

Lake 4, West Lake and A-Frame Dam Rehabilitation Project

Weekly Construction Update Report

4/27/2020 to 5/1/2020

Date: 5/7/2020

Location: Boulder County Open Space west of Hygiene, CO

Project Owners: Boulder County and St. Vrain & Left Hand Water Conservancy District

Design Engineers:

Lake 4 - Engineering Analytics (EA)

West Lake and A-Frame - Applegate Group (AG);

Lake 4 Outlet Pipeline - Deere & Ault (DA)

Construction Contractors:

Kirkland Construction (Prime Contractor)

Lobato Construction (Sub-contractor)

Weather & Site Conditions: Dry and mild/warm weather. Dry site conditions.

Update by: Obadiah Broughton, Boulder County



4/28: West Lake Dam - Placing riprap in the newly constructed ditch cross-section at the Clough and True Ditch outlet structure.

Work in Progress/Completed

1. Lake 4 Dam – completed the concrete pour (~43 cubic yards) for outlet tower #1. Started formwork and rebar installation on outlet tower #2.
2. Lake 4 Dam - excavated Lake 4 emergency spillway cut-off wall to sub-grade. Prepped subgrade for inspection and concrete formworks installation. Finalized grades in spillway in preparation for riprap and bedding placement.
3. Lake 4 sediment removal area - continued ripping, crushing, and stockpiling of claystone to use as $\frac{3}{4}$ " minus embankment fill. Continued ripping claystone to be used as fill on the southern shore line/bank of A-Frame Pond in the West Lake Dam project.
4. West Lake Dam – continued excavation on downstream side of West Lake Dam. Continued placing cut material as backfill to rebuild the Clough and True Ditch encasement and the southern shore line/bank of A-Frame pond. Began hauling and placing ripped claystone (~500 loads) from Lake 4 sediment removal area as backfill to rebuild the Clough and True Ditch cross-section and the southern shore line/bank of A-Frame Pond.
5. West Lake Dam - continued placement of riprap on upstream embankment. Excavated the siphon outlet drain pipe trench, installed the pipe and poured a concrete flowable fill CLSM (controlled low strength material) backfill/encasement around the pipe.
6. West Lake Dam - finished installing riprap bedding and riprap at the Foothills Outlet Ditch inlet structure. Started to grade the Clough and True Ditch cross-section downstream of outlet structure and install riprap bedding and riprap at the outlet. Installed two 20' x 18" CMP culverts as crossings for Clough Private Ditch adjacent to the Foothills Outlet Ditch inlet and the South Branch Ditch crossing.

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Work in Progress/Completed *(cont.)*

7. West Lake Dam – completed construction of infrastructure to allow the Foothills Outlet Ditch, South Branch Ditch and Clough Private Ditch to run water.
8. Kirkland took delivery of approximately 651 Tons of Type H Rip Rap, and 828 Tons of Type M Rip Rap and staged near Lake 4/Lake 3 embankment.
9. As necessary to facilitate the work dewatering operations occurred to remove nuisance water in work areas, Lake 3, Lake 4, West Lake and A-Frame Pond.

Upcoming Work *(One week look ahead. Week of 5/4/2020 to 5/8/2020)*

1. Lake 4 Dam - finish formwork and rebar installation on outlet tower #2 and pour concrete with in the structure.
2. Lake 4 Dam - finish formwork and rebar installation in the Lake 4 emergency spillway cut-off wall and pour concrete in footer. Start importing and stockpiling riprap for spillway rundown.
3. Lake 4 – finish hauling and placing ripped claystone from Lake 4 sediment removal area as backfill to rebuild the Clough and True Ditch embankment and cross-section along the northern bank of Lake 3.
4. Lake 4 – begin hauling and placing crushed $\frac{3}{4}$ " minus claystone from Lake 4 sediment removal area as backfill to continue building the Lake 3 zoned embankment. Restart placing sand filter and clay within the embankment.
5. As necessary to facilitate the work dewatering operations occurred to remove nuisance water in work areas, Lake 3, Lake 4, West Lake and A-Frame Pond.
6. West Lake Dam – continue and finish hauling and placing ripped claystone from Lake 4 sediment removal area as backfill to rebuild the Clough and True Ditch cross-section and the southern shore line/bank of A-Frame Pond.
7. West Lake Dam – excavate subgrade, install formworks/rebar and pour concrete at the West Lake Dam outlet tower bridge abutment and the outlet flume.



