1. NAME OF PROPERTY

Historic Name: PULPIT ROCKS

Other Name/Site Number: N/A

2. LOCATION

Street & Number: Old Huntingdon-Hollidaysburg Tpk. Not for publication: ___

City/Town: Huntingdon Vicinity: X

State: PA County: Huntingdon Code: 061 Zip Code: 16652

3. CLASSIFICATION

Ownership of Property
Private: X
Public-Local: ___
Public-State: ___
Public-Federal: ___

Category of Property
Building(s): ___
District: ___
Site: X
Structure: ___
Object: ___

Number of Resources within Property

Contributing	Noncontributing	
____	____	buildings
1	____	sites
____	____	structures
____	____	objects
1	0	Total

Number of Contributing Resources Previously Listed in the National Register: 0

Name of Related Multiple Property Listing: N/A

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.

_____ _____
Signature of Certifying Official Date

_____
State or Federal Agency and Bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria.

_____ _____
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 _____
____ Determined eligible for the _____
National Register
____ Determined not eligible for the _____
National Register
____ Removed from the National Register _____
____ Other (explain): _____

_____ _____
Signature of Keeper Date of Action

6. FUNCTION OR USE

Historic:	Landscape	Sub:	Natural Feature
Current:	Landscape	Sub:	Natural Feature
	Education		Research Facility

7. DESCRIPTION

ARCHITECTURAL CLASSIFICATION: N/A
MATERIALS: N/A

Describe Present and Historic Physical Appearance.

The Pulpit Rocks site is located on Warrior Ridge, approximately one-and-a-half miles northwest of the town of Huntingdon, Pennsylvania, along the old Huntingdon-Hollidaysburg Turnpike, known also as old U.S. 22 (sometimes referred to as the old Pennsylvania Turnpike). The major section of Pulpit Rocks belongs to Juniata College, with the remainder of the site being owned by John V. Eisenberg heirs and used by a local game and hunt club. That section of the Rocks owned by Juniata College was donated to the college by the Africa family, a local family prominent in Pennsylvania government.[1] The family believed the college would be more able to insure the long term perservation of the site than if it remained in private hands. The deed of transfer requires the college to preserve the site in perpetuity.[2]

Fortunately, the route of new U.S. 22 was changed and there was no longer a threat to Pulpit Rocks. Because of the new location of the main highway the old road has remained virtually unchanged since it was featured in George Lehman's 1840 watercolor which served as the frontispiece for the publication of the First Geological Survey of Pennsylvania by Henry D. Rogers, published in 1858. Rogers, who was Pennsylvania's first State Geologist, described Pulpit Rocks in his final report as follows: "Upon the upper plateau of the Warrior Ridge the traveller will see piles of blocks, called the Pulpit Rocks, remnants of the once more widely outspread upper strata, reared in rude columns one upon another." With reference to Lehman's watercolor, Rogers noted: "A correct sketch of a group of these is represented in the

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[1] Donald M. Hoskins, Letter to John W. Bond, November 18, 1992. Dr. Hoskins is the State Geologist for the Commonwealth of Pennsylvania.

[2] Robert Washburn, Personal Interview with John W. Bond at Pulpit Rocks, Huntingdon County, Pennsylvania, November 4, 1992. Dr. Washburn is the Chairman of the Geology Department of Juniata College, Huntingdon, Pennsylvania. He uses Pulpit Rocks as an outdoor classroom for his geology students.

Frontispiece to this volume."[3] A later geologist, I. White, writing in 1885 for the Second Geological Survey of Pennsylvania describes Pulpit Rocks much in the same manner as Rogers:

> "In many places on the crest of Warrior Ridge the sandstone may be seen forming rock cities, isolated piles of rock 50′ high, with passage-ways from one to ten feet wide between them. One of these localities near the road to Alexandria is especially named the 'Pulpit Rocks.'"[4]

It is commonly believed that George Lehman, who did the watercolor of Pulpit Rocks, was the first professional artist hired by a state or federal survey to sketch important sites illustrating government reports.[5] The State Geologist for the Second Geological Survey of Pennsylvania, J. Peter Lesley, describes the lithographic reproduction of Lehman's water color as one of the most striking. Lesley called Lehman's drawings "exquisite water color drawings" as "fit for the walls of any museum in the world." "The survey of no region," he says, "has even been more magnificently represented, and that with as much faithfulness to its natural history, as skill and taste in color and perspective."[6]

