NPS Form 10-900
(Rev. 8-86)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name Gaithersburg Latitude Observatory

other names/site number

2. Location

street & number 100 DeSellum Avenue ☐ not for publication

city, town Gaithersburg Latitude Observatory ☐ vicinity

state Maryland code MD county Montgomery code 031 zip code 20877

3. Classification

Ownership of Property	Category of Property	Number of Resources within Property	
		Contributing	Noncontributing
☐ private	☒ building(s)	1	2 buildings
☒ public-local	☐ district		sites
☐ public-State	☐ site	1	structures
☐ public-Federal	☐ structure	5	objects
	☐ object	7	2 Total

Name of related multiple property listing:

Number of contributing resources previously listed in the National Register 9

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this ☐ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

Signature of certifying official Date

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

Signature of commenting or other official Date

State or Federal agency and bureau

5. National Park Service Certification

I, hereby, certify that this property is:

☐ entered in the National Register.
☐ See continuation sheet.

☐ determined eligible for the National Register. ☐ See continuation sheet.

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other, (explain:) _____

Signature of the Keeper Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)
Research Facility

Current Functions (enter categories from instructions)
Research Facility

7. Description

Architectural Classification (enter categories from instructions)
No style

Materials (enter categories from instructions)
foundation concrete, fieldstone
walls wood
roof wood
other

Describe present and historic physical appearance.

The Gaithersburg Latitude Observatory is situated west of the southern end of DeSellum Avenue and south of James Street on a 2.3 acre tract in the city of Gaithersburg, Maryland.[1]

The Gaithersburg Latitude Observatory is a small, 13-foot-square one-story building. There is a wooden louver-covered gable roofed entrance porch on the west facade. The original porch door is missing. There is a small shed-roofed ell on the east side. The building has a concrete mortar and fieldstone foundation. The gable roof consists of two sections that move apart on wheels exposing the center interior of the building. The roof is constructed of inch tongue-and-groove board. In the eaves, the rafter ends are cut back and covered by a tilted fascia board. A decorative wooden five-pointed star is mounted in the center of each gable end.

The inner wall plates consist of double two by eights resting on edge. On the north and south walls, these plates extend about three feet beyond the building to support the roof in its open position. These extended plates are capped with four by fours supporting the metal U-track in which the roof wheels travel. Parallel to the U-track, about six inches into the building and down about four inches, are a pair of one-inch-thick iron rods. These rods extend the length of the north and south plates, piercing the east and west walls. They are moved from inside the building. Each section can be moved independently by a rope and pulley system. There are two decorated ventilators, one on each roof section near the center of the building. As a part of the decoration, a metal five-pointed star caps each ventilator.

The building is double walled. The inner wall consists of four by fours overlayed with tongue and groove boards on the inside. There is a nine-inch space between the walls. The outer wall consists of four by fours covered on the outside with horizontal framed wooden louvers. The outside walls are connected to the inner walls only at the building corners, the entrance and the door to the east ell. The inner and outer sills appear to rest on the foundation. The exterior wall ends at the ground in a bevelled wooden water table. There is a double floor in the main room with a concrete pyramid-shaped pier in the center

[x] See continuation sheet

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:
[X] nationally [ ] statewide [ ] locally

Applicable National Register Criteria [X] A [ ] B [ ] C [ ] D NHL Criteria 1

Criteria Considerations (Exceptions) [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

Areas of Significance (enter categories from instructions)	Period of Significance	Significant Dates
National Register Significance: Science	1899-1982	1899-1982
National Historic Landmark Significance: Science		
Subtheme: Physical Science	**Cultural Affiliation**	
Facet: Astronomy, Earth Science		

Significant Person

Architect/Builder
Edwin Smith

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

Summary

The Gaithersburg Latitude Observatory is significant for its association with the study of polar motion, and for its symbolic value in representing an important and long-lived program of international scientific cooperation. Established in 1899 by the International Geodetic Association, the International Polar Motion Service was a cooperative effort among scientists worldwide to study the Earth's wobble on its rotational axis. The Gaithersburg Latitude Observatory was one of six observatories around the world (in the United States, Russia, Japan, and Italy) commissioned under this program.

