Rock Cores in Monroe, Lawrence, and Surrounding Counties

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ABSTRACT

Ninety new rock cores were collected to support geological mapping in Monroe and Lawrence Counties. These cores were systematically described using a coding system presented in *A Corebook of Carbonate Rocks in Indiana* (Thompson and Keith, 2015). Data from these cores were entered in the Indiana Geological and Water Survey Petroleum Database Management System and archived in the Survey core repository. This report summarizes the data collected and presents graphical descriptions of each core.

INTRODUCTION

As part of the federally funded STATEMAP portion of the National Cooperative Geologic Mapping Program, bedrock geological mapping was conducted in Monroe and Lawrence Counties from 2004 to 2014. This mapping resulted in a series of Indiana Geological Survey (now Indiana Geological and Water Survey [IGWS]) preliminary maps (Keith and others, 2008, 2009b, 2010, 2011, 2012, 2013; Thompson and others, 2008, 2009, 2010, 2011, 2012, 2013), several miscellaneous maps (Thompson and others, 2007; Hasenmueller and others, 2008, 2011; Keith and others, 2009a, 2014a), and a digital compilation (Keith and others, 2014b). Besides measuring hundreds of outcrops, we collected 90 rock cores. This brief report summarizes the collected data and presents graphical descriptions of those cores.

METHODS

Rock cores were drilled to a depth of about 200 ft or less throughout Monroe and Lawrence Counties with additional cores located in surrounding counties (fig. 1). Cores were typically collected at high topographic areas and placed to retrieve important stratigraphic horizons not present in nearby outcrops. In Lawrence County, we strategically placed the cores to produce down-dip cross sections. All cores were sawed in half and described in detail at the Indiana Geological and Water Survey's Material Testing Facility.

After wetting, the cores were described using the coding system in Thompson and Keith (2015), the descriptive data stored, and stratigraphic columns created using the Windows™.NET program *Column* (v. 1.02). To rapidly describe the thousands of units from the cores, we did

Figure 1. Hillshade map of south-central Indiana showing the locations of cores. Note that cores are labeled on map below, in Table 1, and in Appendix A as SDHxxx rather than SDH xxx (with a space). The the second number is used in the Petroleum Database Management System.

not use Munsell color charts to identify colors. We based the contacts between stratigraphic horizons on a review of the literature. We then refined these as we described the cores in greater detail than is possible in outcrop. Locations and stratigraphic data were entered into the IGWS Petroleum Data Management System (PDMS) (<https://igws.indiana.edu/pdms/>). The cores were accessioned into the IGWS core repository.

RESULTS

Ninety cores having a total length of 2.61 miles were collected and described. Individual core lengths ranged from 20.3 ft to 214.6 ft, with an average length of 153.3 ft (Table 1) (Appendix A). Recovery of core was variable and influenced by the properties of the stratigraphic units. For instance, some sandstones were

Table 1. Core location and stratigraphic data.

Name SDH* - site	PDMS Number	UTM Northing	UTM Easting	Core Top (ft)	Core Bottom (ft)	Stratigraphic Unit Top	Stratigraphic Unit Base
SDH386 Liberty Church	163656	4333199.5	524974.9	31.80	199.40	Stephensport Group, Beech Creek Limestone	Blue River Group, Ste. Genevieve Limestone
SDH387 Junction Limestone 1	163657	4333754.0	526980.5	20.00	200.00	West Baden Group, Elwren Formation	Blue River Group, Ste. Genevieve Limestone
SDH388 Junction Limestone 2	163658	4333684.0	526699.0	2.70	200.00	Blue River Group, Ste. Genevieve Limestone	Sanders Group, Salem Limestone
SDH389 Van Buren Water Tower	163659	4331891.7	535652.7	12.20	150.00	Blue River Group, Paoli Limestone	Blue River Group, St. Louis Limestone
SDH390 Loesch Road Water Tower	163660	4336223.9	535428.8	20.30	150.00	West Baden Group, Bethel Formation	Blue River Group, St. Louis Limestone
SDH391 IU Bell Tower	163661	4336616.6	542306.6	20.80	200.00	Blue River Group, St. Louis Limestone	Borden Group, Edwardsville Formation
SDH392 Peden Farm	163662	4344988.4	535139.5	29.70	199.80	Blue River Group, St. Louis Limestone	Sanders Group, Ramp Creek Formation
SDH393 Hoosier Energy Microwave Tower	163663	4340074.6	530914.4	22.50	200.00	West Baden Group, Sample Formation	Blue River Group, St. Louis Limestone
SDH394 Reeves Road Water Tower	163664	4343275.3	527696.7	24.00	200.00	West Baden Group, Sample Formation	Blue River Group, St. Louis Limestone
SDH395 Rolling Meadows Golf Course	163665	4349926.0	526544.0	10.00	210.05	Blue River Group, Ste. Genevieve Limestone	Sanders Group, Salem Limestone
SDH397 Greene County Middle School	165146	4321746.6	522060.7	32.50	199.50	Stephensport Group, Haney Limestone	West Baden Group, Beaver Bend Limestone
SDH398 Solsberry Water Tower	165147	4326968.9	522343.1	10.00	60.00	Stephensport Group, Big Clifty Formation	Stephensport Group, Beech Creek Limestone