The rock is often referred to as the Oriskany, or the Ridgeley member of the glass sands as spoken of in the vernacular.[7] To most visitors to the area the Oriskany is first observed in its outcropping at the quarry in Mapleton. The rock steeply dips over into the Mapleton area as it continues under the town of Huntingdon and then comes up at Pulpit Rocks. Fortunately, the Pulpit Rocks area has never been mined. There are abandoned sand quarries a short distance northwest of Pulpit Rocks. Also, extensive iron ore deposits can be found in the nearby

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[3] William Sevon, ed., *Guidebook for the 51st Annual Field Conference of Pennsylvania Geologists in Commemoration of the 150th Anniversary of the Pennsylvania Geological Survey: Selected Geology of Bedford and Huntingdon Counties*, (Harrisburg, PA: Bureau of Topographic and Geologic Survey, 1986), p. 128.

[4] *Ibid.*, p. 129.

[5] Donald M. Hoskins, Letter to Harry Butowsky, April 26, 1990.

[6] J. P. Lesley, *Second Geological Survey of Pennsylvania, 1874-5-6, Historical Sketch of Geological Explorations in Pennsylvania and Other States* (Harrisburg, PA: Board of Commissioners, 1876), pp. 134-135.

[7] Washburn.

Keyser-Helderberg limestone formation running southwest to northeast.[8] Strip mining has taken place west of Pulpit Rocks.[9]

Within one-half mile of the rocks toward the town of Huntingdon extensive logging has recently occurred. That activity is not visible from Pulpit Rocks.

The crest of Warrior Ridge in the vicinity of Pulpit Rocks has the appearance of Karst topography.[10] Karst is characterized by porous limestone containing deep fissures and sinkholes and underground caves and streams. Underneath the Pulpit Rocks formation is the Keyser-Helderberg limestone. All through the Warrior Ridge area where there is sand occurring, there is also evidence of the dissolving of limestone. So, in addition to the sinkholes, there are caves, such as Lincoln Caverns, where the limestone has collapsed and, in some cases, the sand, being a relatively thin layer, has also collapsed.[11]

Pulpits are the weathered remnants of the ridge-forming Oriskany formation laid down approximately 390 million years ago when the area was covered by an inland sea. Weathering is still going on along the joint surfaces, especially because of the rectilinear nature of the joints, and is proceeding rapidly, isolating the rocks that now look like pulpits.[12] The weathering has resulted in the formation of an almost pure sand soil. It does not take much effort to disaggregate the rocks which have broken off because of the erosion along the joints. One can pick up a small fragment of the stone and crush it in the hand. The remaining formation in the horizontal position is very resistant to erosion because of the good quartz with which it is cemented. It is that quality of resistance that made it a good ridge former, such as at Warrior Ridge.

These sandy soils are very deficient in nutrients and support only scrub vegetation. That area, therefore, is not, and never has been, suited for farming. The highly acid nature of the soils is conducive to the growing of mountain laurel and various evergreens. Also present are scrub oaks and birches. In May the area is profusely covered with pink lady slippers, another acid-loving species, which follow the outcrop belt.[13] What is growing there today would be the result of a neatral process, meaning

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[8] I. C. White, *Geology of Huntingdon County* (Harrisburg, PA: Board of Commissioners, 1885), p. 216.

[9] United States Department of the Interior, Geological Survey, Alexandria Quadrangle, Huntingdon County, Pennsylvania.

[10] Sevon, p. 131.

[11] Washburn.

[12] *Ibid.*

[13] *Ibid.*

that the appearance has not significantly changed during historic times. This is, in fact, confirmed when one compares the present appearance with the 1840 Lehman drawing.

On September 26, 1986, a plaque commemorating Pulpit Rocks and the beginning of geological surveys in Pennsylvania in 1836 was dedicated by the Field Conference of Pennsylvania Geologists, Inc. and Juniata College.[14] The plaque reads:

Pulpit Rocks

> Pillars of sandstone of the Ridgeley Formation, an erosional remnant whose layers were deposited in an ancient sea nearly 390 million years ago. These rocks were visited by geologists of the First Geological Survey of Pennsylvania during 1836.

One has only to look at Lehman's water color (Fig. 1) and compare it with the present appearance of the rocks, vegetation, and the road to realize that the area has changed very little since the first survey. Thus, Pulpit Rocks retains a high level of integrity.

