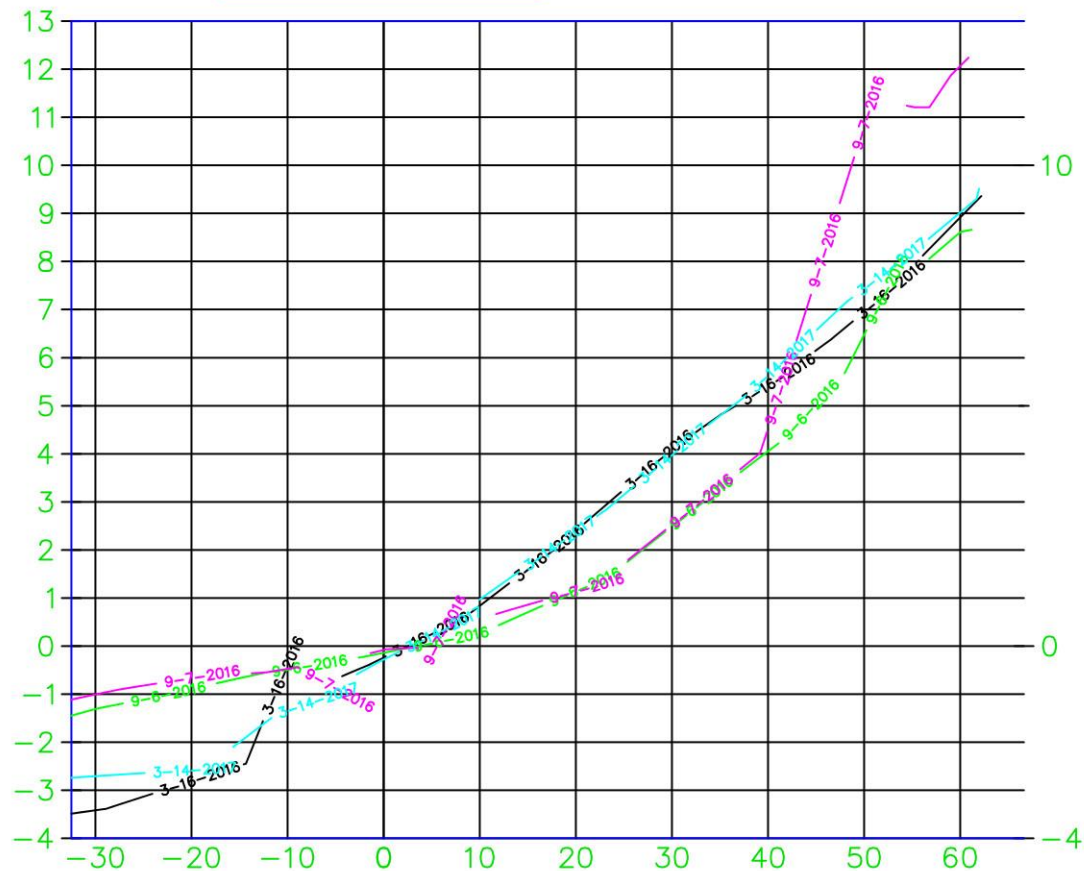


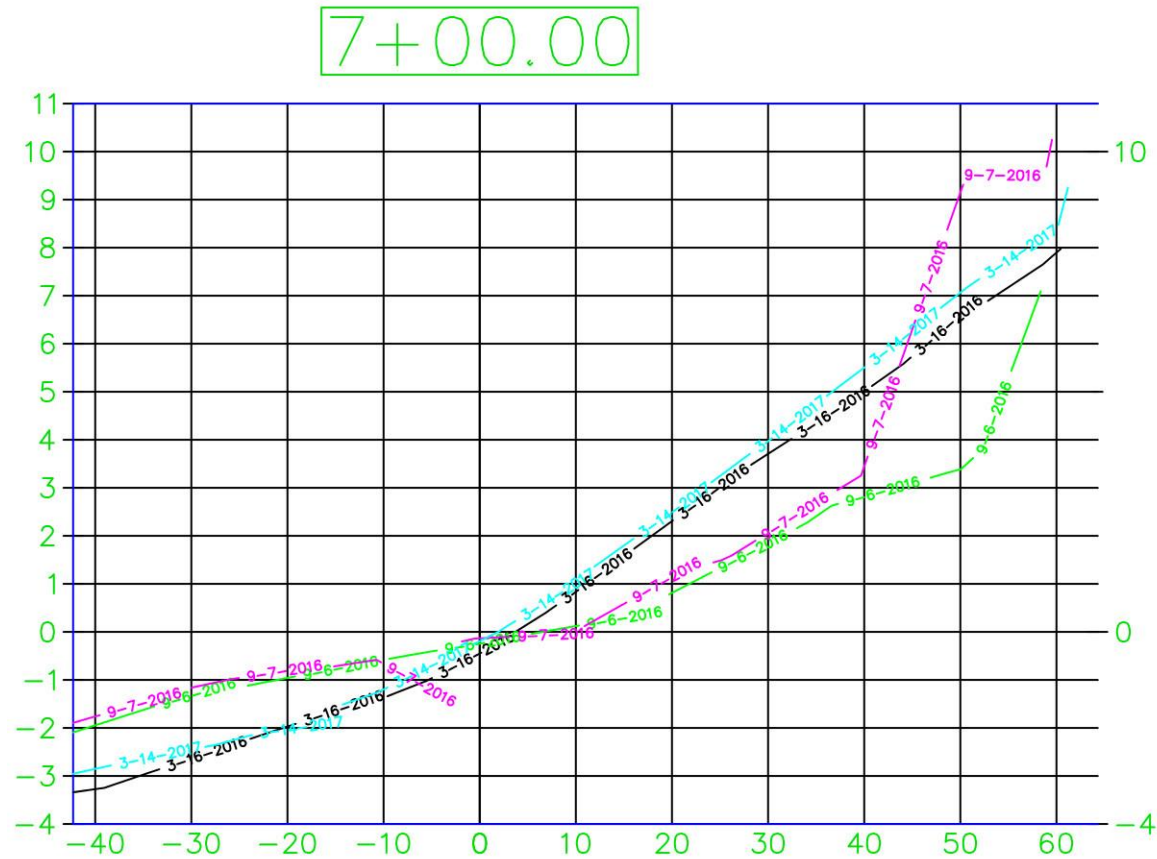


6+00.00