*Survey drill hole

Table 1 (continued). Core location and stratigraphic data

Name SDH* - site	PDMS Number	UTM Northing	UTM Easting	Core Top (ft)	Core Bottom (ft)	Stratigraphic Unit Top	Stratigraphic Unit Base
SDH399 Caldwell - Elwren	165148	4329139.8	528858.3	14.00	200.00	West Baden Group, Sample Formation	Blue River Group, Ste. Genevieve Limestone
SDH400 Doug Dixon	165149	4324266.9	529578.8	12.00	170.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH401 Funkhouser 1	165150	4333121.8	531661.7	10.00	200.00	West Baden Group, Sample Formation	Blue River Group, St. Louis Limestone
SDH402 Funkhouser 2	165151	4332374.9	531700.9	17.50	230.00	Blue River Group, Paoli Limestone	Blue River Group, St. Louis Limestone
SDH403 Hoosier Energy Substation	165152	4320255.3	529279.3	20.00	200.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, St. Louis Limestone
SDH404 Van Buren Water Tower - Mt. Zion	165153	4324511.4	532318.8	18.50	200.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH405 Independent Limestone Quarry	165154	4327301.8	535986.1	0.00	170.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH406 Sunoco Gas Station	165155	4328777.6	538704.5	4.50	150.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH407 McCraken	165156	4341550.7	523020.2	23.90	200.00	West Baden Group, Sample Formation	Blue River Group, Ste. Genevieve Limestone
SDH408 Guthrie Quarry	165157	4314270.0	540472.7	6.80	191.00	Blue River Group, St. Louis Limestone	Borden Group, Edwardsville Formation
SDH409 MOCO Gas Station	165158	4313536.8	538957.1	24.20	201.40	Blue River Group, St. Louis Limestone	Sanders Group, Salem Limestone
SDH410 Siebolt Quarry Floor	165519	4313057.4	534943.2	5.90	201.00	Blue River Group, Ste. Genevieve Limestone	Sanders Group, Salem Limestone
SDH411 Lazy Diamond Farm Supply	165160	4309450.5	548938.6	7.00	151.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH412 Stevens Farm	165161	4307917.4	547172.9	5.60	171.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH413 Victor Oolitic Quarry, abandoned	165162	4307927.3	543705.9	3.00	161.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH414 Feldon-Purdue Agriculture Center	165163	4304372.5	537222.4	5.40	131.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, St. Louis Limestone

*Survey drill hole

Table 1 (continued). Core location and stratigraphic data

Name SDH* - site	PDMS Number	UTM Northing	UTM Easting	Core Top (ft)	Core Bottom (ft)	Stratigraphic Unit Top	Stratigraphic Unit Base
SDH415 Pritchett-Maul Ridge Road	165164	4304627.0	534937.7	29.00	165.10	West Baden Group, Sample Formation	Blue River Group, Ste. Genevieve Limestone
SDH416 Oak Grove Church	165165	4311209.9	533188.8	21.50	188.65	Blue River Group, Paoli Limestone	Blue River Group, St. Louis Limestone
SDH417 East Lawrence Water Tower	165166	4301410.5	552038.7	21.00	190.00	Blue River Group, St. Louis Limestone	Borden Group, Edwardsville Formation
SDH418 Unity Missionary Baptist Church	165167	4298293.1	548848.7	37.90	208.55	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH419 White River Baptist Church	165168	4293937.2	551543.4	33.00	200.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH420 Ash Lake Log Homes	165169	4297097.2	544323.6	30.60	200.00	Blue River Group, St. Louis Limestone	Sanders Group, Ramp Creek Formation
SDH421 Bluesprings Caverns	165170	4294465.4	539527.4	12.70	200.00	Blue River Group, St. Louis Limestone	Sanders Group, Ramp Creek Formation
SDH422 Appleacres Orchard	165171	4292100.4	537832.6	5.50	150.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, St. Louis Limestone
SDH423 Bob Way	165172	4289832.2	538995.2	30.00	200.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH424 Hoosier National Forest	165173	4289504.5	533280.8	15.50	190.00	Raccoon Creek Group, Mansfield Formation	West Baden Group, Bethel Formation
SDH425 Ratkovich	165174	4302508.0	532956.2	20.00	200.00	West Baden Group, Elwren Formation	Blue River Group, St. Louis Limestone
SDH426 Brumfield	166271	4289293.2	554978.4	10.40	180.00	Blue River Group, St. Louis Limestone	Borden Group, Edwardsville Formation
SDH427 Rosenbaum	166272	4292488.0	557098.1	5.70	130.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH428 Bill Todd 1	166273	4308112.1	555068.1	8.10	80.00	Sanders Group, Harrodsburg Limestone	Borden Group, Edwardsville Formation
SDH429 Hidden Falls Camp	166274	4295950.0	556935.4	14.50	120.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH430 Larry McKeaigg	166275	4293785.8	563211.4	4.00	150.00	Blue River Group, St. Louis Limestone	Sanders Group, Ramp Creek Formation