The primary use of the Pulpit Rocks area today is as an outdoor classroom for the study of geology by Juniata College, owner of most of the site. The present chairman of the geology department at Juniata College, Dr. Robert Washburn, has been bringing students to the Rocks since 1966. Dr. Washburn says that he recognized that the area had long been regarded as historical for the study of geology because it was featured in the frontispiece of the First Geological Survey of Pennsylvania, published in 1858, but with the survey work done between 1836 and 1842. The area has an added sense of history because of its location alongside the old Huntingdon and Hollidaysburg Turnpike. The road, the rocks, and vegetation are little changed from the appearance at the time of the first survey. Additionally, the Rocks are recognized as historical because they profoundly represent an understanding achieved by Henry D. Rogers, the director of the first survey and his two assistants, James C. Booth and John F. Frazer, regarding the order in which the sedimentary rocks of central Pennsylvania were laid down and the beginning of a new field of geology—that of structural geology. Dr. Washburn uses Pulpit Rocks to illustrate to his classes what the first survey geologists discovered in 1836, that is, that there were in fact three ridge forming sandstones, not just one as previously thought. The survey geologists could differentiate three formations separated by a lot of other rocks. That understanding allowed them to decipher the structure of the Appalachians. Comprehending that concept helps to explain the

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[14] Sevon, p. 128. Also see audiovisual tape of a re-enactment of the meeting of Henry D. Rogers and his assistants, James C. Booth and John F. Frazer. Tape is in the possession of the State Geologist of Pennsylvania.

major folds that characterize the ridge and valley formation and the thick sequence of sedimentary rocks.

Using Pulpit Rocks as a study guide, Dr. Washburn helps his students to relate the outcroppings at the sand quarries they have seen in Mapleton to what they are seeing at Pulpit Rocks. The rock which is steeply dipping over into the Mapleton area, continues under the town of Huntingdon and comes up again at Pulpit Rocks. Pulpit Rocks are used to illustrate the weathering which takes place, particularly along the vertical joints, and how sandy soils are formed when the rock erodes along the joints. The remaining harder rocks stand out like pulpits. The remaining highly resistant rocks are identified as the ridge formers, such as in the case of Warrior Ridge, where Pulpit Rocks are located. Dr. Washburn uses the site to teach a lesson in proper utilization of the environment, i.e., leave it as it is because it is not suitable for agriculture. There is discussion about sand as commercially profitable in the manufacture of glass, such as illustrated by the quarries at Mapleton. Further west in western Pennsylvania and eastern Ohio this formation is deeply buried and is an oil and gas reservoir because of its high porosity.

Dr. Washburn uses Pulpit Rocks to present the findings of the first survey. According to Dr. Washburn,

> "What the folks did out here in the first survey was to discover and prove to themselves that there were in fact three different ridge forming sandstones, not just one, as previously thought. They now could differentiate three formations separated by a lot of other rocks and that was the key to deciphering the structure of the Appalachians. Superficially, the rocks looked pretty much the same since they are all quartz sandstones, so the quick and dirty look at them caused earlier geologists to say that the same sandstone formed the ridges. You get an entirely different structure if you recognize that it is not one sand, but three different sands in succession with a lot of rocks between. Then, we come up with the major folds that characterize the ridge and valley formation and a very thick sequence of sedimentary rocks rather than a relative thin sequence of sedimentary rocks. That understanding puts the rocks at Pulpit Rocks into the historical context of deciphering the structuring of the Appalachian Mountains."[15]

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[15] Washburn.

8. STATEMENT OF SIGNIFICANCE

Certifying official has considered the significance of this property in relation to other properties: Nationally: X Statewide: ___ Locally: ___

Applicable National Register Criteria: A X B X C ___ D ___

Criteria Considerations (Exceptions): A ___ B ___ C ___ D ___ E ___ F ___ G ___

NHL Criteria: 1, 2

NHL Theme(s): XIII. Science
B. Earth Science
2. Geology

Areas of Significance: Science

Period(s) of Significance:

Significant Dates: 1836-1842

Significant Person(s): Henry D. Rogers
James C. Booth
John F. Frazer

Cultural Affiliation: N/A

Architect/Builder: N/A

State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.

