

MONAGHAN, GEORGE WILLIAM:

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EDUCATION:

Ph.D. Geology, 1989, Michigan State University.
M.S. Geology, 1984, Michigan State University.
B.S. Anthropology, 1978, Michigan State University
Chinese Study, 1975_76 Taiwan Normal University
Languages: *Chinese*: spoken: fair reading: fair
German: spoken: fair reading: good

PROFESSIONAL EXPERIENCE:

Present. *ASSOCIATE RESEARCH SCIENTIST*, Glenn A. Black Laboratory for Archaeology, Indiana University.
1987-2003 *ASSOCIATE CURATOR*, Museum, Michigan State University, East Lansing, MI (1999-2003). And *CONSULTING GEOLOGIST*, specialize geology, geomorphology, geoarchaeology, hydrogeology.
1987 *LECTURER* Michigan State University, Continuing Education; Modern concepts in geology for secondary educators (with laboratory).
1987 *GEOLOGIST*, Museum Michigan State University; analysis of geology and soils of archaeological sites in central Michigan.
1982-87 *TEACHING ASSISTANT*, Michigan State University, Dept. Geology; Glacial, Engineering, Field and Physical Geology, Hydrogeology, Geomorphology.
1982-85 *RESEARCH ASSISTANT*, Michigan State University, Geology; computer mapping and inventory of Michigan's coal resources.
1983-84 *GEOLOGIST*, Michigan State University Museum; Analysis of geology at sites in Central Michigan.
1979_81 *RESEARCH ASSISTANT*, Michigan State University, Dept. Geology; Geological mapping and computer modeling of groundwater recharge to aquifers in central and southwestern Michigan.

EXPERTISE

Geoarchaeology & Geomorphology
Environmental Geology & Hydrology
Computer Mapping & GIS

CERTIFICATION/LICENSE

Pennsylvania DOT: Geoarchaeology

PROFESSIONAL AFFILIATIONS

Geological Society of America
Society for American Archaeology
European Association of Archaeologists
American Cultural Resources Association
Conference on Michigan Archaeology

GRANTS AND AWARDS

- \$6,164 Magnetometer survey of an area at the Federal Prison at Terre Haute, Indiana., US Federal Bureau of Prisons (2006)
- \$71,147 Michigan Department of Transportation, Site Formation in Eolian Setting in the Upper Great Lakes (through Michigan State University, 2005-2007; IU-GBL portion of \$264,000 grant; with William Lovis and Alan Arbogast, Michigan State University)
- \$37,000 Crane ARSP Third Iteration, US Navy (With Melody Pope, Glenn Black Laboratory, 2004-2005)
- \$63,500 US DOD, Deep Testing at the Newport Chemical Depot, Vermilion County, IN (With Melody Pope, Glenn Black Laboratory, 2004)
- \$135,000 Minnesota Depart of Transportation, Evaluation of Deep Test Methods in Minnesota (through Commonwealth Cultural Resources, Inc., 2004-2005. IU-GBL portion of \$350,000 grant; with Katherine Egan-Bruhy and Michael Hambacher, CCRG, Inc)
- \$148,000 Interstate Transportation Enhancement Act (ISTEA), Michigan Depart Transportation, Deep Test Model (with W.A. Lovis, Michigan State University. 2000-2002)
- \$ 100 Michigan State University, Geological Sciences. Most outstanding thesis in 1984_1985 award (1985).
- \$ 1,000 Michigan State University. Drift Stratigraphy of the Lake Michigan Lobe, Northwest Michigan (1984).
- \$29,800 US Geological Survey. Computerize Coal Resources in Michigan's Coal Basin (with G.J. Larson, 1983)
- \$ 1,000 Michigan State University, Geological Sciences. Drift Stratigraphy of the Lake Michigan Lobe, Southwest Michigan (1983).
- \$ 8,900 Michigan Dept Natural Resources. Surficial Geology and Groundwater Recharge, Kalamazoo County, Michigan (with G.J. Larson, 1980).
- \$ 500 Michigan State University, Geology. Drift stratigraphy of the Saginaw Lobe, Central Michigan (1980).

