

Mars 2020 Possible Cache Deployment

Ken Farley, Caltech
Mars 2020 Project Scientist

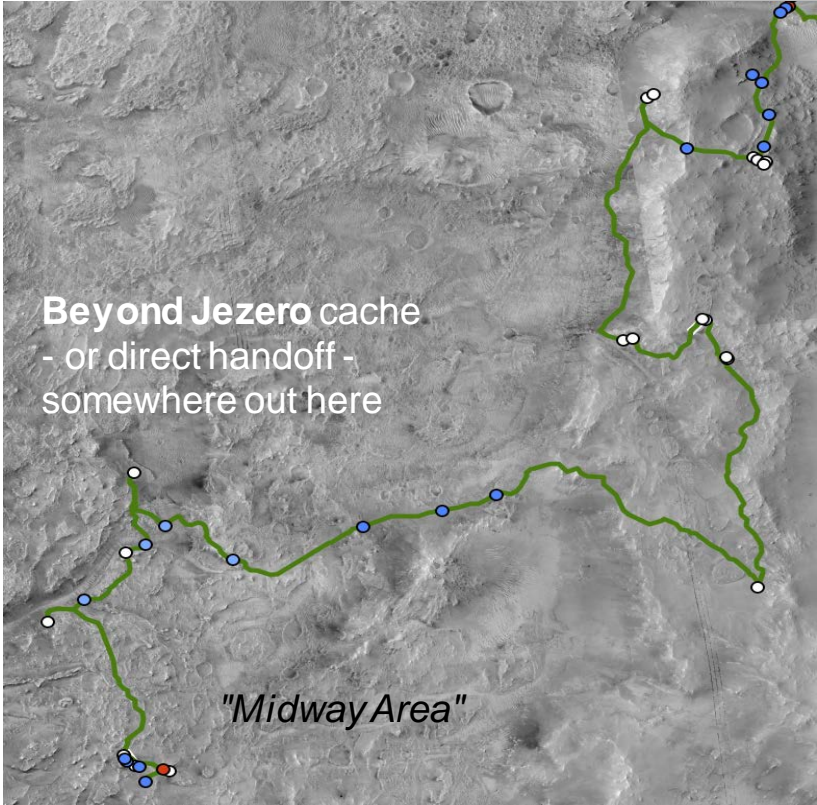
MEPAG 39
May 3, 2022



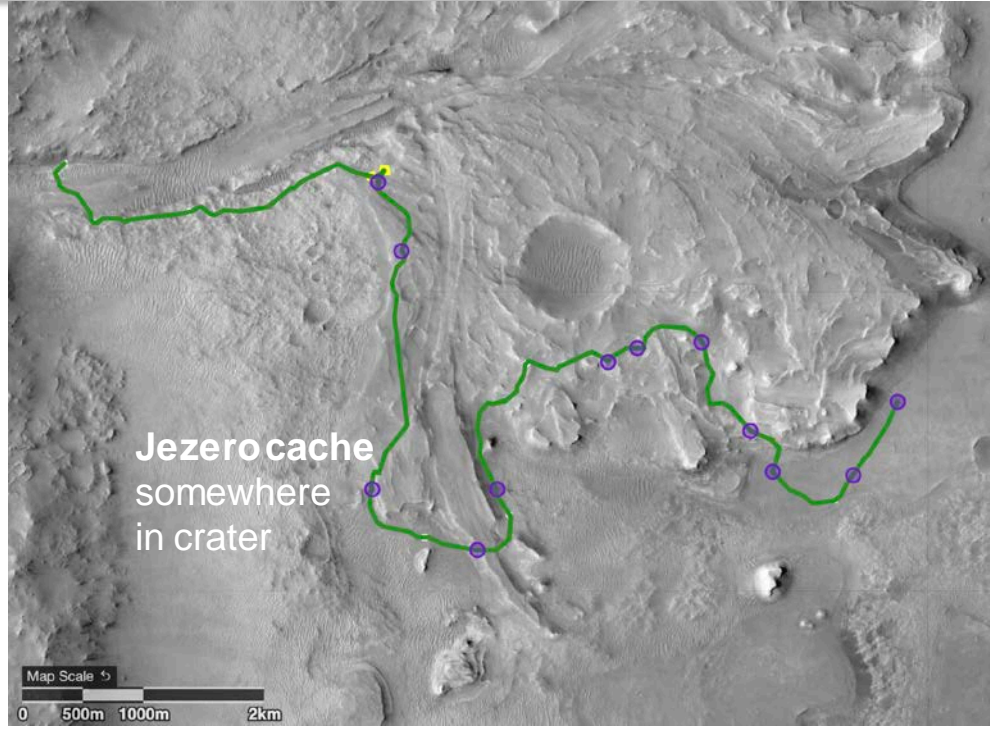
Jet Propulsion Laboratory
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Government sponsorship acknowledged.¹