Pulpit Rocks is important in the history of earth sciences because it is a prime example of the findings of the First Geological Survey of Pennsylvania, enabling a student of geology to understand the impact of that survey upon the study of important aspects of the geology of much of the eastern United States.[1] An agreement reached in 1836 among the geologists conducting The First Geological Survey of Pennsylvania clearly confirming the succession of sedimentary rocks was important not only for the study of geology in Pennsylvania, but it set the framework for all future geologic work in the Appalachian Mountains and for stratigraphy throughout the eastern United States.[2]

The investigations and discoveries of the First Geological Survey of Pennsylvania, when finally published in 1858,

> "were destined to set the geologic framework for all subsequent geologic mapping in the states along the Appalachian Mountains. In addition, the discoveries of the First Geological Survey of Pennsylvania prompted a major branch of the science of geology. The new field, structural geology, was concerned with the form and arrangement of rocks, their internal structures and, particularly, with their description and analysis."[3]

HISTORY

The First Geological Survey of Pennsylvania came into being as the result of pressures placed upon the legislature by the recently formed Geological Society of Pennsylvania (1832) and the realization by the commonwealth's legislators and the governor that if Pennsylvania were to keep pace economically with its neighboring states it needed to develop its mineral resources. Before the mineral resouces could be developed there had to be some knowledge of what and where these resources were. Finally, on March 30, 1836, Governor Joseph Ritner signed a bill establishing "a geological and mineralogical survey of the state with a view to determine the order, succession, arrangement, relative position . . . of the several strata of geological formations within the state, and to discover and examine all beds and deposits of ores, coals, clays, marls . . . as may be necessary to make a full and complete geological and

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[1] Hoskins, Letter to Butowsky, April 26, 1990.

[2] *Ibid.*

[3] Donald M. Hoskins, "Celebrating a Century and a Half: The Geological Survey," *Pennsylvania Heritage*, v. 12, no. 3, 1986, p. 28.

mineralogical survey of the state."[4] The bill authorized an annual appropriation of $6,400 for five years to pay the salaries of a geologist, two assistants, and a chemist.[5]

The staff for the first Geological Survey of Pennsylvania consisted of State Geologist Henry D. Rogers, a 26-year-old professor at the University of Pennsylvania, who had been appointed in 1835 as the State Geologist of New Jersey, assistants James C. Booth, 24 years old, and John F. Frazer, 26 years old. Both Booth and Frazer had studied at the University of Pennsylvania. Rogers' brother, Robert, was appointed to the position of chemist.[6]

The survey got underway in May 1836, with initial emphasis being given to Bedford and Huntingdon Counties. During the summer of 1836 Rogers and his assistants met in the town of Huntingdon and compared notes on what they had found. Frazer, who had started in the Broadtop Coal Measures in Bedford County, descended from that location through the gap in Terrace Mountain and then along the course of Yellow Creek through the gap in Tussey Mountain into the limestone valley of Morrison's Cove.[7] While undertaking his survey, Frazer descended through geologic time in a "continuous one-dip section, straight across the Old-Age System, through all its slanting formations from the coal measures at its top to the magnesian limestones near its bottom; with a total thickness of rock deposits of about twenty-five thousand feet."[8] In going from the youngest rocks in the coal field area to the oldest rocks along Yellow Creek, Frazer "was able to demonstrate that the resistant sandstone layers underlying Tussey and Terrace Mountains were, in fact, not the same, as had been thought by geologists who had previously examined the area. The sandstone and conglomerate layers supporting these mountains were, in reality, separated by many thousands of feet of intervening rock layers. Until this time geologists thought that all of the mountains of central Pennsylvania were supported by rocks of the same age."[9]

When Frazer reported his findings to Rogers, initially there was disbelief. When Booth reported on the same sequence of rocks in a traverse he had made along the Potomac River in western Maryland and Rogers personally corroborated the findings of Frazer by visiting some of his sites, the three realized that they had made a major discovery regarding the succession of

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[4] *Ibid.*, p. 29.

[5] Lesley, p. 53.

[6] Hoskins, "Celebrating a Century and a Half," p. 28.

[7] *Ibid.*, p. 29.

[8] Lesley, p. 54.

[9] Hoskins,"Celebrating a Century and a Half," p. 29.

sedimentary rocks. This conclusion was reached during a Sunday meeting in Huntingdon during the summer of 1836.