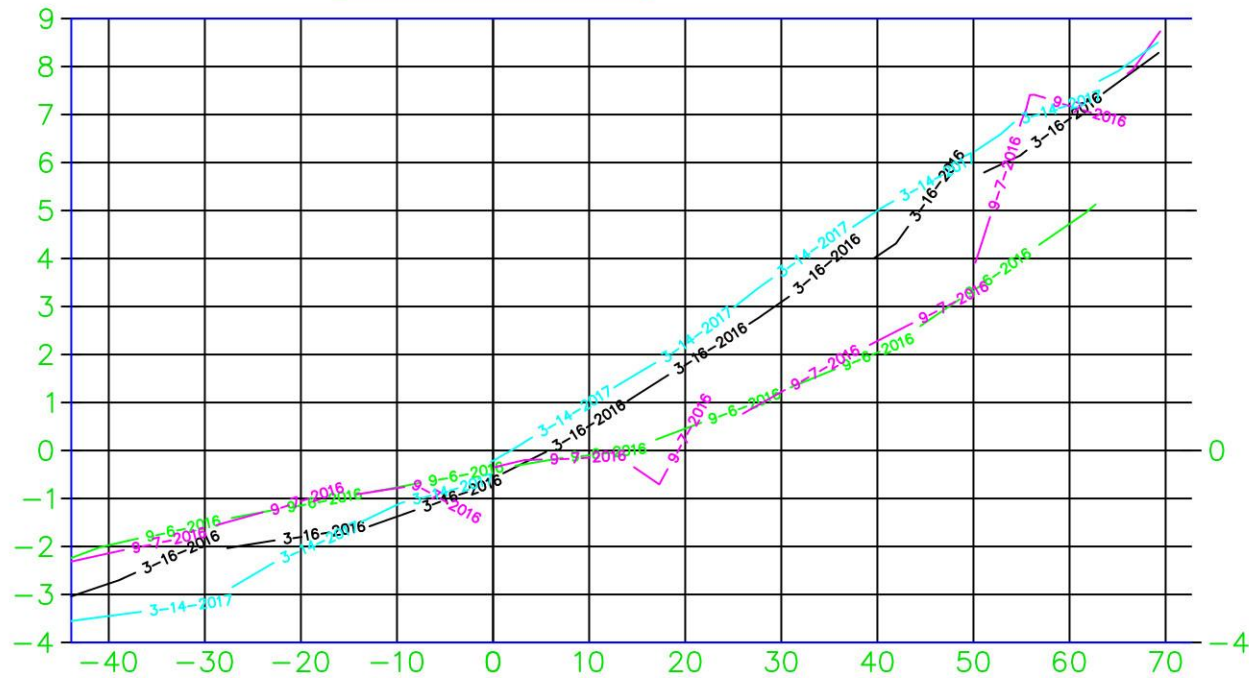


$$6 + 50.00$$

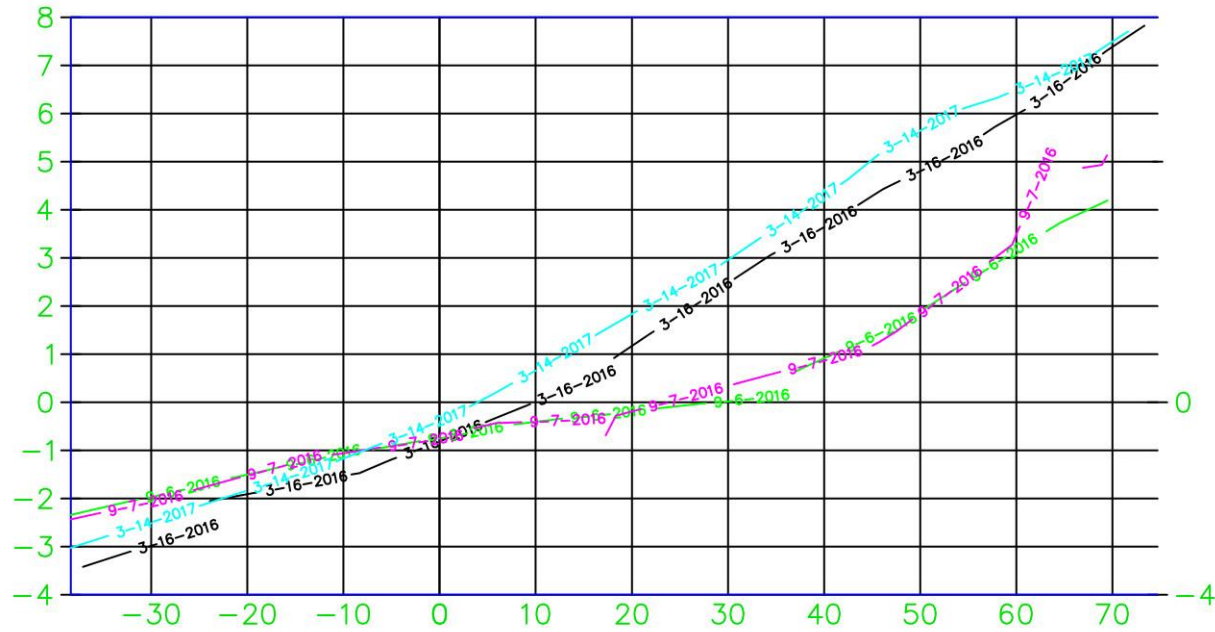




$$7 + 50.00$$