Two Mars 2020 Mission Phases and Sample Cache Sites

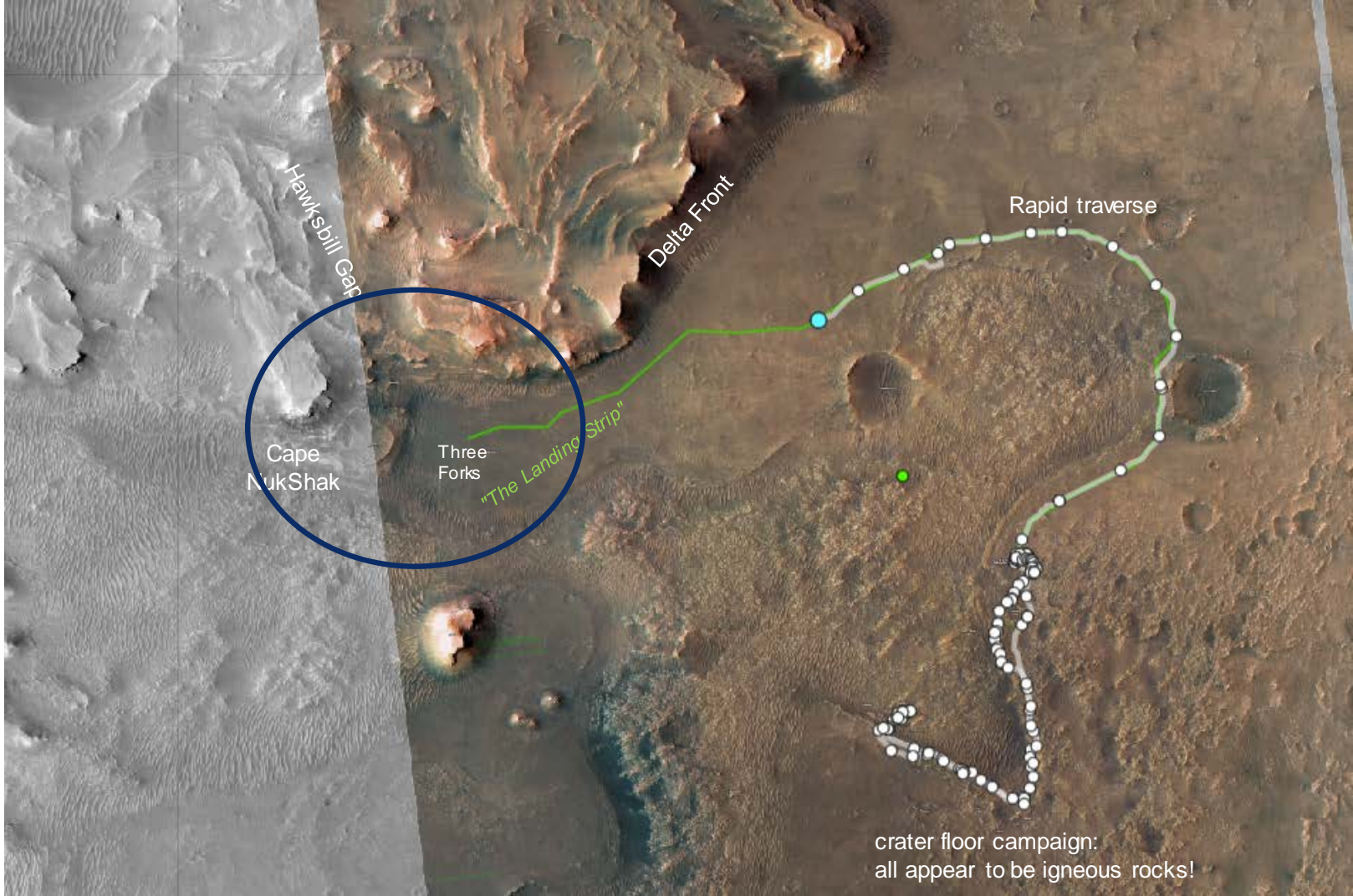


Beyond Jezero Phase
(requires extended mission)



Jezero Phase
(prime mission +)

(specific paths shown are NOT SIGNIFICANT)