JOURNAL AND BOOK PUBLICATIONS:

- Dworkin, S.I., Larson, G.J., Monaghan, G.W., 1985. Late Wisconsinan ice flow reconstructions for the central Great Lakes Region: *Canadian Journal of Earth Sciences*, 22:935_940.
- Larson, G.J. and Monaghan, G.W., 1988, *Wisconsinan and Holocene Stratigraphy in Southwestern Michigan*. Midwest Friends of the Pleistocene 35th Field Conference, Michigan State University. 62 p.
- Lovis, W.A., K.C. Egan, G.W. Monaghan, and B.A. Smith, 2001. Wetland and Emergent Horticultural Economies in the Upper Great Lakes: A new Perspective from the Schultz Site. *American Antiquity* 66:615-632
- Lovis, W.A., Holman, M.B, Monaghan, G.W., and Skowronek, R.K., 1994, Archaeology, geology, and paleoecology: perspectives on regional research design in the Saginaw Bay region of Michigan. In *Great Lakes Archaeology and Paleoecology: Exploring Interdisciplinary Initiatives for the Nineties*. Edited by R.I. MacDonald, Quaternary Sciences Institute, University of Waterloo, Waterloo, ON, pp 81-94.

- Lovis, W.A., Egan, K.C., Monaghan, G.W., Smith, B.A., Prah, E.J., 1996, Environment and Subsistence at the Marquette Viaduct Local of the Fletcher Site In *Investigating the Archaeological Record of the Great Lakes States*. Edited by M.B. Holman, J.G. Brashler, and K.E. Parker, New Issues Press, Western Michigan University, Kalamazoo, MI, pp 251-306.
- Monaghan, G.W., 1984. *Drift Stratigraphy of the Lake Michigan and Saginaw Ice Lobes, South-central Michigan*. [M.S. Thesis], Geology, Mich. State Univ.
- Monaghan, G.W., 1988, Clay-mineral composition of tills in the Lake Michigan basin. in Larson, G.J. and Monaghan, G.W., *Wisconsinan and Holocene Stratigraphy in Southwestern Michigan*. Midwest Friends of the Pleistocene 35th Field Conference, Mich. State Univ. p. 25-34.
- Monaghan, G.W. and Fay, L. 1989. Geology of Weber Site I. In *Archaeological Investigations at the Weber I and Weber II Sites*, Edited by W.A. Lovis, Michigan Cultural Resources Investigations Series, Volume 1. Lansing, MI.
- Monaghan, G.W., 1989, *Systematic variation in Clay-mineral Composition of Wisconsinan Age Till Sheets in the Lake Michigan Basin*. [Ph.D. Thesis], Department of Geological Sciences Michigan State University, 79 p.
- Monaghan, G.W., 1990. Systematic variation in the clay-mineral composition of till sheets: Evidence for the Erie Interstade in the Lake Michigan Basin. In *Late Quaternary history of the Lake Michigan Basin*, Edited by A.F. Schneider and G.S. Fraser, Geological Society of America, Special Paper 251:43-49.
- Monaghan, G.W., 1993. Geology of the Third Street Bridge Right-of-Way, Bay City, Michigan, In W.A. Lovis [ed.], *The Archaic, Woodland and Historic Period Occupations of the Liberty Bridge Locale: Bay City, Michigan*, Michigan Cultural Resources Investigations Series, Volume 3, Michigan Department of Transportation, Lansing, MI.
- Monaghan, G.W., Gephart, G., and Larson, G.J., 1986. Drift stratigraphy of the Lake Michigan Ice Lobe, southwestern Michigan: *Geol. Soc. Am. Bulletin*, 97:324_328.
- Monaghan, G.W., and Hansel, A.K. 1990. Evidence for the intra-Glenwood (Mackinaw) low-water phase of glacial Lake Chicago: *Canadian Journal of Earth Science*, 27:1236-1241
- Monaghan, G.W., D.R. Hayes, S. Dworkin, E.A. Voigt, 2004. Geoarchaeology of the brook run site (44CU122): an early archaic Jasper Quarry in Virginia, USA. *Journal of Archaeological Science*, 31:1083-1092.
- Monaghan, G.W. and Larson, G.J., 1985. A computerized groundwater resources information system: *Groundwater*, 23(2):233_240.
- Monaghan, G.W. and Larson, G.J., 1986. Drift stratigraphy of the Saginaw Lobe, south-central Michigan: *Geol. Soc. Am. Bulletin*, 97:329_334.
- Monaghan, G.W. and Lovis, W.A., 2005. *Modeling Archaeological Site Burial in Southern Michigan: A Geoarchaeological Synthesis*. Michigan State University Press, East Lansing, MI.
- Monaghan, G.W., Lovis, W.A. and Fay, L., 1986. The Nipissing transgression in the Thumb Area of Michigan: *Canadian Journal of Earth Sciences*, 23:1851-1854.