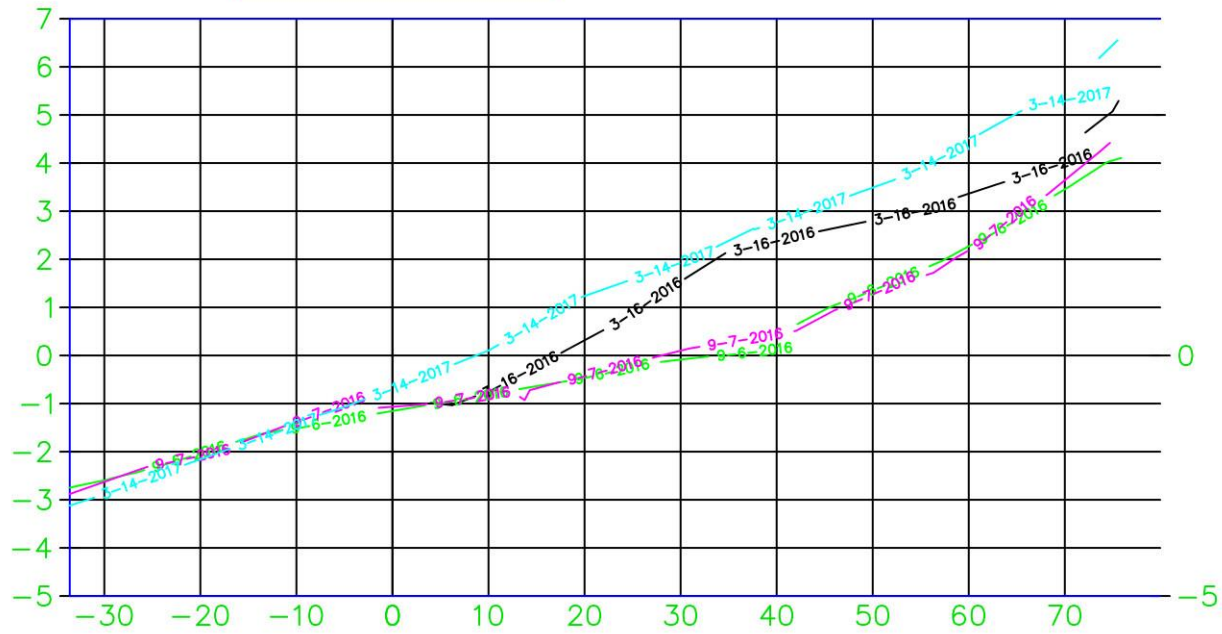


$$8+00.00$$





$$8 + 50.00$$

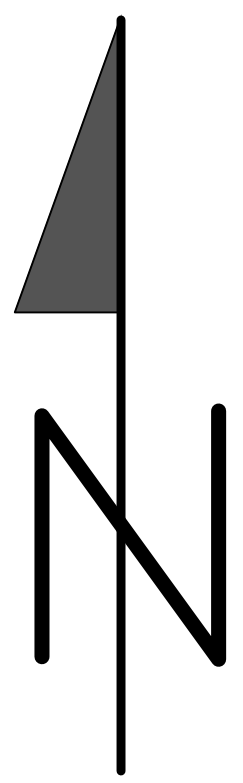