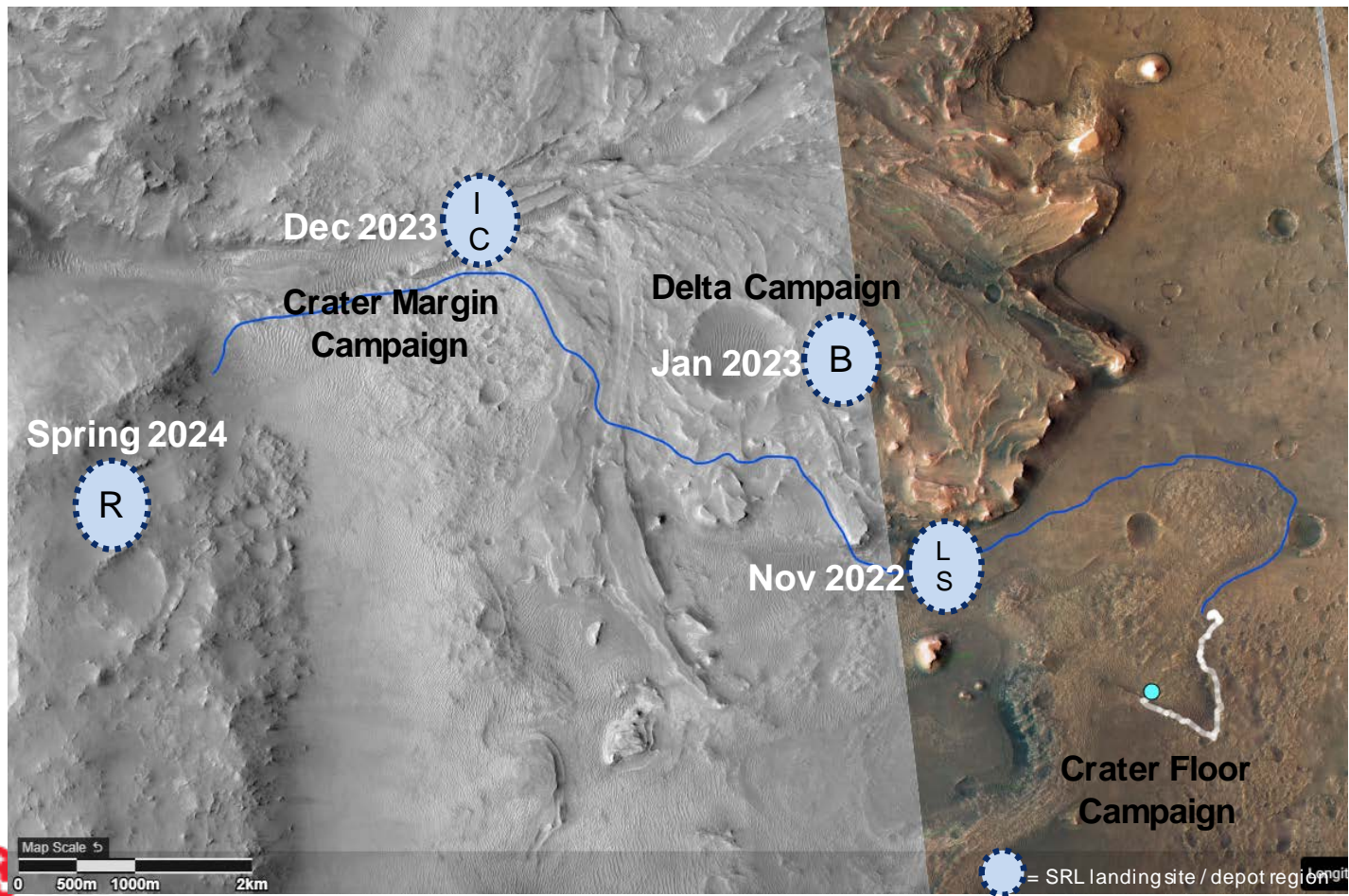


crater floor campaign:
all appear to be igneous rocks!

Considerations for Jezero Cache Deployment

1. The Jezero cache should contain ~12 of *Perseverance's* 43 tubes, allowing ~31 to be available for the second cache/handoff (full complement for OS, +1 spare).
2. Every sample in Jezero cache was/will be collected as a pair
 - allows Beyond Jezero cache to contain full sample diversity
3. When deployed, the Jezero cache will provide a target for MSR should *Perseverance* fail prematurely
 - *Perseverance* qualified lifetime is 1.5 MY (through ~end of 2023)
4. MSR needs *Perseverance* to document landing and cache depot sites
 - ensures acceptability of site
 - provides detailed data for sample pickup planning
 - *this survey may require several months of the mission's time*

Possible Cache Deploy Sites



- Map shows most likely locations and approximate dates for scouting / initial cache placement based on intersections between M2020 mission plan and MSR landing locations

LS: Landing Strip
B: Belva crater
IC: Inlet Channel
R: Rim of crater

Three Forks Landing Strip - Potential Depot Site

Advantages

1. **Expansive and remarkably benign**
2. Already traversed by *Perseverance*
3. Preliminary scouting largely completed
4. Will return to this area regardless of cache deploy decision