*Survey drill hole

Table 1 (continued). Core location and stratigraphic data

Name SDH* - site	PDMS Number	UTM Northing	UTM Easting	Core Top (ft)	Core Bottom (ft)	Stratigraphic Unit Top	Stratigraphic Unit Base
SDH431 Greg Pickett	166276	4294305.5	562202.8	14.70	110.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH432 Wilma Jansing	166277	4302593.1	556657.6	23.20	60.00	Sanders Group, Ramp Creek Formation	Borden Group, Edwardsville Formation
SDH433 Belcher - Erie Church Road	166278	4304724.3	557911.2	13.10	190.00	Blue River Group, St. Louis Limestone	Borden Group, Edwardsville Formation
SDH434 Ratliff	166279	4307082.7	557939.0	19.50	39.80	Sanders Group, Ramp Creek Formation	Borden Group, Edwardsville Formation
SDH435 Bill Todd 2	166280	4308100.0	555609.4	24.70	200.00	Blue River Group, St. Louis Limestone	Sanders Group, Ramp Creek Formation
SDH436 Blackwell Limestone Co. Quarry	166281	4310607.8	555064.3	3.50	160.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH437 Smith Sawmill	166282	4310940.2	554388.7	17.50	80.00	Sanders Group, Harrodsburg Limestone	Borden Group, Edwardsville Formation
SDH438 Dalton	166283	4294529.8	551755.8	4.50	40.00	Chert pebble conglomerate, unknown age	
SDH439 Denny Brown	166287	4285816.0	565165.0	6.70	80.00	Sanders Group, Harrodsburg Limestone	Borden Group, Edwardsville Formation
SDH440 Kevin Northway	166286	4285435.1	564800.5	0.00	50.00	Sanders Group, Ramp Creek Formation	Borden Group, Edwardsville Formation
SDH441 Jennifer Cardwell	166289	4284778.8	563175.5	12.20	180.00	Sanders Group, Salem Limestone	Borden Group, Edwardsville Formation
SDH442 George Chastain	166290	4280712.3	557364.9	28.80	201.10	Blue River Group, St. Louis Limestone	Sanders Group, Harrodsburg Limestone
SDH443 Sugar Creek Hunting Preserve	166291	4285713.1	557607.3	35.60	210.00	Blue River Group, St. Louis Limestone	Sanders Group, Ramp Creek Formation
SDH444 Town of Campbellsburg	166292	4278375.0	564254.7	56.00	80.00	Blue River Group, St. Louis Limestone	Blue River Group, St. Louis Limestone
SDH445 Steve Brown	166293	4276202.9	560092.4	30.00	200.00	Blue River Group, St. Louis Limestone	Sanders Group, Harrodsburg Limestone

