

December 7, 1989

**To:** George Seielstad  
**From:** Buck Peery  
**Subj:** Comments regarding utilities and other physical requirements  
 for proposed sites 3, 4 & 5 for the GBT.

**GENERAL:** Providing utilities to the sites appears very little different between the sites, except for the question of drainage at site 4 and the advantage that site 5 would have, in that the existing electric circuit to the 300-ft. control building could become a dedicated circuit for the GBT. A list of comparative requirements and a site map is attached.

The final decision will probably be determined by the horizon requirements or RFI.

With regard to horizon, a more detailed study is under way. The visual impression is that site 3, due to its elevation and small number of trees to be cut, would be the first choice, with site 5 second choice because of the number of trees to be cut.

RFI is somewhat different: Site 4 is screened by trees, if too many are not cut, from everything except the 140-ft. However, due to the height of the telescope, it is difficult to predict how effective this screening will be. Site 3 is close and in plain view of the Works Area (2000 ft.) and the main site buildings. Again, the effect is difficult to predict. Sites 3 and 4 are about the same distance from the highway, (Site 5 is in between the Interferometer Control Building and the 140-ft. and in plain view. Site 5 is farther from the highway, with some screening.) The height of the telescope is such that it is very probable the dish and apex will be visible from most of the highway east of the site.

All three sites will have about the same exposure to the wind, as there are no high points or other barriers nearby to shield them. They are near the center of the valley between the mountains to the east and west of the site.

The philosophy of operation, which is yet to be determined, might eliminate the need for a building at the telescope. If the building is not needed, a well and septic system will not be needed. Other utilities would not be affected.

**Site 3:**

Access Road: Approximately 450 ft. Off paved main-site road. No major obstacles.

Drainage: Very good. Well above nearby stream. Pintle bearing room could use gravity drain.

Power: Estimated demand 525 KVA. Approximately 400 ft. to the existing East End Feeder or 3000 ft. to main substation - East End Feeder present load is approximately 225 KVA, 22 percent loaded. If the GBT were added, the circuit would be approximately 75 percent loaded. If the service is taken from the main substation, the circuit would be designed to serve just the GBT, thus a dedicated circuit. The East End Circuit serves the Works Area,

Lab Building, Residence Hall and Warehouse. The main substation (2500 KVA) is approximately 32 percent loaded. Adding the GBT will increase this to approximately 53 percent loaded.

- Telephone: Approximately 700 ft. to access to the underground conduit for the existing telephone system. Circuits available at this point are unknown.
- Sewerage: Very probably a septic tank and drain field will be required. The site sewage plant is 2000 ft. away, but it is doubtful it is accessible because of the terrain.
- Water: Water could be taken from the site system near the Works Area gate approximately 3000 ft. away, or by drilling a well.
- Soil: Alluvial overburden somewhere between 15 and 50 ft. deep over bedrock consisting of medium to soft shale. The overburden has an approximate bearing capacity of 4000 lbs. per sq. ft., and the bedrock 8000 lbs. per sq. ft. or better. A complete soils investigation and report should be made for the site chosen.
- Elevation: Approximately 2700 ft. at ground level.
- Air Strip: The site is approximately 2200 ft. north and east of the airstrip and out of approach zone.

#### Site 4:

- Access Road: Approximately 500 ft. Off paved main-site road. No major obstacles.
- Drainage: Questionable, due to nearby stream and areas of swamps to the east of the site drained by this stream. A sump pump will be required for the pintal bearing room.
- Power: Estimated demand 525 KVA. Approximately 300 ft. to the existing Interferometer Feeder, or 2900 ft. to the main substation. The Interferometer feeder load is approximately 85 KVA, 9 percent loaded. If the GBT were added, the circuit would be approximately 61 percent loaded. If the service is taken from the main substation, the circuit would be designed to serve just the GBT, thus a dedicated circuit. The Interferometer circuit serves the Interferometer control building, 85-2 and 85-3. The main substation (2500 KVA) is approximately 32 percent loaded. Adding the GBT will increase this to approximately 53 percent loaded.
- Telephones: Approximately 600 ft. to access to the underground conduit for the existing telephone system. Circuits available at this point are unknown.
- Sewerage: A septic tank and drain field will be required.
- Water: Drilling a well will be required.
- Soil: Alluvial overburden somewhere between 15 and 50 ft. deep over bedrock consisting of medium to soft shale. The overburden has an approximate bearing capacity of 4000 lbs. per sq. ft. and bedrock 8000 lbs. per sq. ft. or better. A complete soils investigation and report should be made for the site chosen.

Elevation: Approximately 2660 ft. at ground level.

Air strip: The site is approximately 700 ft. southwest of the west approach center line, just outside the clear zone and higher than the slope path. Due to the closeness and height of Little Mountain off the west end of the runway, it is necessary to turn soon after takeoff to the west. This means a turn over or to the west of this site. A turn in the opposite direction would be over or west of the 140-ft. telescope. The 140-ft. is east of, just outside of, and higher than the clear zone slope path.

#### Site 5:

Access Road: Approximately 400 ft.. Off paved main-site road. No major obstacles.

Drainage: Fair. The site slopes to the west can get gravity drain out of pindle bearing room.

Power: Estimated demand 525 KVA. Approximately 500 ft. to the existing 300-ft. feeder (auxiliary power line) or 2100 ft. to the main substation. 300-ft. feeder present load approximately 50 KVA about 5 percent loaded. If the GBT were added, the circuit would be approximately 57 percent loaded. If the service is taken from the main substation, the circuit would be designed to serve just the GBT, thus a dedicated circuit. The 300-ft. circuit serves the 300-ft. control building only. It is indefinite as to future use of the building. The main substation (2500 KVA) is approximately 32 percent loaded. Adding the GBT will increase this to approximately 53 percent loaded.