Good for MSR and minimum impact on Mars 2020 science mission



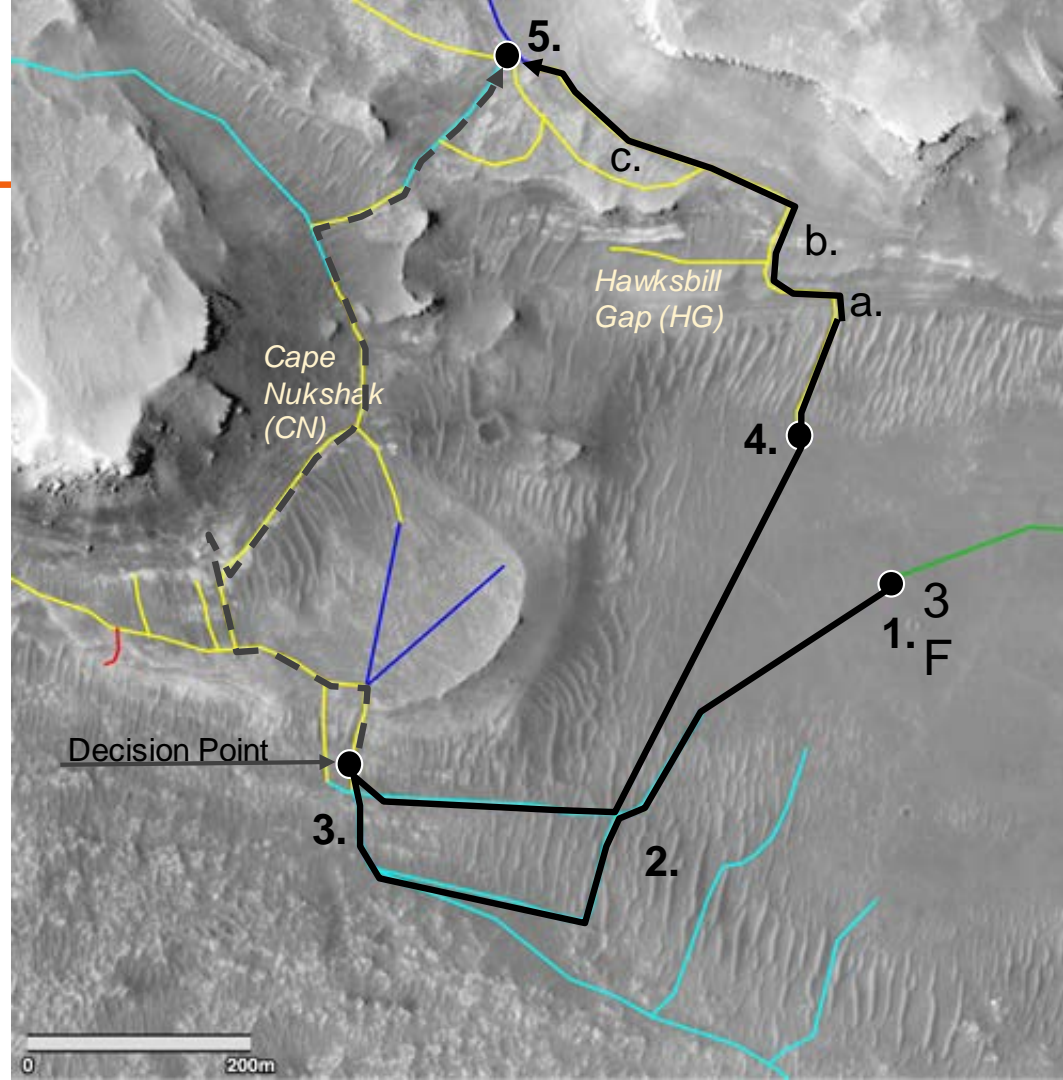
Delta Front Campaign

Current plan in progress: black line with multi-pass investigation of the region between points **a** and **c**, ending at **a**.