*Survey drill hole

Table 1 (continued). Core location and stratigraphic data

Name SDH* - site	PDMS Number	UTM Northing	UTM Easting	Core Top (ft)	Core Bottom (ft)	Stratigraphic Unit Top	Stratigraphic Unit Base
SDH446 Spring Mill State Park	166294	4287046.5	550476.4	6.50	220.00	Blue River Group, St. Louis Limestone	Sanders Group, Ramp Creek Formation
SDH447 Steve Ralston	166295	4280957.5	551455.5	6.00	200.00	Blue River Group, St. Louis Limestone	Blue River Group, St. Louis Limestone
SDH448 Holiday Drive-In Theater	166296	4283909.2	546732.8	3.50	200.00	Blue River Group, Ste. Genevieve Limestone	Sanders Group, Salem Limestone
SDH449 Mark Taylor	166297	4281941.1	544918.8	12.80	181.00	Blue River Group, Paoli Limestone	Blue River Group, St. Louis Limestone
SDH450 John Noblitt	166298	4276990.4	547973.3	0.00	180.00	West Baden Group, Bethel Formation	Blue River Group, St. Louis Limestone
SDH451 Hoosier National Forest - Georgia Fire Tower	166299	4287505.6	536730.4	8.10	200.00	Raccoon Creek Group, Mansfield Formation	West Baden Group, Beaver Bend Limestone
SDH452 Hoosier National Forest - Brunner Cemetery	166300	4282306.1	532368.2	8.10	200.00	Raccoon Creek Group, Mansfield Formation	West Baden Group, Sample Formation
SDH453 Robert White	166301	4286361.0	524728.3	8.90	150.00	Raccoon Creek Group, Mansfield Formation	West Baden Group, Elwren Formation
SDH454 Indian Creek Stone Products Yard	166302	4285815.0	527470.6	10.00	200.00	West Baden Group, Beaver Bend Limestone	Blue River Group, St. Louis Limestone
SDH455 Indian Creek Stone Products Farm	166303	4289909.3	531241.0	6.00	120.00	Raccoon Creek Group, Mansfield Formation	Stephensport Group, Big Clifty Formation
SDH456 Indian Creek Stone Products Quarry	166304	4290062.8	530916.5	5.40	200.00	Stephensport Group, Big Clifty Formation	Blue River Group, Ste. Genevieve Limestone
SDH457 Hoosier National Forest Turnaround at Scarlet	166305	4277877.3	528555.5	31.50	200.00	Raccoon Creek Group, Mansfield Formation	Stephensport Group, Big Clifty Formation
SDH458 Charles Johnson	166306	4276181.4	537944.8	7.80	200.00	West Baden Group, Elwren Formation	Blue River Group, Ste. Genevieve Limestone
SDH459 Watterson	166307	4282893.6	539744.9	15.30	200.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH460 Dillman	166308	4296635.1	528954.4	10.60	200.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH461 Bledsoe Quarry	166309	4301093.6	530258.4	5.80	126.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, St. Louis Limestone

*Survey drill hole

Table 1 (continued). Core location and stratigraphic data

Name SDH* - site	PDMS Number	UTM Northing	UTM Easting	Core Top (ft)	Core Bottom (ft)	Stratigraphic Unit Top	Stratigraphic Unit Base
SDH462 Jim Williams 2	166591	4290602.6	525098.8	20.10	120.00	Blue River Group, Paoli Limestone	Blue River Group, Ste. Genevieve Limestone
SDH463 Jim Williams 1	166592	4290762.7	525488.4	7.00	150.00	West Baden Group, Elwren Formation	Blue River Group, Ste. Genevieve Limestone
SDH464 Indian Creek Quarries 1	166593	4295405.1	527018.0	0.00	180.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, St. Louis Limestone
SDH465 Indian Creek Quarries 2	166595	4295711.3	527010.4	13.00	80.00	West Baden Group, Bethel Formation	Blue River Group, Ste. Genevieve Limestone
SDH466 Mary Baker 2	166597	4294081.9	523141.6	0.00	170.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH467 Brock	166598	4299878.5	528845.2	10.00	200.00	West Baden Group, Sample Formation	Blue River Group, Ste. Genevieve Limestone
SDH468 Heritage Quarry 1	166599	4307079.0	529766.5	5.50	130.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, St. Louis Limestone
SDH469 Padgett	166601	4310779.0	525053.0	5.00	200.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH470 Lowder Cemetery	166602	4312614.3	530825.7	5.00	200.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH471 Armstrong Quarry Floor	166603	4314722.9	531218.7	3.50	80.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, St. Louis Limestone
SDH472 Roger Fancher	166604	4316310.3	529287.0	0.00	200.00	Raccoon Creek Group, Mansfield Formation	Blue River Group, Ste. Genevieve Limestone
SDH473 Heritage Quarry 2	166600	4307196.2	529621.4	9.10	60.00	Blue River Group, Ste. Genevieve Limestone	Blue River Group, Ste. Genevieve Limestone
SDH479 Linthicum United Methodist Cemetery	166869	4316806.9	532479.5	15.00	170.00	West Baden Group, Elwren Formation	Blue River Group, Ste. Genevieve Limestone
SDH480 McCormick's Creek State Park	166875	4348753.8	524212.3	27.20	210.00	Blue River Group, Ste. Genevieve Limestone	Sanders Group, Salem Limestone
SDH481 Platt	166876	4348903.1	522377.4	5.40	220.00	Blue River Group, St. Louis Limestone	Borden Group, Edwardsville Formation