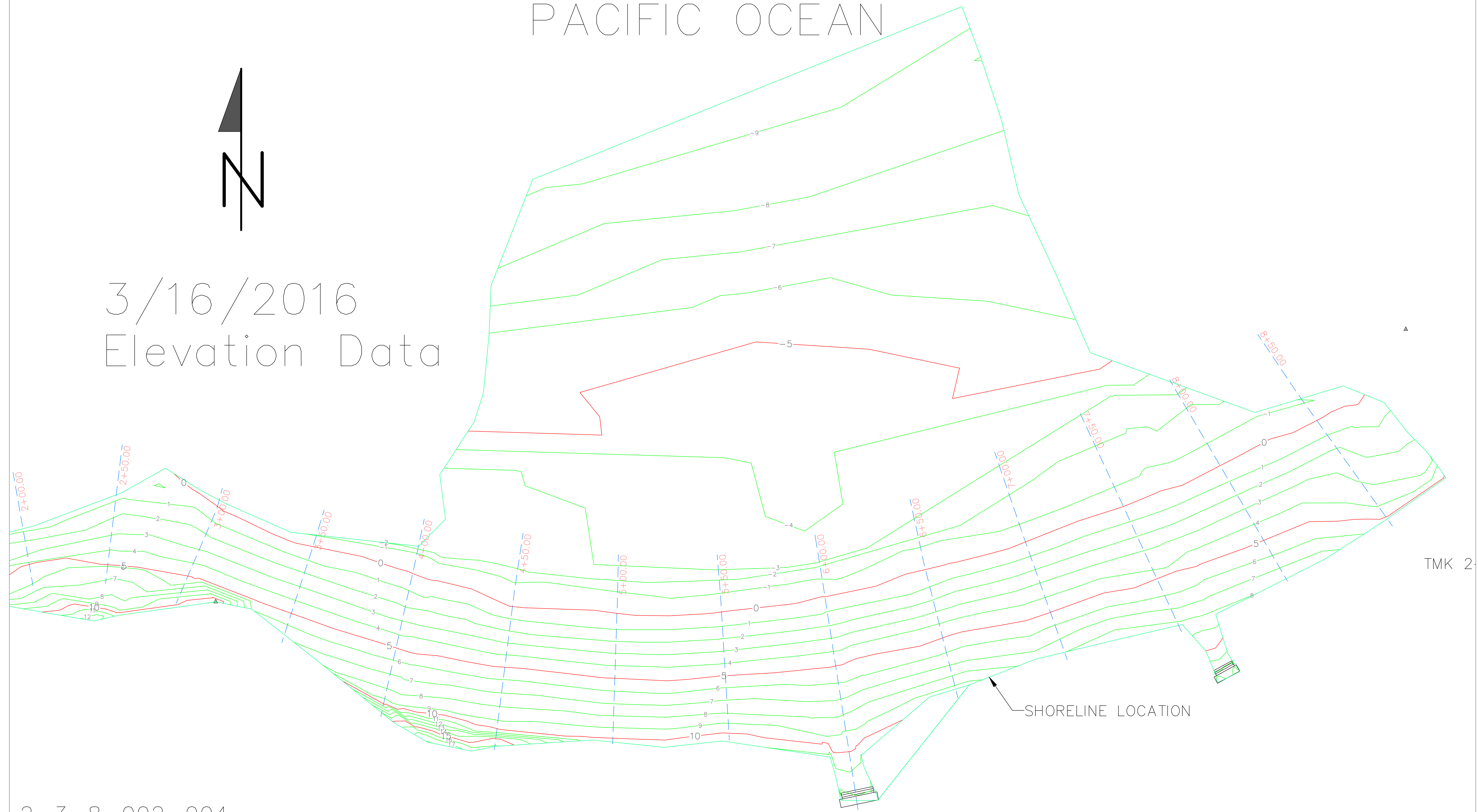
ATTACHMENTS

ELEVATION CONTOUR DATA

PACIFIC OCEAN



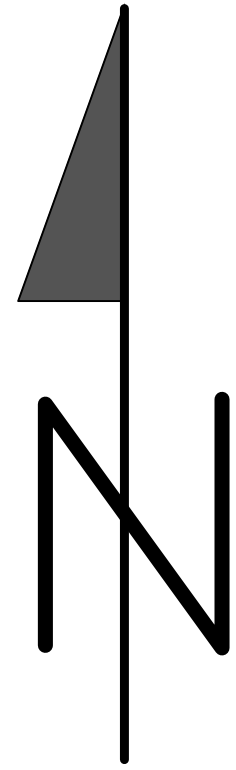
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Elevation Data