ABSTRACTS AND PAPERS PRESENTED:

- Egan-Bruhy, K., G.W. Monaghan, M, Kolb, S. Peterson D.R. Hayes, and M.J. Hambacher. 2005 *Minnesota Deep Test Protocol Project: Part 2, Cost/Benefit and Deep Test Protocol*. Presented at 51st Annual Midwest Archaeological Conference, Dayton, OH.

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- Gephart, G.D., Monaghan, G.W., and Larson, G.J., 1982. A Mid-Wisconsinan event in the Lake Michigan Basin: *Geol. Soc. Am. Programs with Abstracts*, 14,5:260.
- Gephart, G.D., Monaghan, G.W., and Larson, G.J., 1983. Stratigraphic evidence for a significant readvance of the Michigan Ice Lobe to the Kalamazoo Moraine B southwestern Michigan: *Geol. Soc. Am. Programs with Abstracts*, 15,4:261.
- Hayes, D.H., and Monaghan, G.W., 1997. Archaeological site Burial during the Holocene: A case Study approach to the Mid-Atlantic. Paper presented at the *Third International conference on Soils, Geomorphology and Archaeology*. May 22-24, 1997.
- Hayes, D.H., and Monaghan, G.W., 1998. The down and dirty approach to a variable archaeological record: a geomorphological framework for archaeological site formation, preservation, and discovery in the James and Potomac River basins. Paper presented at the *Society of American Archaeologists, Seattle Annual Meeting*.
- Hayes, D.H., and Monaghan, G.W., 1998. Geoarchaeological Investigations Along Rock Creek: Variable Landscape and Archaeological Site Formation Within Evolving Prehistoric and Human Environments. Paper presented at the *Mid-Atlantic Archaeological Society, Annual Meeting* at Cape May, New Jersey.
- Hayes, D.H., and Monaghan, G.W., 1999. Geoarchaeological Investigations Along Rock Creek: Variable Landscape and Archaeological Site Formation Within Evolving Prehistoric and Human Environments. Paper presented at the Society for American Archaeologists Annual Meeting, Chicago, Illinois.
- Hayes, D.H. and G. W Monaghan, 2000. *Geoarchaeological Investigations along the Guyandotte River and Blue Creek: Late Holocene Alluvial Terrace Formation, and Buried Site Identification Along Medium-Sized Tributaries within Logan and Kanawha Counties, West Virginia*. Presented at the Council for West Virginia Archeology=s 2nd Annual Workshop, Hurricane WV.
- Hambacher, M.J., Egan, K., and Monaghan, G.W., 1992. Summary of the Archaeology and Geology of the Bear Creek Site (20SA1023), Saginaw Co., MI. Presented at Midwest Archaeology Conference, Grand Rapids, MI.
- Hambacher, M.J., Dunham, S.B., and Monaghan, G.W., 1998, The US-31 highway project: recent investigations at the Spoonville, and other Middle and Late Woodland occupations in the lower Grand River Valley, Ottawa County, Michigan. Presented at Midwest Archaeology Conference, Muncie, IN.
- Lovis, W.A., Holman, M.B, Monaghan, G.W., and Skowronek, R.K., 1991, Archaeology, geology, and paleoecology: perspectives on regional research design in the Saginaw Bay region of Michigan. *Great Lakes Archaeology and Paleoecology: Exploring Interdisciplinary Initiatives for the Nineties*. A Symposium presented by the Quaternary Sciences Institute, University of Waterloo, Waterloo, ON. p. 8.
- Lovis, W.A., G.W. Monaghan, and J.A. Robertson 2001. *Landscape Change and the Late Archaic Occupation of the Lower Saginaw River in Bay City* Paper presented at the 2001 Midwest Archaeological Conference Symposium on Archaic Research in the Upper Midwest October 2001, LaCrosse, Wisconsin
- Monaghan, G.W. 1985. Evidence for the Erie Interstade in the Lake Michigan Basin: Southwestern Michigan: *Geol. Soc. Am. Programs with Abstracts*, 17,4:319.