*Survey drill hole

weathered and highly friable, and some limestones had void spaces owing to dissolution. Despite these issues, total recovery for all cores was 97 percent, with the poorest recovery in SDH-444 at 59 percent. Thirty-nine cores had no losses whatsoever.

Rocks exposed in Monroe and Lawrence Counties span six stratigraphic groups (fig. 2), ranging from the Middle Mississippian Borden Group along the eastern edge of the mapping area to the Lower Pennsylvanian Raccoon Creek Group in the western part. This distribution of oldest to youngest rocks is related to the regional dip of approximately 30 to 35 ft per mile to

the southwest. This same stratigraphic range is present in the cores, encompassing 17 formations (fig. 3). The Blue River Group Ste. Genevieve Limestone and St. Louis Limestone were the most commonly cored units, primarily because they are thick formations encountered when drilling from higher stratigraphic units and are common hill formers in the mapped area. Also, we located core sites to retrieve rock from the middle of the St. Louis Limestone, where the coral *Acrocyathus proliferus* occurs in one or two beds throughout the two-county area. We found the coral horizons to be useful in correlating rock units within the St. Louis Limestone. When the two coral horizons are present in core, they are typically separated by 10 to 14 ft. Similarly, the Indian Creek Limestone Beds, defined by Connor (1986) but not formally adopted by the Indiana Geological and Water Survey, are useful for correlations within the Ste. Genevieve Limestone. Other formal and informal members and beds are not shown in the stratigraphic columns. The authors intend to define these units more clearly in a future publication.

Our intent in drilling the cores was to provide more stratigraphic contact data between formations than could be found in the relatively limited outcrops and quarry exposures in the map area. We described the cores in relative detail as efficiently as possible, given the volume of core material, the need for stratigraphic data for mapping, and the contractual deadlines for

MISSISSIPPIAN	Stephensport Group	PENNSYLVANIAN	
		Raccoon Creek Group	Mansfield Formation
		Hardinsburg Formation	
		Haney Limestone	
		Big Clifty Formation	
	West Baden Group	Beech Creek Limestone	
		Elwren Formation	
		Reelsville Limestone	
		Sample Formation	
		Beaver Bend Limestone	
	Blue River Group	Bethel Formation	
		Paoli Limestone	
		Ste. Genevieve Limestone	Indian Creek Limestone Beds
	Sanders Group	St. Louis Limestone	<i>Acrocyathus proliferus</i> coral horizons
		Salem Limestone	
		Harrodsburg Limestone	
	Borden Group	Ramp Creek Formation	
		Edwardsville Formation	

Figure 2. Stratigraphic column of the units and horizons highlighted in the cores.

Figure 3. Histogram illustrating the number of cores that contain each formation.

producing the maps. The cores do provide a wealth of information about the units that can be used for further research and interpretation beyond the mapping for which they were acquired. For example, the *Acrocyathus* coral and Indian Creek Limestone Beds may represent time horizons related to sea level change across the Illinois Basin.

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APPENDIX A

Stratigraphic columns

KEY

IGWS Petroleum Database Mangement System Number	Survey Drill Hole Number and General Site Name	Date Described	Describers
ID Number: 163658 Site Name: SDH388 (Junction Limestone 2) Location: NW¼NW¼NE¼ sec. 12, T. 8 N., R. 3 W. UTMX: 526699.00, UTM Y: 4333684.00, Zone: 16 Elevation: 648.0000 Feet		Date: 6/30/2005 By: Brian D. Keith and Todd A. Thompson Notes: Whitehall quadrangle, Greene County. Junction Limestone Quarry. Poor recovery from 84 to 129 ft. Core collected through floor of quarry. See SDH 387 for core of highwall.	
Township and Range Location and Universal Transverse Mercator Coordinates		7.5-Minute Quadrangle, County, and additional notes

KEY**DUNHAM CLASSIFICATION**
(left to right)

m - mudstone
w - wackestone
f - floatstone
p - packstone
g - grainstone
r - rudstone
b - boundstone

WENTWORTH GRAIN SIZES
(left to right)

c - clay
s - silt
v - very fine
f - fine
m - medium
c - coarse
v - very coarse
g - gravel

LITHOLOGIES

	conglomerate
	sandstone
	siltstone
	shale
	mudstone
	limestone
	dolostone
	limestone-clast breccia
	dolostone-clast breccia
	clay
	chert
	gypsum/anhydrite
	coal

PRIMARY SEDIMENTARY STRUCTURE

	cross bedding
	horizontal bedding
	ripple bedding
	flaser bedding
	wavy bedding
	lenticular bedding
	rhythmic bedding
	interlaminated/interbedded

Note: Mixtures and interbedding of lithologies can occur.