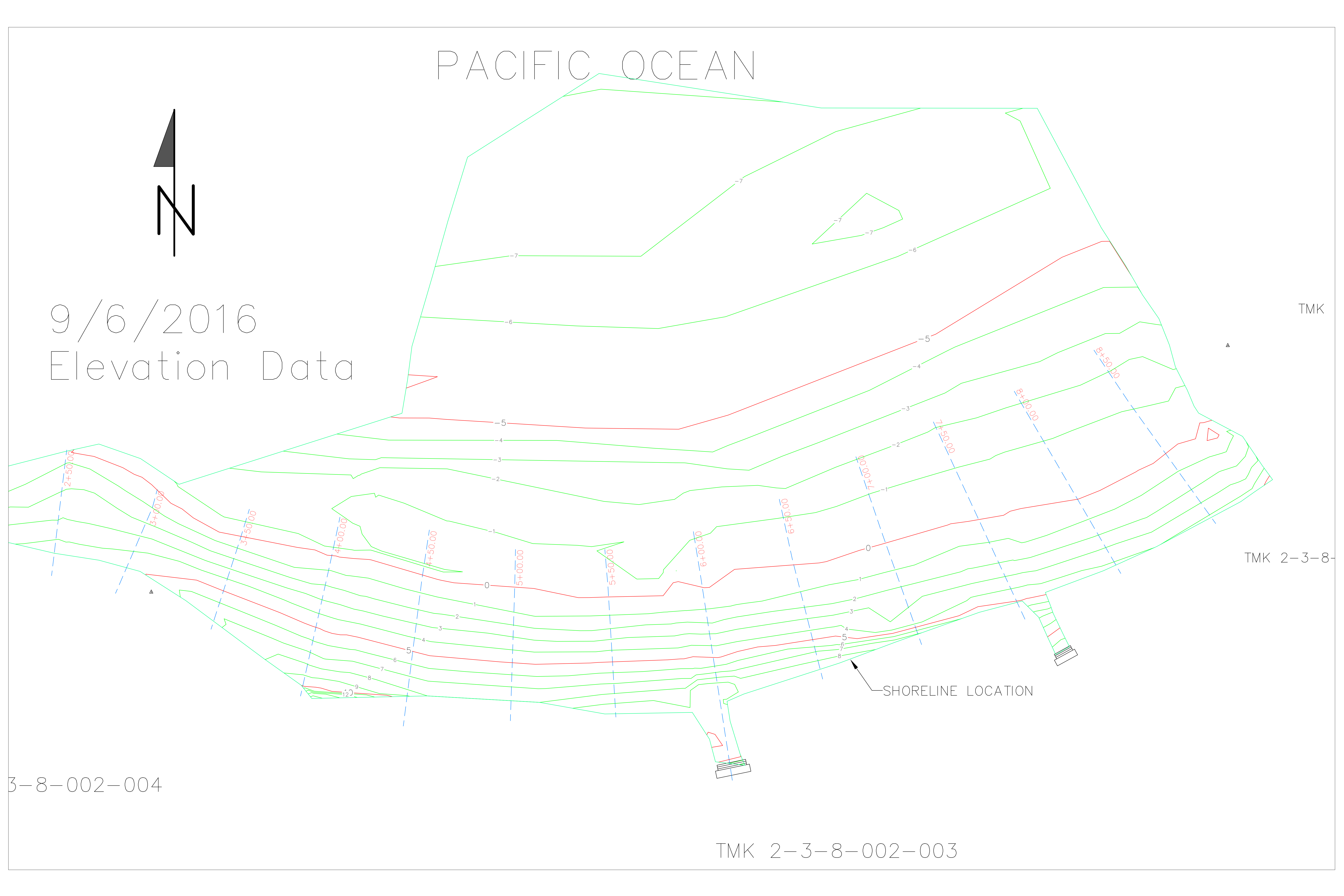
2-3-8-002-004

TMK 2-3-8-002-003

PACIFIC OCEAN



9/6/2016
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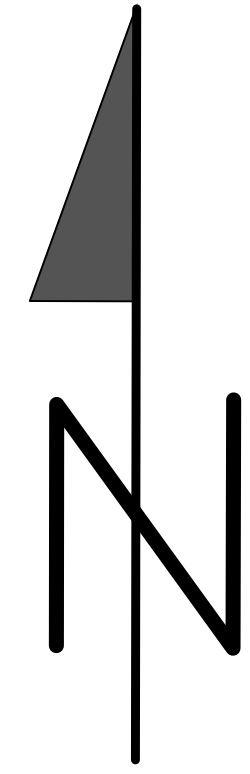