- Monaghan, G.W., K. Egan-Bruhy, M, Kolb, S. Peterson D.R. Hayes, and M.J. Hambacher. 2005 Minnesota Deep Test Protocol Project: Part 1, Project Background, Design, and Results. Presented at 51st Annual Midwest Archaeological Conference, Dayton, OH.
- Monaghan, G.W., and D.R. Hayes, 2004. Geological History and Archaeological Potential of Butlers Bluff, Southeastern Shore of Chesapeake Bay, Va. *Geological Society of America Abstracts with Programs*, 36(2):42.
- Monaghan, G.W. and Staffan Peterson 2005. *Exploring for alluvially buried archaeological sites in the upper Midwest, USA: A methodological comparison*. Paper presented at the 11th Annual Meeting of the European Association of Archaeologists, Cork, Ireland.
- Monaghan, G.W., and Hayes, D.H. 1997. Archaeological Site Burial: A Model for site Formation within the Middle-to-Late Holocene Alluvial Settings of the Great Lakes. Presented at *Taming the Taxonomy: Towards a New Understanding of Great Lakes Prehistory*, Joint Symposium of the Ontario Archaeological Society, Midwest Archaeology Conference, North York, ON, pg 12.
- Monaghan, G.W., and Hayes, D.H. 1998. Millennial-Scale patterns to Middle-to-Late Holocene Alluviation in the Great Lakes and Mid Atlantic Regions, USA., *Geol. Soc. Am. Programs with Abstracts*, 30, 7.
- Monaghan, G.W., D.H. Hayes, 2000. *Geoarchaeological Investigations at Hickory Bluff: Site Formation and Preservation within a Changing Holocene Landscape*. Presented at the 65rd Annual Meeting of the Society for American Archaeology; Philadelphia, Pennsylvania
- Monaghan, G.W., and Hayes, D.H. 2001. Archaeological Site Burial: A Model for Site Formation Within Middle-To-Late Holocene Alluvial Settings of the Great Lakes and Mid-Atlantic Regions, USA. *Geological Society of America. Programs with Abstracts*.
- Monaghan, G.W., and Hayes, D.H. 2002. *The Geoarchaeology of the Converse Site: Discovery, Taphonomy, and Depositional History*. Paper presented at Society for American Archaeology Annual Meeting, Denver CO.
- Monaghan, G.W., and D.R. Hayes, 2004. Geological History and Archaeological Potential of Butlers Bluff, Southeastern Shore of Chesapeake Bay, Va. *Geological Society of America Abstracts with Programs*, 36(2):42.
- Monaghan, G.W. and Larson, G.J. 1980. Shallow and deep drift aquifers: a model for their formation in south-central Michigan: *Geol. Soc. Am. Programs with Abstracts*, 12,5:251.
- Monaghan, G.W., and Larson, G.J. 1994. Origin of clay-mineral variation in Wisconsinan age sediments from the Lake Michigan: *Geol. Soc. Am. Programs with Abstracts*, 26,5:55.
- Monaghan, G.W., and Ritter, H.M., 1982, Identification and verification of natural recharge in a glaciated terrain, south-central Michigan: *Geol. Soc. Am. Programs with Abstracts*, 14,7:569.

REPORTS, MAPS, FIELD GUIDES, AND OTHER SCHOLARLY WORKS:

- Demeter, C.S., and Monaghan, G.W., 1997, *A Phase II/III prehistoric Site Evaluation of the Ambassador Bridge-Detroit Welcome Center, Detroit, Michigan*. Commonwealth Cultural Resources Group, Jackson, MI., 47 p.
- Cline, J.S, G.W. Monaghan and D.R. Hayes, 2001, *Archaeological and Geological Evaluations at Butler=s Bluff, Northampton, County, Virginia*. Report for Virginia Department of Historic Resources, Richmond, VA., 32 p.