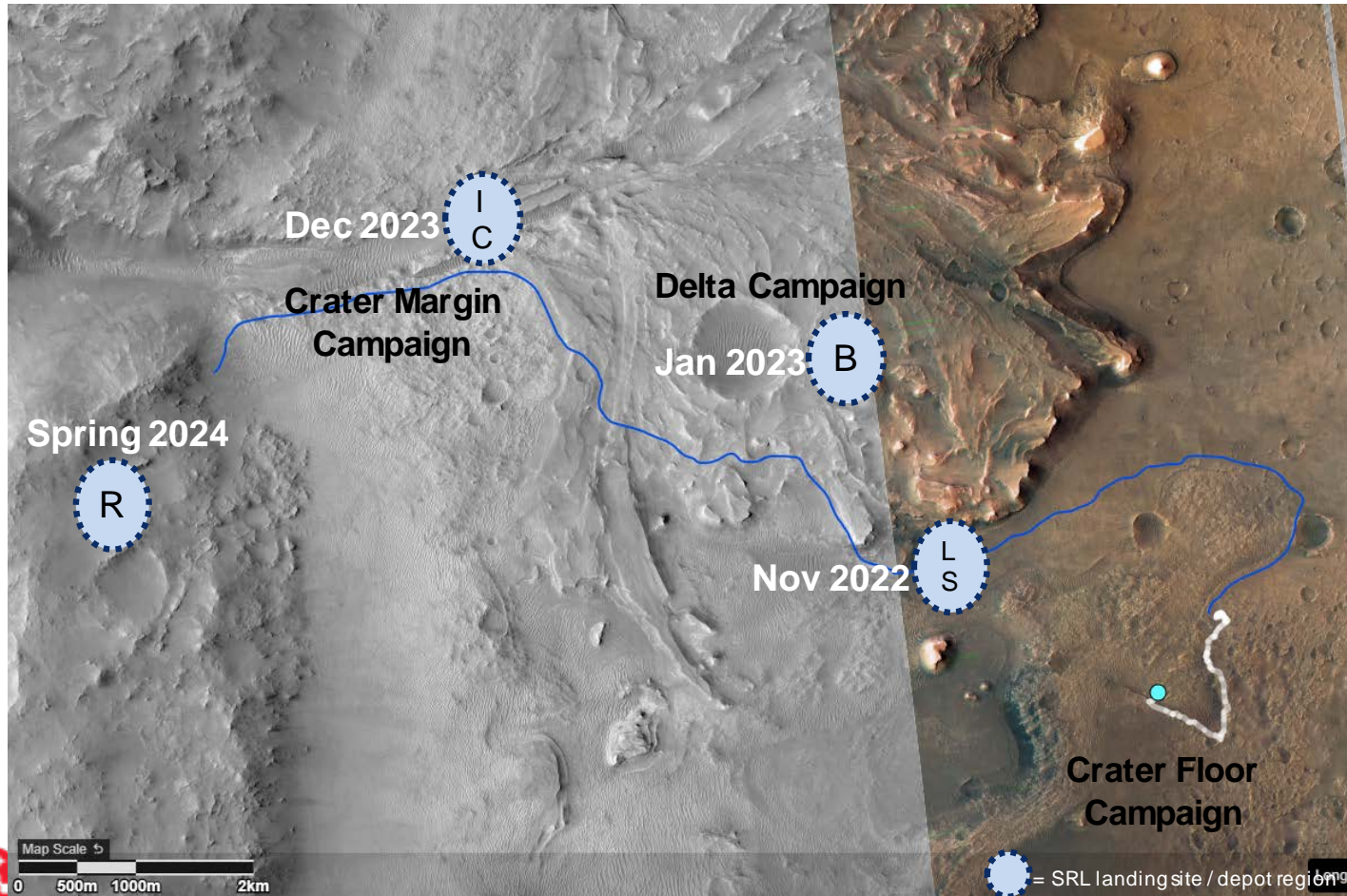
From **a** to possible depot site (near **1**) is just a few sols of driving.

Planned samples:

1. Delta fine-grained #1, paired cores
2. Delta fine-grained #2, paired cores
3. Delta coarse grained, paired cores
4. Regolith, paired cores
5. Witness tubes, paired



What samples may be in each potential depot?



SAMPLES

Landing Strip (LS)

- 1 witness tube
 - 2 Máaz (altered igneous) rocks
 - 2 Séítah (altered igneous) rocks
 - 1 atmosphere
 - 1 witness tube
 - 1 regolith
 - 2 delta fine-grained
 - 1 delta coarse-grained
- 11 total tubes**

or

Belva (B), add:

- 1 delta coarse-grained

12 total tubes

or

Inlet Channel (IC), add

- 1 marginal unit (carbonate, olivine?)
- 13 total tubes (full!)**

or

Rim (R), add

- 1 marginal unit
- 1 crater rim rock

15 total tubes

Downselect required from 15 to 13

Three Forks Landing Strip - Potential Depot Site

Cache deployment could occur near the end of 2022