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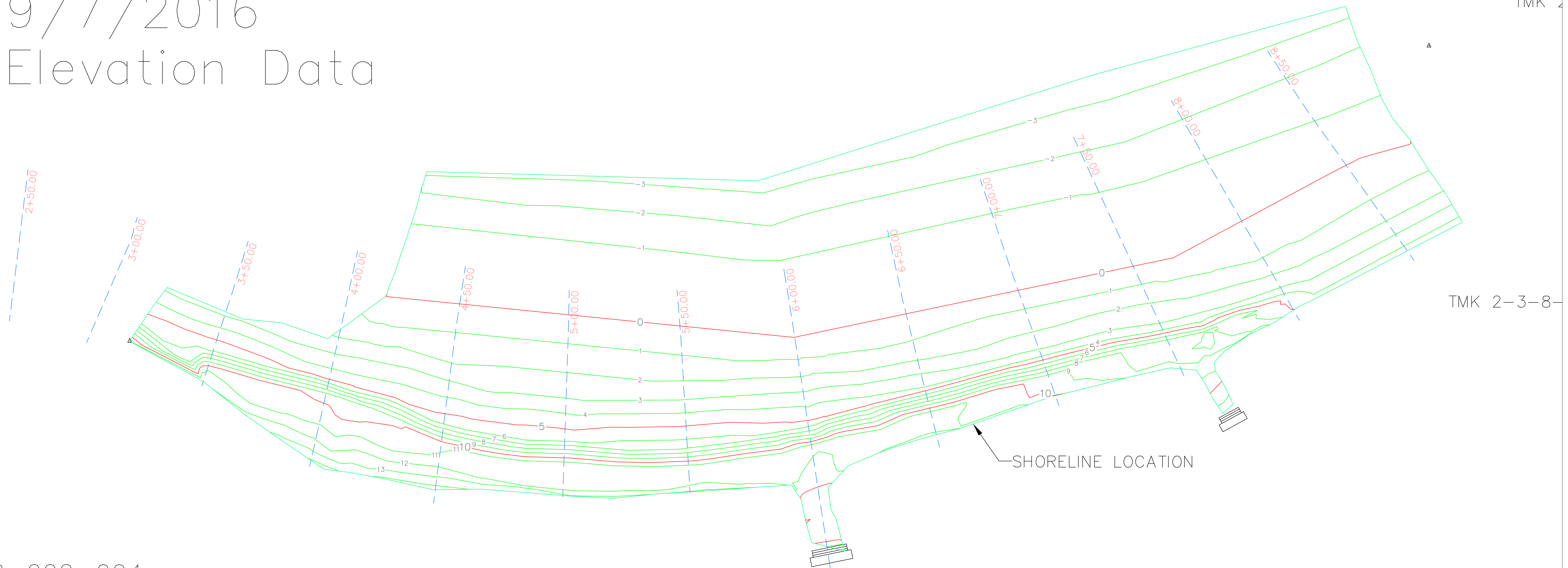
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PACIFIC OCEAN