GRAIN TYPE OR SECONDARY SEDIMENTARY FEATURE

	fossiliferous
	oolitic
	peloidal
	intraclast
	oncolitic
	birdseyes
	mottled
	mudcracks
	bioturbated
	disturbed bedding
	rooted
	slickensided

CONTACT

	sharp
	irregular
	gradational
	stylolitic
	hardground
	clast-mantled

ID Number: 163656	Date: 7/18/2005
Site Name: SDH386 (Liberty Church Cemetery)	By: Todd A. Thompson and Brian D. Keith
Location: NW¼SW¼NE¼ sec. 11, T. 8 N., R. 3 W. UTMX: 524974.90, UTMY: 4333200.00, Zone: 16	Notes: Whitehall quadrangle, Greene County
Elevation: 859.8000 Feet

ID Number: 163658	Date: 6/30/2005
Site Name: SDH388 (Junction Limestone 2)	By: Brian D. Keith and Todd A. Thompson
Location: NW¼NW¼NE¼ sec. 12, T. 8 N., R. 3 W.	Notes: Whitehall quadrangle, Greene County.
UTMX: 526699.00, UTMY: 4333684.00,	Junction Limestone Quarry. Poor recovery from 84
Zone: 16	to 129 ft. Core collected through floor of quarry.
Elevation: 648.0000 Feet	See SDH 387 for core of highwall.

ID Number: 163660	Date: 7/14/2005
Site Name: SDH390 (Loesch Road Water Tower)	By: Brian D. Keith and Todd A. Thompson
Location: NE¼SW¼NW¼ sec. 36, T. 9 N. , R. 2 W.	Notes: Bloomington quadrangle, Monroe County
UTMX: 535428.80, UTMY: 4336224.00, Zone: 16	
Elevation: 939.6000 Feet

ID Number: 163661	Date: 7/5/2005
Site Name: SDH391 (IU Bell Tower)	By: Todd A. Thompson and Brian D. Keith
Location: NE¼NE¼NW¼ sec. 34, T. 9 N., R. 2 W.	Notes: Bloomington quadrangle, Monroe County
UTMX: 542306.60, UTMY: 4336617.00,	
Zone: 16	
Elevation: 930.0000 Feet

ID Number: 165151	Date: 8/31/2006
Site Name: SDH402 (Funkhouser 2)	By: Brian D. Keith and Todd A. Thompson
Location: NW¼SE¼SE¼ sec. 9, T. 8 N., R. 2 W.	Notes: Whitehall quadrangle, Monroe County
UTMX: 531700.90, UTMY: 4332375.00,	
Zone: 16	
Elevation: 879.7000 Feet

ID Number: 165159	Date: 8/7/2007
Site Name: SDH410 (Siebolt Quarry Floor)	By: Todd A. Thompson and Brian D. Keith
Location: SW¼NE¼SE¼ sec. 11, T. 6 N., R. 2 W.	Notes: Oolitic quadrangle, Lawrence County
UTMX: 534943.20, UTMY: 4313058.00,	Floor of the Rogers Seibolt Quarry
Zone: 16	
Elevation: 705.0000 Feet

ID Number: 165161	Date: 7/11/2007
Site Name: SDH412 (Stevens Farm)	By: Brian D. Keith and Todd A. Thompson
Location: NE¼NW¼NW¼ sec. 30 T. 6 N., R. 1 E. UTMX: 547172.90, UTMY: 4307918.00, Zone: 16	Notes: Bartlettsville quadrangle, Lawrence County
Elevation: 757.4000 Feet

ID Number: 165165	Date: 11/13/2007
Site Name: SDH416 (Oak Grove Church)	By: Brian D. Keith and Todd A. Thompson
Location: SW¼SW¼SE¼ sec. 15, T. 6 N., R. 2 W.	Notes: Oolitic quadrangle, Lawrence County
UTMX: 533188.80, UTMY: 4311210.00, Zone: 16	
Elevation: 805.0000 Feet