4/28: West Lake Dam – finishing up riprap installation at the Foothills Outlet Ditch inlet structure.



4/29: West Lake Dam – looking west from the South Branch Ditch crossing at the ditch running water.

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Additional Notes

1. April 28th Weekly construction process meeting was held remotely via a conference call.
2. Project website for additional updates and information:
<https://www.bouldercounty.org/open-space/management/lake-4-west-lake-a-frame-pond/>



4/29: West Lake Dam – ripped claystone placement along the south bank of A-Frame Pond.



5/1: West Lake Dam – rough grading of the Clough and True Ditch looking east.



4/30: West Lake Dam – looking east at the reconstruction of the south bank of A-Frame Pond.



4/30: West Lake Dam – siphon outlet drain pipe - pouring of concrete flowable CLSM fill backfill/encasement around the pipe.



4/30: West Lake Dam – siphon outlet drain pipe – finished CLSM fill backfill/encasement around the pipe.



4/27: West Lake Dam – looking north at water in the reconstructed Foothills Outlet Ditch, downstream of the outlet structure and installed riprap bank protection.



4/27: West Lake Dam – placing riprap on the upstream embankment.



4/30: Lake 4 Dam – outlet tower #1 after formworks were removed. Installation of formworks occurring in tower #2.



4/30: Lake 4 Dam - Installation of formworks occurring in tower #2.



4/28: Lake 4 – clastone/bedrock ripping in the Lake 4 sediment removal area to be used as fill on the southern shore line/bank of A-Frame Pond in the West Lake Dam project.



4/30: Lake 4 Dam – emergency spillway cutoff wall excavated to the subgrade and ready for formworks and rebar.

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Longmont, CO
51 °F Mostly Cloudy

Recent Cities

Revelstoke, British Columbia, Canada (weather/ca/revelstoke/50.99,-118.19) Crested Butte, CO (weather/us/co/crested-butte/38.

40.17 °N, 105.16 °W

Longmont, CO Weather History

 **51° VANCE BRAND STATION** (/WEATHER/US/CO/LONGMONT/KLMO?CM_VEN=LOCALWX_PWSDASH) | [CHANGE](#) 

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April

27

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[View](#)