Prior to this time there was considerable disagreement and confusion among geologists in general. Even among the three geologists on the survey there had been "a series of embarrassments; their note books filled with a confused mass of irreconcilable statements; their cross-sections contradictory in themselves when compared together; and the geology of Pennsylvania apparently at variance with that of the neighboring State of New York."[10] After the agreement in Huntingdon, "everything went smoothly; all contradictions vanished; their back notes became luminous, and northern outcrops . . . in New York were seen to be all represented in the same regular order, although on an immensely enlarged scale, by the southern outcrops of the same formations in Pennsylvania; Tussey Mountain being made of the Oneida conglomerate, No. IV; and Terrace Mountain by the Catskill sandstones of New York, Nos. IX and X.[11] In cooperation with his "equally distinguished brother," William Rogers, State Geologist of Virginia, Rogers was able to recognize "the persistency of the same formations, under slight variations of color, size and mineral ingredients, across the Old Dominion and into Tennessee and Alabama."[12] J. Peter Lesley, writing in his report in 1876 as the State Geologist for Pennsylvania for the Second Geological Survey of Pennsylvania, assessed the importance of the findings of the first year of the first survey by saying, "We may truthfully claim for the work of the first year of the Pennsylvania Geological Survey, 1836, that it gives the epoch for American Old-Age Sedimentary Geology."[13]

Another achievement by Rogers during that first survey was the system he devised for numbering the rock formations. He divided the Paleozoic system into twelve parts, or formations, the lowest being that of the limestone of Harrisburg and Reading, the highest being that of the Coal Measures."[14] Rogers recognized that first season that he and his assistants had to "establish rock units that could be physically traced along and around the complexly folded ridges and valleys. This rock stratigraphic mapping approach has been used by all of the Surveys of Pennsylvania and is a legacy of Henry Rogers."[15]

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[10] Lesley, p. 54.

[11] *Ibid.*

[12] *Ibid.*

[13] *Ibid.*

[14] *Ibid.*

[15] Donald M. Hoskins, "Henry Rogers and James Hall of the Pennsylvania and New York Geological Surveys, 1836-1842," *Earth Sciences History*, 1987, vol. 6, no. 1, p. 18.

At the time Lesley was reporting on the Second Geological Survey of Pennsylvania in 1876 he said regarding the numbering:

> "All the principal features of the old-age system of rocks were, in this system of numbers, painted with a bold, free brush, truthfully; and no good reasons can be given for its non-adoption by other State Surveys."[16]

In fact, Rogers' numbering system was adopted by the U.S. Geological Survey when it was established in 1879 and continued to be used by that organization until 1937.[17]

While Rogers did not use his numbering system in his final report of 1858, the system was readopted by the Second Geological Survey of Pennsylvania and continued in use through the 2nd, 3rd, and 4th Pennsylvania Geological Surveys and was last used on the Geological Map of Pennsylvania in 1931.[18] When Rogers was describing the twelve formations that he and his assistants had delineated during the summer of 1836, he applied the name Appalachian System to the nine geologically older units and Carboniferous System to the three younger. Rogers concluded that all of the rocks of the Appalachians were part of one unitary system. "He recognized that the sedimentary sequence of the Appalachians had a beginning and an ending, much as we recognize today that sedimentary basins are finite."[19] Rogers, aware that his Appalachian System was deposited in the broad bed of an ocean, compared the Appalachian basin to the Paleozoic basin of Europe because of the similarity in their sedimentary features.[20]

According to Lesley, "the 1837 survey season saw for the first time a consistent, general and permanent classification of the old age rock system of North America." Continuing, Lesley quoted from Rogers' chapter on General Observations in his report to the Secretary of the Commonwealth regarding the 1837 season:

> "In taking a general review of the extensive series of our Appalachian formations, now the first time systematically classified and described, our attention is forcibly arrested by their vast thickness, the

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[16] Lesley.

[17] Donald M. Hoskins, Telephone Conversation with John W. Bond, November 25, 1992.

[18] Hoskins, "Henry Rogers and James Hall," p. 18.

[19] *Ibid.*

[20] *Ibid.*

> immensity of their range, and the inexhaustible stores of mineral treasure which they contain."[21]

In speaking of the Central Pennsylvania area investigated in the 1837 season, Rogers noted,

> "It is worthy of remark, that probably no other district in the entire Appalachian chain from the Hudson River to northern Alabama, presents our American lower secondary rocks on an equally expanded scale, or so admirably developed for geological investigations."[22]

Rogers stressed that the system of gigantic anticlinal elevations in central Pennsylvania brings the entire series of formations several times in succession to the surface, making that region, along with western Maryland, the key to the geology of many of the other states, "where but a part of the same strata are spread out in a nearly horizontal attitude, and exhibited in a single belt."[23] The Pulpit Rocks area, being part of an anticlinal system, was, and is, an ideal place for geological study.