ID Number: 165166	Date: 6/27/2008
Site Name: SDH417 (East Lawrence Water Tower)	By: Brian D. Keith and Todd A. Thompson
Location: NE¼ NW¼NW¼ sec. 22, T. 5 N., R. 1 E. UTMX: 552038.70, UTMY: 4301411.00, Zone: 16	Notes: Bedford East quadrangle, Lawrence County
Elevation: 774.1000 Feet

ID Number: 165168	Date: 7/1/2008
Site Name: SDH419 (White River Baptist Church)	By: Brian D. Keith and Todd A. Thompson
Location: SW¼NE¼SE¼ sec. 9, T. 4 N., R. 1 E.	Notes: Bedford East quadrangle, Lawrence County
UTMX: 551543.40, UTMY: 4293937.00, Zone: 16	
Elevation: 697.8000 Feet

ID Number: 165169	Date: 7/7/2008
Site Name: SDH420 (Ash Lake Log Homes)	By: Todd A. Thompson and Brian D. Keith
Location: SE¼NW¼SW¼ sec. 35, T. 5 N, R. 1 W.	Notes: Bedford East quadrangle, Lawrence County
UTMX: 544323.60, UTMY: 4297097.00,	
Zone: 16	
Elevation: 670.0000 Feet

ID Number: 165170	Date: 7/10/2008
Site Name: SDH421 (Bluespring Caverns)	By: Brian D. Keith and Todd A. Thompson
Location: SE¼SE¼NW¼ sec. 8, T. 4 N., R. 1 W.	Notes: Bedford West quadrangle, Lawrence County
UTMX: 539527.40, UTMY: 4294466.00,	
Zone: 16	
Elevation: 589.5700 Feet

ID Number: 165171	Date: 7/16/2008
Site Name: SDH422 (Appleacres Orchard)	By: Todd A. Thompson and Brian D. Keith
Location: NE¼SE¼SW¼ sec. 18, T. 4 N., R. 1 W.	Notes: Bedford West quadrangle, Lawrence County
UTMX: 537832.60, UTMY: 4292101.00,	
Zone: 16	
Elevation: 703.2000 Feet

ID Number: 166271	Date: 7/6/2009
Site Name: SDH426 (Brumfield)	By: Todd A. Thompson and Brian D. Keith
Location: SW¼NE¼SE¼ sec. 26, T. 4 N., R. 1 E. UTMX: 554978.40, UTMY: 4289293.00, Zone: 16	Notes: Tunnelton quadrangle, Lawrence County
Elevation: 681.9000 Feet

ID Number: 166278	Date: 10/9/2009
Site Name: SDH433 (Belcher - Erie Church Road)	By: Todd A. Thompson and Brian D. Keith
Location: SW¼SW¼SW¼ sec. 6, T. 5 N., R. 2 E. UTMX: 557911.20, UTMY: 4304725.00, Zone: 16	Notes: Norman quadrangle, Lawrence County
Elevation: 822.6000 Feet

ID Number: 166288	Date: 8/26/2010
Site Name: SDH440 (Kevin Northway)	By: Todd A. Thompson and Brian D. Keith
Location: NE¼NE¼NE¼ sec. 11, T. 3 N., R. 2 E.	Notes: Campbellsburg quadrangle, Washington, County.
UTMX: 564800.50, UTMY: 4285435.00,	
Zone: 16	
Elevation: 585.9000 Feet

ID Number: 166294	Date: 8/20/2010
Site Name: SDH446 (Spring Mill State Park)	By: Brian D. Keith and Todd A. Thompson
Location: NW¼NW¼NW¼ sec. 4, T. 3 N., R. 1 E.	Notes: Mitchell quadrangle, Lawrence County
UTMX: 550476.40, UTMY: 4287047.00, Zone: 16	
Elevation: 661.3000 Feet

ID Number: 166295	Date: 7/21/2010
Site Name: SDH447 (Steve Ralston)	By: Brian D. Keith and Walt E. Gray
Location: NE¼SW¼SE¼ sec. 21, T. 3 N., R. 1 E.	Notes: Mitchell quadrangle, Orange County
UTMX: 551455.50, UTMY: 4280958.00,	
Zone: 16	
Elevation: 742.9000 Feet