Telephone: Approximately 1000 ft. to access to the underground conduit for the existing telephone system. Circuits available at this point are unknown.

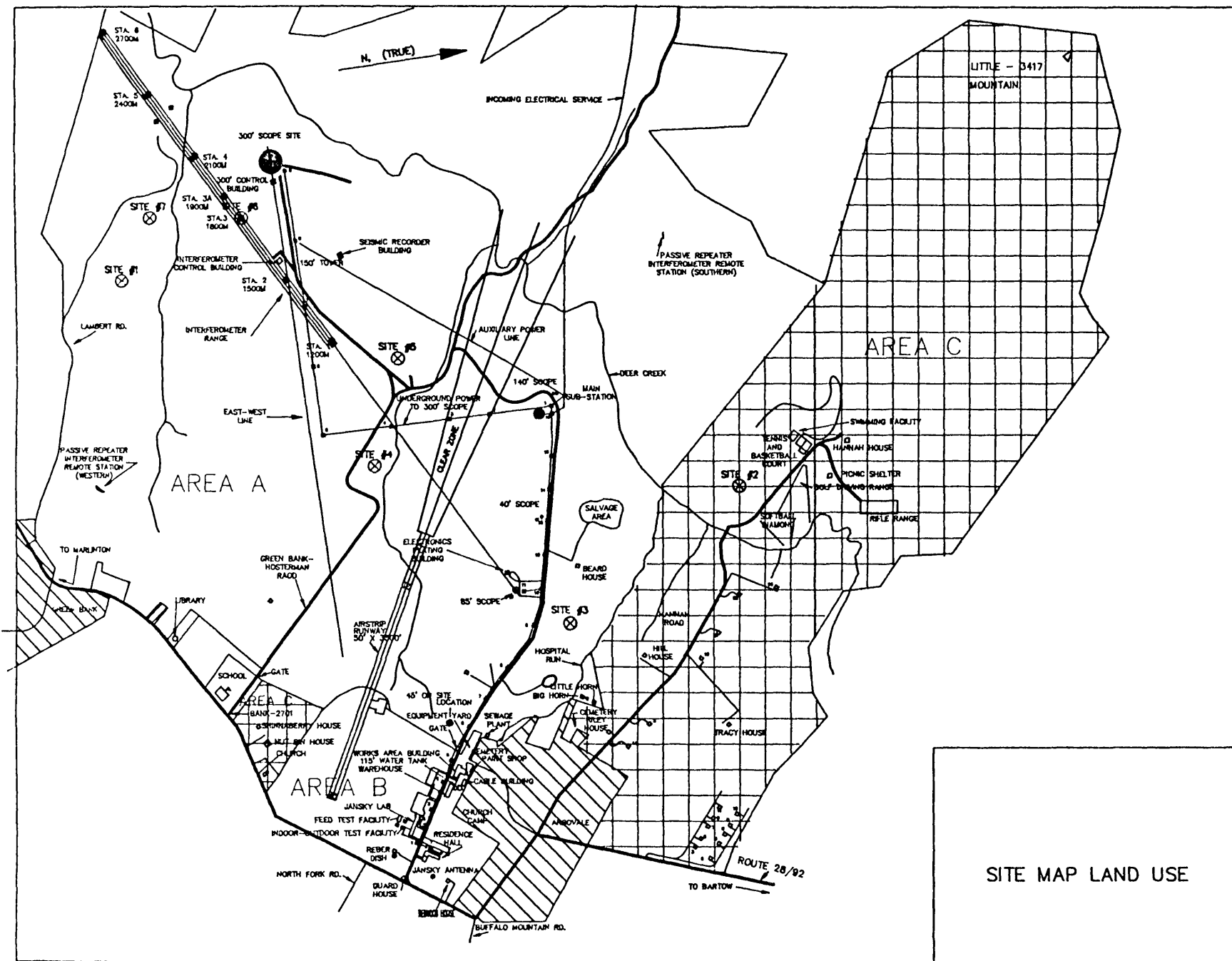
Sewerage: A septic tank and drain field will be required.

Water: Drilling a well will be required.

Soil: Alluvial overburden somewhere between 15 and 50 ft. deep over bedrock consisting of medium to soft shale. The overburden has an approximate bearing capacity of 4000 lbs. per sq. ft. and bedrock 8000 lbs. per sq. ft. or better. A complete soils investigation and report should be made for the site chosen.

Elevation: Approximately 2647 ft. at ground level.

Air Strip: The site is approximately 1000 ft. southwest of the west approach center line just outside the clear zone and higher than the slope path. Due to the closeness and height of Little Mountain off the west end of the runway it is necessary to turn soon after takeoff to the west. This means a turn over the site. A turn in the opposite direction would be over or west of the 140-ft. telescope. The 140-ft. is east of and just outside and higher than the clear zone slope path.



- TELESCOPE
- POWER MANHOLE
- HOUSE
- ▢ BARN
- CONTROL BUILDING
- ⊗ PROPOSED SITE FOR NEW TELESCOPE

#### NOTES

1. AREA A = TELESCOPE AREA.
2. AREA B = ADMINISTRATION AREA.
3. AREA C = RESIDENTIAL AND RECREATION AREA.

SITE MAP LAND USE