Lesley, an eminent geologist in his own right, never ceased to heap praise on the first season's work:

> "The first season's field work sufficed to make known with certainty the geological order of the rocks of Middle Pennsylvania; and on this determination, as a sure foundation, all subsequent work in the Appalachian mountain belt of the Atlantic States was based."[24]

Continuing to praise the first year's work, he went on to say:

> "It was glory enough for the first year's survey to have swept away the enormous fictions of previous years—demolished the theories of [Richard] Taylor respecting the Broad Top and Anthracite Coal Measures—put a stop to all talk about 'Transition Rocks'—and separated the mountains of IV and the mountains of X into two distinct groups of very different ages."[25]

He went on to attribute international recognition to the first year's efforts of Rogers and his assistants:

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[21] Lesley.

[22] *Ibid.*

[23] *Ibid.*, p. 68.

[24] *Ibid.*, p. 54.

[25] *Ibid.*, p. 55.

> "We may with equal truth assert that American Structural Geology was born in 1836. For it was during this first season's work that that system of anticlinal and synclinal folds, or rock-waves, was first fairly seen and understood by Professor Rogers, with which his name will ever be identified as closely and honorably as the names of Thurmann of Switzerland, and Elie de Beaumont of France."[26]

The first few seasons of the first survey produced an unusual number of "firsts". Among them was what Lesley described as follows:

> "The doctrine of subaerial erosion, which now (1876) plays so prominent a role in all discussions of the physics of the earth, and especially of dynamic and sedimentary geology, may therefore be justly called a Pennsylvania discovery, dating from the years 1837 and 1838."[27]

This discovery seems to have been to a large degree the result of the work of Robert Jackson, who, in studying the brown irons of the many limestone valleys in central Pennsylvania, determined that they originated from accumulation of the undissolvable iron resulting from the solution of limestones in which the iron naturally occurred. It was from Jackson's and the other assistants' observations, mainly in 1838, that there came the first understanding of the effect of erosion on the earth's surface. Later, their conclusions were acknowledged and accepted by European geologists.[28]

At Pulpit Rocks the geologists of the first survey achieved a very good picture of the anatomy of a mountain range, the giant folds that seem to characterize all of the major mountain ranges of the world. Geologists studying the Alps, for example, came to Pennsylvania and consulted with Rogers and his assistants. In their study of the central Appalachians in Pennsylvania they saw how these mountains were folded and related that information to what they had observed in Europe.[29]

Dr. Washburn maintains that the conclusions reached during the first survey, using Pulpit Rocks as a pivotal example, collectively was probably one of the first scientific contributions that American scientists made—that is, in studying the Appalachians and formulating a hypothesis of mountain building that has continued, with various modifications to this day. The findings of the first survey, according to Dr. Washburn

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[26] *Ibid.*

[27] *Ibid.*, p. 85.

[28] Hoskins, "Celebrating a Century and a Half," p. 29.

[29] *Ibid.*

demonstrated that the study of a state's geology was a complex undertaking, not just studying for a few years, writing a book, and that would be it. The agreement reached by Rogers and his assistants, says Dr. Washburn,

> "was very basic to any kind of applied geology—what the architecture of the earth is—that's what Rogers and his assistants were trying to get a handle on. That's what the hydrogeologist, petroleum geologist and mining geologists need to know."[30]

One of the major contributions of the first season's work was the conclusion by Assistant Frazer, based upon observations he made while descending from Broad Top to Yellow Creek, that exploration for coal in the rocks of the Appalachian Mountains, except in the Broad Top, was useless, as no coal existed in these rocks.[31] Only a short time before Frazer's study, Richard Taylor had studied the Broad Top area and came up with erroneous conclusions as to where coal would likely be found. Taylor and others thought that underlying the Broad Top and the surrounding areas included in the Appalachian Mountains were rocks which would include veins of quartz, volcanic rocks, and metal ores, as well as coal. Frazer's findings resulted in a new scientific understanding of where to look for coal. Consequently, tremendous economic savings were realized in the prospecting for coal.

The significance of the first geological survey is best summed up by the present State Geologist, Dr. Donald M. Hoskins:

> "The legacy bequeathed to Pennsylvania by that diligent first survey team is truly remarkable. Its heritage is a living legacy, continuing to provide—each and every day—new and useful information supporting the Commonwealth's myriad industries and technologies."[32]

The primary importance of Pulpit Rocks is that it is representative of a major conclusion which the State Geologist and his assistants reached during the first summer of the survey regarding the order of deposition of the sedimentary rocks in central Pennsylvania, a principle which was subsequently broadly applied throughout the Appalachian Mountains and the eastern United States.