ID Number: 166296	Date: 7/21/2010
Site Name: SDH448 (Holiday Drive-In Theater)	By: Brian D. Keith and Walt E. Gray
Location: NE¼NE¼NE¼ sec. 13, T. 3 N., R. 1 W. UTMX: 546732.80, UTMY: 4283909.00, Zone: 16	Notes: Mitchell quadrangle, Lawrence County
Elevation: 693.8000 Feet

ID Number: 166298	Date: 10/3/2010
Site Name: SDH450 (John Noblitt)	By: Todd A. Thompson and Brian D. Keith
Location: SE¼NE¼NW¼ sec. 6, T. 2 N., R. 1 E.	Notes: Mitchell quadrangle, Orange County
UTMX: 547973.30, UTMY: 4276991.00,	
Zone: 16	
Elevation: 764.8000 Feet

ID Number: 166592	Date: 9/11/2012
Site Name: SDH463 (Jim Williams 1)	By: Todd A. Thompson and Brian D. Keith
Location: NW¼ NE¼ SE¼ sec. 23, T. 4 N., R. 3 W.	Notes: Williams quadrangle, Martin County
UTMX: 525488.40, UTMY: 4290763.00, Zone: 16	
Elevation: 617.0000 Feet

ID Number: 166593	Date: 9/12/2012
Site Name: SDH464 (Indian Creek Quarries 1)	By: Brian D. Keith and Todd A. Thompson
Location: SE¼ NW¼ SE¼ sec. 1, T. 4 N., R. 3 W.	Notes: Williams quadrangle, Martin County
UTMX: 527018.00, UTMY: 4295405.00, Zone: 16	
Elevation: 491.9000 Feet

ID Number: 166595	Date: 9/18/2012
Site Name: SDH465 (Indian Creek Quarries 2)	By: Todd A. Thompson and Brian D. Keith
Location: NE¼ NW¼ SE¼ sec. 1, T. 4 N., R. 3 W.	Notes: Williams quadrangle, Martin County
UTMX: 527010.40, UTMY: 4295712.00, Zone: 16	
Elevation: 569.7000 Feet

ID Number: 166598	Date: 9/26/2012
Site Name: SDH467 (Brock)	By: Todd A. Thompson and Brian D. Keith
Location: SW¼ SE¼ SE¼ sec. 19, T. 5 N., R. 2 W.	Notes: Williams quadrangle, Lawrence County
UTMX: 528845.20, UTMY: 4299879.00,	
Zone: 16	
Elevation: 675.6000 Feet

ID Number: 166599	Date: 10/3/2012
Site Name: SDH468 (Heritage Quarry 1)	By: Brian D. Keith and Todd A. Thompson
Location: SW¼ SW¼ NE¼ sec. 32, T. 6 N., R. 2 W.	Notes: Owensburg quadrangle, Lawrence County
UTMX: 529766.50, UTMY: 4307079.00,	
Zone: 16	
Elevation: 603.7000 Feet

ID Number: 166601	Date: 10/15/2012
Site Name: SDH469 (Padgett)	By: Todd A. Thompson and Brian D. Keith
Location: SE¼ NE¼ NW¼ sec. 23, T. 6 N., R. 3 W.	Notes: Owensburg quadrangle, Greene County
UTMX: 525053.00, UTMY: 4310779.00,	
Zone: 16	
Elevation: 739.3000 Feet

ID Number: 166602	Date: 10/25/2012
Site Name: SDH470 (Lowder Cemetery)	By: Todd A. Thompson and Brian D. Keith
Location: SE¼ SW¼ SW¼ sec. 9., T. 6 N., R. 2 W.	Notes: Owensburg quadrangle, Lawrence County
UTMX: 530825.70, UTMY: 4312615.00,	
Zone: 16	
Elevation: 875.1000 Feet

ID Number: 166869	Date: 8/26/2013
Site Name: SDH479 (Linthicum United Methodist Cemetery)	By: Todd A. Thompson & Brian D. Keith
Location: SE¼ SW¼ NW¼ sec. 34, T. 7 N., R. 2 W. UTMX: 532479.50, UTMY: 4316807.00, Zone: 16	Notes: Owensburg quadrangle, Monroe County
Elevation: 855.6000 Feet

ID Number: 166875	Date: 8/27/2013
Site Name: SDH480 (McCormick's Creek State Park)	By: Brian D. Keith & Todd A. Thompson
Location: NE¼ NW¼ SW¼ sec. 23, T. 10 N., R. 3 W.	Notes: Gosport quadrangle, Owen County
UTMX: 524212.30, UTMY: 4348754.00,	North of horse barn in field next to woods.
Zone: 16	
Elevation: 749.1000 Feet