Between 1900 and 1960 these observatories were the best source of information on polar motion available to scientists. Data supplied by the six latitude observatories have been used in hundreds of scientific papers and studies investigating the geophysics of the earth. The observatories have enabled geodesists to better understand the size and shape of the earth and astronomers to adjust their observations for the effects of polar motion. In more practical terms, the work done by the observatories contributed to studies attempting to determine earthquake mechanisms and the elasticity of the earth, and to predict climate variations. The space program has also benefited from this work; polar motion study is necessary to determine orbit patterns of spacecraft and satellites, and aids tracking techniques used in deep space navigation.

The latitude observatories made a major contribution to science on an international scale. The research undertaken in these small, simple structures not only fueled all work done in earth motion for decades, but transcended the differences of man during times of war and international strain. Despite the location of stations in two Allied nations and two Axis nations during World War II, cooperation between the observatories continued and their important work did not cease. From its construction in 1899 until the obsolescence of man-operated telescopic observation forced its closing in 1982, the Gaithersburg Latitude Observatory played an integral role in this important scientific endeavor.

[ ] See continuation sheet

9. Major Bibliographical References

SEE CONTINUATION SHEET

☒ See continuation sheet

Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey # _____
- ☐ recorded by Historic American Engineering Record # _____

Primary location of additional data:

- ☐ State historic preservation office
- ☐ Other State agency
- ☐ Federal agency
- ☐ Local government
- ☐ University
- ☐ Other

Specify repository: _____

10. Geographical Data

Acreage of property 2.3 acres

UTM References

	Zone	Easting	Northing
A	18	309930	4334030
B			
C			
D			

☐ See continuation sheet

Verbal Boundary Description

SEE CONTINUATION SHEET
SEE CONTINUATION SHEET

☒ See continuation sheet

Boundary Justification

The nominated property, 2.3 acres, comprises the acreage historically associated with the resource. The property is surrounded on the north, south, and west by modern residential development, and the grounds of a recently constructed public high school abuts it on the south.

☐ See continuation sheet

11. Form Prepared By

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of the dirt floor that is sunk four feet below the floor and tapers as it extends up to about waist height. The observing telescope and instruments were mounted on it. The telescope is now in storage in Corbin, Virginia. The southern wall has a central section of two by three feet which can be lowered to expose two sliding wooden sashes in the inner wall.

About 200 feet to the south of the observatory is the Meridian Mark Pier (azimuth marker), a green metal pagoda-shaped object about four feet high by two feet square, which was used to align the Zenith Telescope.

Five Coast and Geodetic Survey monuments are located on the property of the observatory. These monuments establish exact geographic longitude and latitude positions, elevation above sea level, and the direction of the magnetic north field of force. The Observatory RM-1 monument, dated 1966 is still used by the National Oceanographic and Atmospheric Administration (NOAA), for positional testing of new technology in the Global Positioning System (GPS) Receiver which tracks orbital satellites. A 1-1/2 story brick caretaker's house and garage, constructed in 1947, is seventy-feet to the south of the observatory building.

Only the observatory building, the Meridian Mark Pier, and the five monuments described above are considered to contribute to the significance of the Gaithersburg Latitude Observatory as a National Historic Landmark. The caretaker's house and garage do not contribute to the significance of the site and are excluded from this nomination.

History

The United States Coast and Geodetic Survey Superintendent's Report for 1898-99 records an agreement reached by members of the International Geodetic Association to establish six observatories for the purpose of measuring the variations in latitude caused by the earth's wobble on its polar axis. This program, known as the International Polar Motion Service, was initiated in 1899 with the establishment of six stations, all located near the parallel of 39 degrees 08 minutes north latitude (to permit uniform computations), and were at Gaithersburg, Maryland; Cincinnati, Ohio; Ukiah, California; Mizusawa, Japan; Charjui in Russian Turkestan; and Carloforte, Sardinia, Italy. Economic constraints forced the closing of the Cincinnati observatory in 1932. The Charjui station was lost in World War I, and an observatory was substituted for it at Kitab, near Samarkand in the Soviet Union.