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- Demeter, C.S., G.W. Monaghan, and M.J. Hambacher 2000. A Phase I archaeological Evaluation of the Crotty Street Mitigation Wetland: The Green Point/Schultz II (20SA1) Site, City of Saginaw, Saginaw County, Michigan. Report R-0344, Commonwealth Cultural Resources Group, Inc, Jackson, Michigan.
- Dunham, S.B., Taylor, K.C., and Monaghan, G.W., 1999, *Phase II investigations at Site 20Br47 and Phase I deep Testing at the Coldwater River Tristate Pipeline Project, Branch County Loop, Girard Township, Branch County, Michigan*. Commonwealth Cultural Resources Group, Inc, Jackson, MI., 47 p.
- Lovis, W.A., Egan, K., Smith, B., Monaghan, G.W., 1994, *Muskrat and Fish, Wild Rice and Goosefoot: Changing Subsistence Strategies and the Origins of Indigenous Horticulture at the Schultz Site*. Submitted to Committee for Research, National Geo. Soc, Washington, D.C.
- Lovis, W.A., Smith, B., Egan, K., Monaghan, G.W., and Prahl, E., 1989, *Environment and Subsistence at the Marquette Viaduct Locale of the Fletcher Site*. Report submitted to the Committee for Research, National Geographic Society, Washington, D.C.
- Larson, G.J., Monaghan, G.W., and Puzio, M. 1979. *Groundwater Recharge Potential to the Saginaw Formation, Ingham, Eaton, and Clinton counties Michigan*. On file, Tri-County Planning Commission, Lansing, MI.
- Monaghan, G.W. 2002. Geology and Geoarchaeology of the Marquette Viaduct Relocation Project Sites 20BY28 and 20 BY387, Bay City Michigan. In: *A Bridge to the Past: the Post Nipissing Archaeology of the Marquette Viaduct Replacement Project Sites 20BY28 and 20BY387*. Willam A. Lovis [ed]. MSU Museum and Depart of Anthropology, Michigan State University, East Lansing, MI.
- Monaghan, G.W. 1995. Deep Testing results for in the Broadway-Washington corridor Project Area., in Hambacher, M, Dunham, S., and Branstner, M., 1995. *Cultural resources investigations: Broadway-Washington corridor project area, Bay City, Michigan*. Great Lakes Report # 95-21 submitted to H.N.T.B. Michigan, Inc. East Lansing,
- Monaghan, G.W. 1996. The Physiographic and Geologic Background and Phase I Deep Testing for Archaeological Sites in the US-23 Project Area , in Hambacher, M, Dunham, S., Branstner, T., and Branstner, M., 1996. *Cultural resources investigations: US-23 Corridor and Alternatives, Arenac, Bay and Iosco Counties, Michigan*. Great Lakes Report # 96-02 submitted to Michigan Department of Transportation, Lansing, MI
- Monaghan, G.W. 1996. Physiographic and Geologic Background and Phase I Deep Testing for Archaeological Sites in the US-31 Project Area., in Hambacher, M, Dunham, S., Branstner, T., and Branstner, M., 1996. *Cultural resources investigations: US-31 Corridor and Alternatives, Allegan, Ottawa, and Muskegon Counties, Michigan*. Great Lakes Report # 96-05 submitted to Michigan Department of Transportation, Lansing, MI.
- Monaghan, G.W., 1995. Geomorphic and Physiographic Setting. **in:** M.C. Branstner and M.J. Hambacher [eds], *1991 Great Lakes Gas transmission limited Partnership Pipeline Expansion Projects: Phase III investigations at Cassassa Site (20Sa1021), Saginaw County, Michigan (FERC docket no. CP89-892-000)*. Report #95-01. Great Lakes Research Associates, Williamston, MI., pp. 2-22.
- Monaghan, G.W., 1995. Geomorphic and Physiographic Setting. **in:** M.C. Branstner and M.J. Hambacher [eds], *1991 Great Lakes Gas transmission limited Partnership Pipeline*