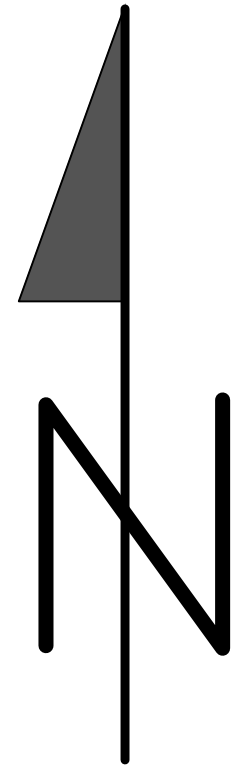
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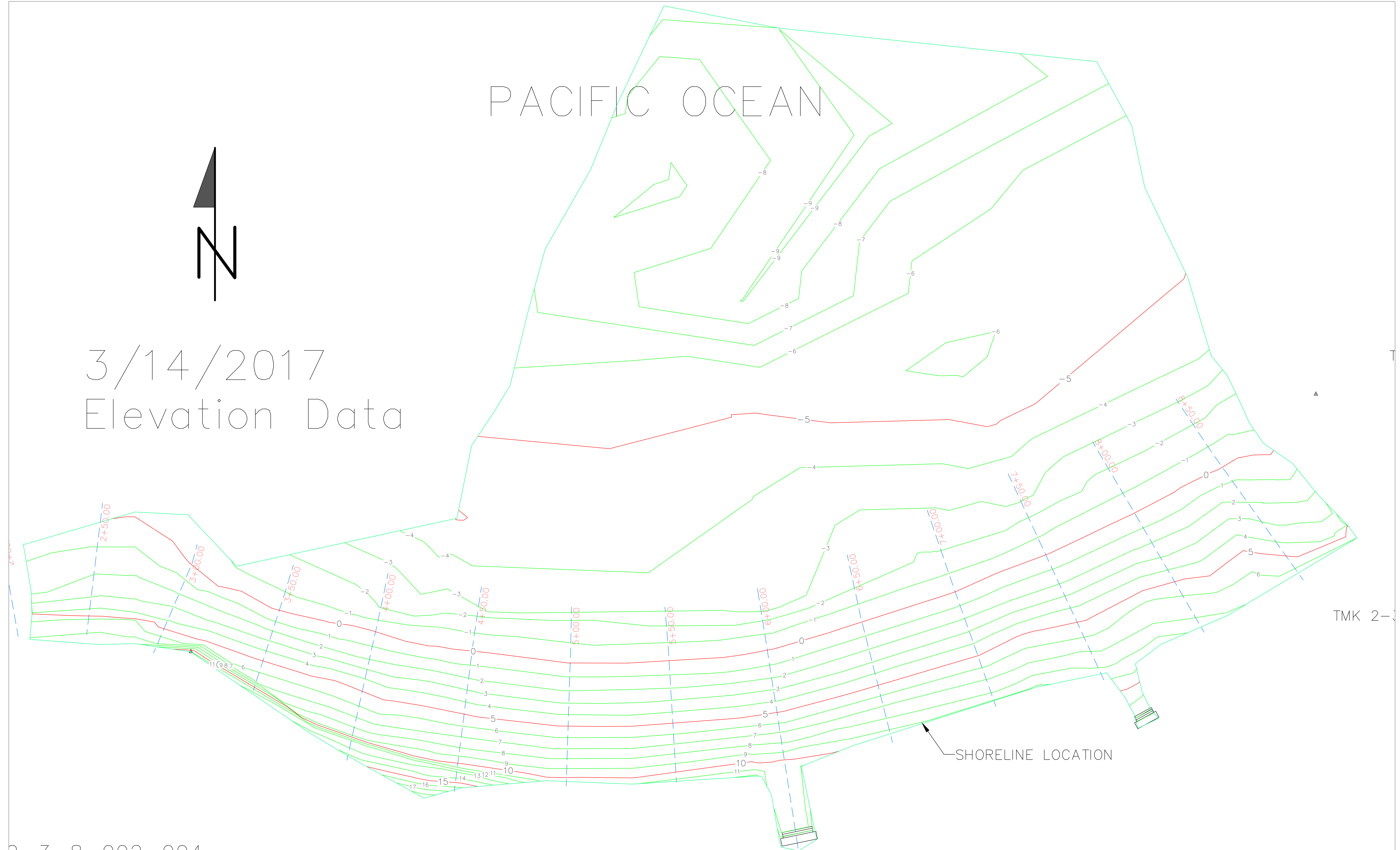
3-8-002-004

TMK 2-3-8-002-003

PACIFIC OCEAN



3/14/2017
Elevation Data



TMK 2-3-8-002-004

SHORELINE LOCATION

2-3-8-002-004