Apr 26

Apr 27

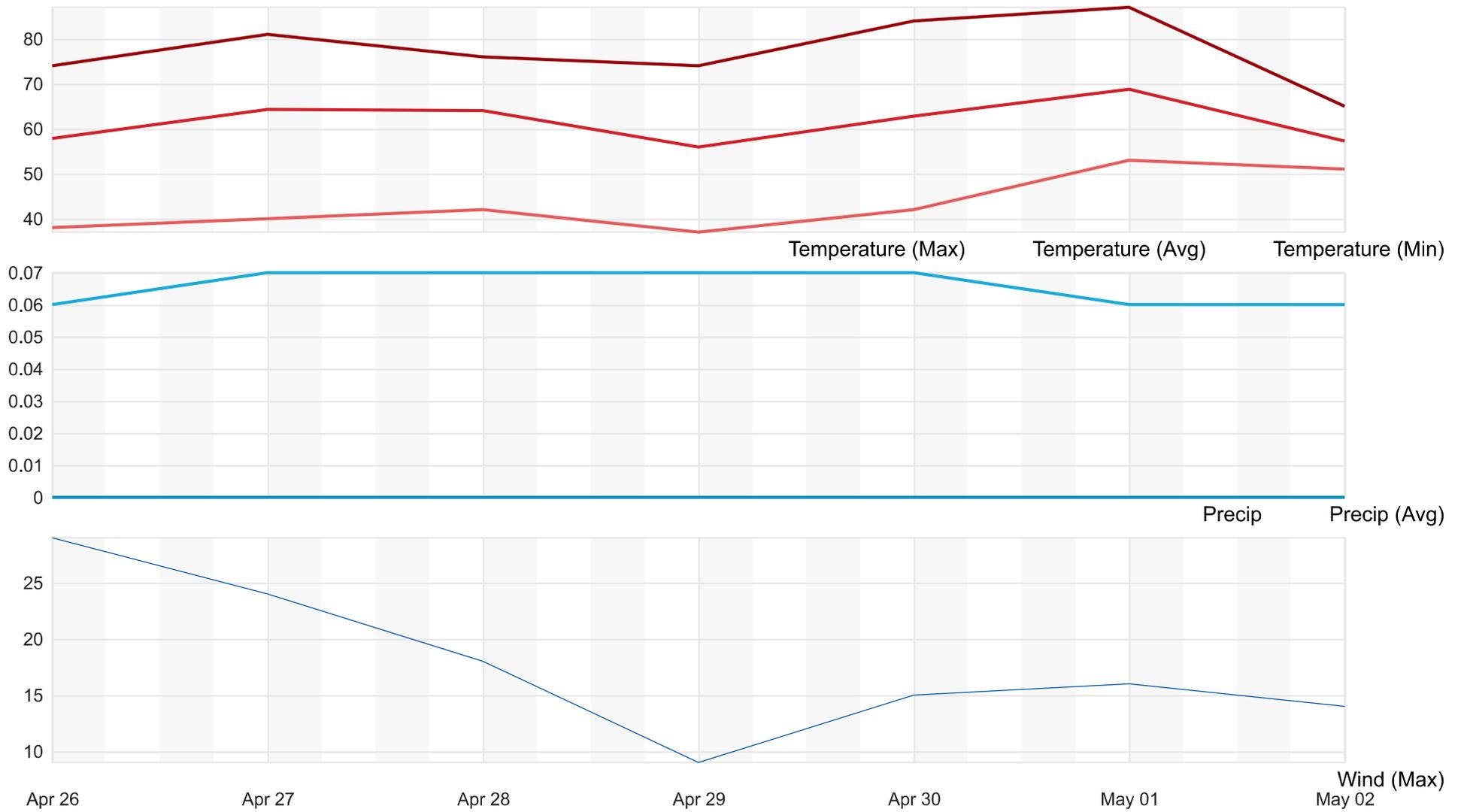
Apr 28

Apr 29

Apr 30

May 01

May 02



Summary

Temperature (° F)	Max	Average	Min	▲
Max Temperature	87	77.29	65	

Temperature (° F)	Max	Average	Min	▲
Avg Temperature	68.77	61.55	55.92	
Min Temperature	53	43.29	37	
Dew Point (° F)	Max	Average	Min	▲
Dew Point	52	35.92	20	
Precipitation (Inches)	Max	Average	Min	Sum ▲
Precipitation	0.00	0.00	0.00	0.00
Snowdepth	0.00	0.00	0.00	0.00
Wind	Max	Average	Min	▲
Wind	29	5.65	0	
Gust Wind	40	3.1	0	
Sea Level Pressure	Max	Average	Min	▲
Sea Level Pressure	25.22	24.98	24.76	

Daily Observations

Time	Temperature (° F)	Dew Point (° F)	Humidity (%)	Wind Speed (mph)	Pressure (Hg)	Precipitation (in)
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Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitation (in)
	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Total
Apr 26	74	57.8	38	40	33.8	26	79	44.8	17	29	7.3	0	25.0	25.0	24.9	0.00
27	81	64.3	40	41	33.2	25	75	38.5	13	24	6.2	0	25.0	24.9	24.8	0.00
28	76	64.0	42	42	30.7	20	70	33.7	12	18	7.7	0	25.2	25.0	24.9	0.00
29	74	55.9	37	35	28.8	23	78	42.6	16	9	4.2	0	25.2	25.1	25.0	0.00
30	84	62.8	42	46	36.3	30	71	40.9	16	15	3.7	0	25.0	24.9	24.8	0.00
1	87	68.8	53	47	40.6	32	66	39.2	14	16	6.2	0	25.0	24.9	24.8	0.00
2	65	57.3	51	52	48.0	45	86	72.4	52	14	4.2	0	25.1	25.0	25.0	0.00

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