- Expansion Projects: Phase III investigations at Vogalar Site (20Sa1021), Saginaw County, Michigan (FERC docket no. CP89-892-000)*. Report #95-02. Great Lakes Research Associates, Williamston, MI., pp. 2-21.
- Monaghan, G.W., 1990, *Report of the geology and depositional history of the Schuyler Falls landfill, Clinton County, New York*. Report prepared for Barton and Loguidice, PC, Syracuse, New York, 21 p.
- Monaghan, G.W., 1990, *Glacial and post-glacial lake level history in the Michigan, Huron and Superior Lake basins and their use in predicting deep burial of pre-historic archaeological sites*. Report prepared for Great Lakes Research, Williamston, MI, 42 p.
- Monaghan, G.W., 1990, Survey Methods. In: M.C. Branstner (ed), *The Great Lakes Gas Transmission Company Natural Gas Pipeline Corridor (MP 562.6-972.9): A Preliminary Sensitivity Model and Testing Strategy Report* to Great Lakes Gas Transmission Pipeline Company and Braun Environmental Laboratories, Inc., Great Lakes Research Associates, Williamston, MI, pp 25-34.
- Monaghan, G.W., 1985, Geology of Third Street Bridge project area, Bay City, Michigan. in: Lovis W.A. (ed.), *Archaeological Investigations at sites 20BY77, 20BY78, and 20BY79, Third Street Bridge Replacement, Bay City, Michigan: Michigan Depart. of Transportation, Archaeological Completion Report*, no. 3.
- Monaghan, G.W. and Fay, L. 1983. Geology of Weber Site I. in: Lovis W.A. (ed.), *Archaeological Investigations at the Weber I (20SA581) and Weber II (20SA582) Sites, Frankenmuth Township, Saginaw County, Michigan: Michigan Department of Transportation, Archaeological Completion Report*, no. 1, p. 41_50.
- Monaghan, G.W., and Hayes, D.H., 1994, Chapter 5: Geoarchaeology. **in:** J.A. Robertson, K.C. Egan, and D.J. Weir [ed], *Stage III Archaeological investigations at Whitney Creek No. 1 Site (ANR-39; AO37-01-0024) Genesee County, New York*, Commonwealth Cultural Resources Group, Inc, Jackson, MI, pg. 1-35.
- Monaghan, G.W. and Hayes, D.H., 1994, Chapter 5: Geoarchaeology. **in:** J.A. Robertson, K.C. Egan, and D.J. Weir [ed], *Stage III Archaeological investigations at Arc Site (ANR-29; AO37-10-0004) Genesee County, New York*, Commonwealth Cultural Resources Group, Inc, Jackson, MI, pg. 1-38.
- Monaghan, G.W., and Hayes, D.H., 1994, Chapter 5: Site Geomorphology and Geoarchaeology. **in:** D.J. Weir [ed], *Stage III Archaeological investigations at Zinselmeier No. 1 Site (ANR-222; AO69-15-0026) Ontario County, New York*, Commonwealth Cultural Resources Group, Inc, Jackson, MI, pg. 1-36.
- Monaghan, G.W., and Hayes, D.H., 1994, Chapter 5: Geoarchaeology. **in:** J.A. Robertson, K.C. Egan, and D.J. Weir [ed], *Stage III Archaeological investigations at McVicker Site, Ontario County, New York*, Commonwealth Cultural Resources Group, Jackson, Mi, pg. 1-36.
- Monaghan, G.W. and Larson, G.J., 1982. Surficial Geology and Groundwater Supplies in Kalamazoo County, Michigan. Open files, Michigan Department of Natural Resources, Groundwater Quality Division, Lansing, MI.
- Monaghan, G.W. and Larson, G.J., 1980. *Map of the Surficial Geology of Eaton County, Michigan*. Tri_County Planning Commission, Lansing, Michigan.

- Monaghan, G.W., Larson, G.J., Forstat, D.W., and Sorensen, H.O. 1983. Selected Geologic Maps of Kalamazoo Co., Michigan: *County Geologic Map Series - Kalamazoo*, Michigan DNR, Geologic Survey, Lansing, MI.
- Monaghan, G.W., and Schaetzl, R., 1994. Geology and Geochemistry of the Study area. **in:** M.C. Branstner and M.J. Hambacher [eds], *1991 Great Lakes Gas transmission limited Partnership Pipeline Expansion Projects: Phase III investigations at the Shiawassee River (20Sa1033) and Bear Creek Sites (20Sa1043), Saginaw County, Michigan (FERC docket no. CP89-892-000)*. Great Lakes Research Associates, Inc., Williamston, MI., pp. 5-32.
- Robertson, J.A., and Monaghan, G.W., 1994, *Geomorphology at the St. Clair River Crossing for the Proposed ANR LINK to the Intercoastal Pipeline, Columbus and St. Clair Townships, St. Clair County, Michigan*, MDOS ER No. 920278. Commonwealth Cultural Resources Group, Inc, Jackson, MI., 16 p.