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[30] *Ibid.*

[31] Hoskins, "Celebrating a Century and a Half," p. 29.

[32] *Ibid.*, p. 31.

9. MAJOR BIBLIOGRAPHICAL REFERENCES

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Hoskins, Donald M. "Celebrating a Century and a Half: The Geological Survey," *Pennsylvania Heritage*, v. 12, no. 3, 1986.

_____. "Henry Rogers and James Hall of the Pennsylvania and New York Geological Surveys, 1836-1842,", *Earth Sciences History*, 1987, vol. 6, no. 1.

_____. Letter to John W. Bond, November 18, 1992.

_____. Letter to Harry Butowsky, April 26, 1990.

_____. Letter to Harry Butowsky, July 10, 1991.

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Sevon, William D., ed. *Guidebook for the 51st Annual Field Conference of Pennsylvania Geological Survey: Selected Geology of Bedford and Huntingdon Counties.* Harrisburg, Pennsylvania: Bureau of Topographic and Geologic Survey, 1986.

United States Department of the Interior, Geological Survey, Alexandria Quadrangle, Huntingdon County, Pennsylvania.

Video tape of the September 26, 1986 re-enactment of the meeting of Henry D. Rogers, James C. Booth, and John F. Frazer. Tape in the possession of State Geologist Donald M. Hoskins, Commonwealth of Pennsylvania.

Washburn, Robert. Personal Interview with John W. Bond at Pulpit Rocks, Huntingdon County, Pennsylvania, November 4, 1992. Dr. Washburn is Chairman of the Geology Department, Juniata College, Huntingdon, Pennsylvania.

White, I.C. *Geology of Huntingdon County.* Harrisburg, Pennsylvania: Board of Commissioners, 1885.

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
_X_ Other State Agency: **State Geologist**
___ Federal Agency
___ Local Government
_X_ University:
___ Other (Specify Repository):

10. GEOGRAPHICAL DATA

Acreage of Property: 4.5 acres

UTM References:

	Zone	Easting	Northing
A	17	750070	4489240
B	17	750490	4489080
C	17	750410	4489940
D	17	750010	4489140

Verbal Boundary Description:

Beginning on the southwest berm of the old Huntingdon-Hollidaysburg Turnpike, at a point approximately 1000 feet southwest of the principal Pulpit Rock (nearest the road and containing the plaque placed there by the 51st Annual Conference of Pennsylvania Geologists and Juniata College) and continuing to a point on the same road approximately 500 feet beyond the principal Pulpit, for a total frontage of approximately 1,500 feet, then proceeding up the side of the hill to the 1,020 foot contour (approximately 250 feet) on Warrior Ridge, running along that contour for approximately 1,500 feet and returning in a straight line down the hill to the point of beginning on the southwest berm of the aforementioned road. When standing facing the principal Pulpit all of the Pulpits visible from that point as well as the road would be included in the boundary.

Boundary Justification:

On November 4, 1992, Historical Consultant John W. Bond, Dr. Robert Washburn, Chairman of the Department of Geology, Juniata College, and Thomas McElroy, hydrogeologist from the Office of the State Geologist for Pennsylvania, carefully studied the area to determine what should be within the boundary in order

to include all of the significant features and to provide adequate protection to the site. Of primary importance was the collection of rocks stacked in high columns and resembling pulpits. The lengthy extent of the pulpits which could be viewed from any point along the 1,500 feet of frontage was considered essential for understanding the range of the outcropping in this important geological formation. The road was regarded as important to the historic scene. When artist George Lehman painted a watercolor of the Pulpits in 1840 the road was included in the scene. The road, vegetation, and rocks today look very much as they did in 1840. The road was one of the main roads across central Pennsylvania at the time of the survey and for many years afterward. Travellers along this road saw this geological wonder as they passed by.

The land immediately across from the most prominent pulpit contains only small remnants of the same formation. While these remnants and the surrounding terrain are pretty much undisturbed, they do not have the pulpit characteristic. Thus, they should not be included within the boundary. The road makes significant turns at both ends of the proposed boundary. Therefore, sightline played an important role in boundary determination. All of the best examples of the pulpits are included within that sightline. At both ends of the boundary are disturbed areas, mostly from logging. Toward the town of Huntingdon, but outside the sightline, is an area which has had extensive logging in very recent times.

There are two landowners of the site under consideration as a National Historic Landmark. Juniata College owns 650 feet of frontage and 250 feet up the side of the hill where the greatest number of pulpits are located. There are significant pulpits, however, on the adjacent tract of land toward the town of Huntingdon. That land is owned by a local game and hunt club and is in a good state of preservation.