The Gaithersburg Observatory was constructed by Edwin Smith, Chief of the Instrument Division of the U.S. Coast and Geodetic Survey (This agency, now the National Oceanic and Atmospheric Administration, operated the International Polar Motion Service observatories in the United States.) Between 1891 and 1892 Smith had been conducting measurements of the variation of latitude on a volunteer basis from his home in Rockville, Maryland, and made nearly 1800 individual measurements on 146 nights, until his regular work forced him to discontinue his observations. However, when the International Geodetic Association allocated funds for the purchase of land in Gaithersburg in 1898, Smith was entrusted with the construction of the Gaithersburg Observatory, which began operating on October 18, 1899.

The original six observatories around the world worked in close concert carrying out a program of star study selected by Dr. Kimura, the astronomer in charge of the Mizusawa station. Twelve groups of stars, each containing six pairs of stars, were selected. Two groups of stars were observed each night at each station in accordance with a schedule of dates, time, and duration prepared by Dr. Kimura. The irregular daily motion of the earth's axis was believed to be extremely small, but the extent could be determined by the precise measurements of the stars. The six stations worked documenting the data to support latitude variations until 1914. Economic constraints forced the closing of the Gaithersburg and Cincinnati stations in 1915. During World War I contact was lost with the Charjui station. When communication with the Russian observers was resumed, the association learned that star movement data had been recorded through 1919. After World War I the Soviets continued to participate in this program with the establishment of a new station in Kitab in Uzbekistan, USSR.

While the Cincinnati station remained closed and was eventually dismantled, the Gaithersburg Latitude Observatory resumed operations in 1932. Upon reopening, it functioned continually in cooperation with its sister observatories throughout the world until computerization rendered its use obsolete in 1982.

The scientific work conducted at the Gaithersburg Latitude Observatory illustrates the systematic approach sought by the International Geodetic Association to measure the degree of "wobble" occuring on the earth's north-south axis. Although superseded by newer technologies using satellite observations the wealth of data returned from Gaithersburg and the other five observatories is used by scientists today to determine polar motion; the size, shape and physical properties of the earth; to predict climate and earthquakes; and to aid the space program through the precise navigational patterns of orbiting satellites.

The city of Gaithersburg designated the observatory as a local historic site in December 1983. In July 1985 the site was listed in the National Register of Historic Places. The observatory property was conveyed to the city of Gaithersburg in May 1987 by the federal government, with the proviso that it be preserved as a historic monument and used for the benefit of the public. At the present time the city of Gaithersburg plans to restore the latitude observatory and build a science education center, on the site of the caretaker's house, for the use of the school children of Gaithersburg.

Footnotes

1. Most of the material in this form was adapted from the following source.

   Kathleen C. Bowers and James Sengstack, "National Register of Historic Places Inventory-Nomination Form--Gaithersburg Latitude Observatory" (Gaithersburg, Maryland: City Planning Department, 1984).

Bibliography

Bowers, Kathleen C. and James Sengstack. "National Register of Historic Places Inventory-Nomination Form--Gaithersburg Latitude Observatory." Gaithersburg, Maryland: City Planning Department, 1984.

Hosayama, Kennosuke. "Reorganization Plan of the International Latitude Observatory of Mizusawa," Publications of the International Latitude Observatory of Mizuaswa, 1987, pp. 1-26.

Lambert, W. D. "Who Shot Those Peas," Geodetic Letter, September 1936, pp. 1-9.

Smith, Edwin and F. Schlesinger. The International Latitude Service at Gaithersburg, Md., and Ukiah, Cal., under the Auspices of the International Geodetic Association, No Place of Publication, Coast and Geodetic Survey. Appendix No. 5, 1900.

Townley, Sidney D. "Variation of Latitude," Publications of the Astronomical Society of the Pacific, August 10, 1907, pp. 210-212.

Wilcove, Raymond. "Why Mother Earth Wobbles," Environmental Science and Services Administration World, October 1967, pp. 10-11.

VERBAL BOUNDARY DESCRIPTION:

Beginning at a stone planted in the ground at intersection of lands of Ignatius T. Fulks, Vandelia Owen, and Philomen M. Smith whose coordinates on the Maryland State Plane Coordinate System are X=743,442.70 feet, Y=474,772.03 feet, and running thence S 46°30 W 300 feet; thence S 43°30' E 270 feet; thence N 46°30' E 444.6 feet; thence N 71°40' W 53.5 feet to a stone whose coordinates are X= 743,691.26 feet, Y=474,722.99 feet; thence still N 71°40 W 252.8 feet to the place of beginning containing 2.307 acres of land more or less.