11. FORM PREPARED BY

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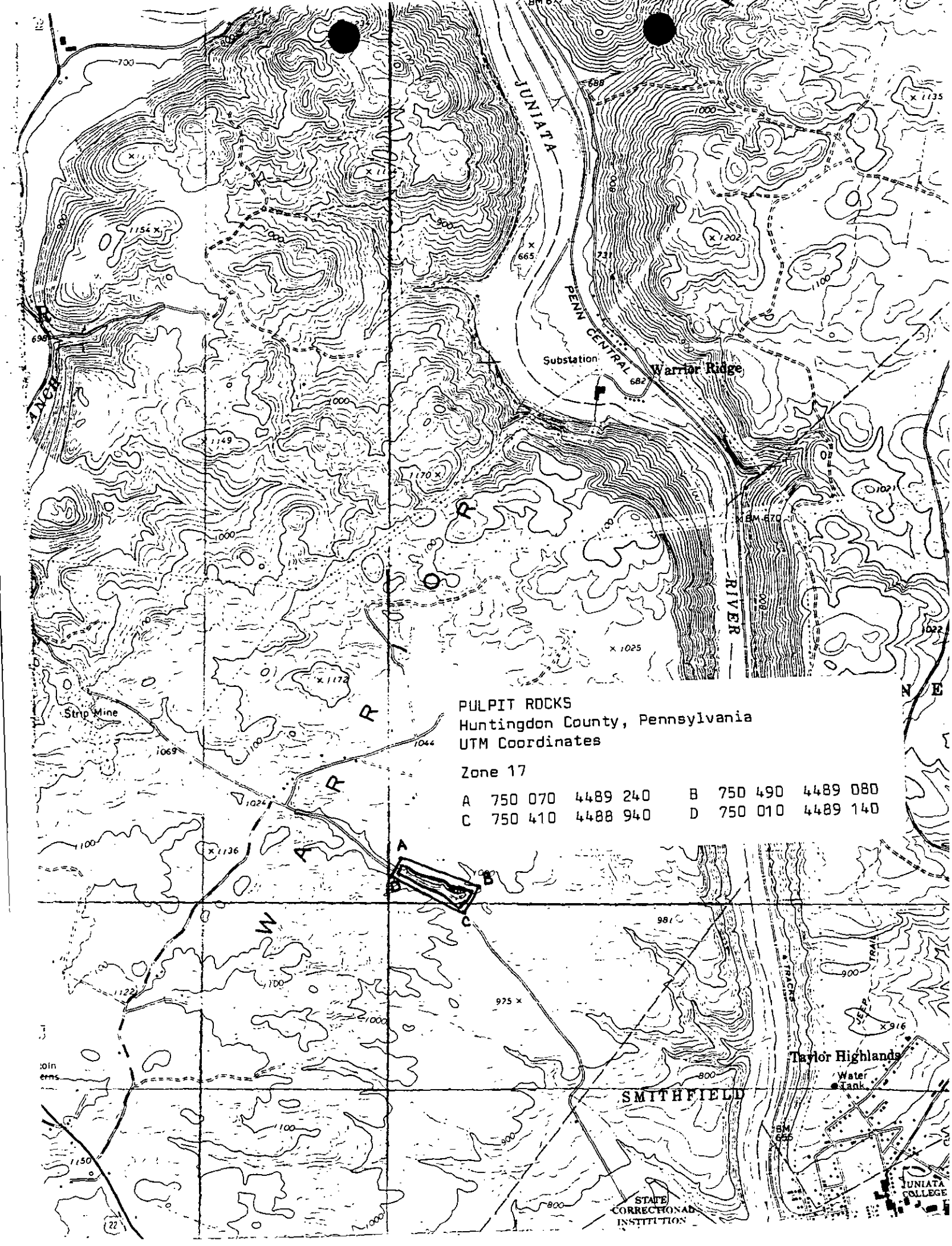
Date: December 2, 1992


JUNIATA
PENN CENTRAL
Substation
Warrior Ridge
RIVER
BM 670
Strip Mine
SMITHFIELD
Taylor Highlands
Water Tank
JUNIATA COLLEGE
STATE CORRECTIONAL INSTITUTION
PULPIT ROCKS
Huntingdon County, Pennsylvania
UTM Coordinates
Zone 17
A 750 070 4489 240
B 750 490 4489 080
C 750 410 4488 940
D 750 010 4489 140