Michigan Technological University

Federal Awards Supplemental Information

June 30, 2022

Michigan Technological University

Contents

Plante & Moran, PLLC
Suite 300
750 Trade Centre Way
Portage, MI 49002
Tel: 269.567.4500
Fax: 269.567.4501
plantemoran.com

Report on Schedule of Expenditures of Federal Awards Required by the Uniform Guidance

Independent Auditor's Report

To the Board of Trustees
Michigan Technological University

We have audited the financial statements of Michigan Technological University (the "University"), a component unit of the State of Michigan, as of and for the year ended June 30, 2022 and the related notes to the financial statements, which collectively comprise the University's basic financial statements. We issued our report thereon dated October 25, 2022, which contained unmodified opinions on those financial statements. Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the basic financial statements. We have not performed any procedures with respect to the audited financial statements subsequent to October 25, 2022.

The accompanying schedule of expenditures of federal awards is presented for the purpose of additional analysis, as required by the Uniform Guidance, and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditures of federal awards is fairly stated in all material respects in relation to the financial statements as a whole.

Plante & Moran, PLLC

March 20, 2023

Plante & Moran, PLLC
Suite 300
750 Trade Centre Way
Portage, MI 49002
Tel: 269.567.4500
Fax: 269.567.4501
plantemoran.com

Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

Independent Auditor's Report

To Management and the Board of Trustees
Michigan Technological University

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of Michigan Technological University (the "University") as of and for the year ended June 30, 2022 and the related notes to the financial statements, which collectively comprise the University's basic financial statements, and have issued our report thereon dated October 25, 2022. The financial statements of the Michigan Tech Fund, a blended component unit, were not audited in accordance with *Government Auditing Standards*.

Report on Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered the University's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, we do not express an opinion on the effectiveness of the University's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the University's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses or significant deficiencies may exist that were not identified.

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

To Management and the Board of Trustees
Michigan Technological University

Purpose of This Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the University's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the University's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Plante & Moran, PLLC

October 25, 2022

Plante & Moran, PLLC
Suite 300
750 Trade Centre Way
Portage, MI 49002
Tel: 269.567.4500
Fax: 269.567.4501
plantemoran.com

Report on Compliance for Each Major Federal Program and Report on Internal Control Over Compliance Required by the Uniform Guidance

Independent Auditor's Report

To the Board of Trustees
Michigan Technological University

Report on Compliance for Each Major Federal Program

Opinion on Each Major Federal Program

We have audited Michigan Technological University's, a component unit of the State of Michigan (the "University"), compliance with the types of compliance requirements identified as subject to audit in the Office of Management and Budget (OMB) Compliance Supplement that could have a direct and material effect on each of the University's major federal programs for the year ended June 30, 2022. The University's major federal programs are identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

In our opinion, the University complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of the major federal programs for the year ended June 30, 2022.

Basis for Opinion on Each Major Federal Program

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America (GAAS); the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (the "Uniform Guidance"). Our responsibilities under those standards and the Uniform Guidance are further described in the *Auditor's Responsibilities for the Audit of Compliance* section of our report.

We are required to be independent of the University and to meet our other ethical responsibilities in accordance with relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on compliance for each major federal program. Our audit does not provide a legal determination of the University's compliance with the compliance requirements referred to above.

Responsibilities of Management for Compliance

Management is responsible for compliance with the requirements referred to above and for the design, implementation, and maintenance of effective internal control over compliance with the requirements of laws, statutes, regulations, rules, and provisions of contracts or grant agreements applicable to the University's federal programs.

Auditor's Responsibilities for the Audit of Compliance

Our objectives are to obtain reasonable assurance about whether material noncompliance with the compliance requirements referred to above occurred, whether due to fraud or error, and express an opinion on the University's compliance based on our audit. Reasonable assurance is a high level of assurance but is not absolute assurance and, therefore, is not a guarantee that an audit conducted in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance will always detect material noncompliance when it exists. The risk of not detecting material noncompliance resulting from fraud is higher than for that resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Noncompliance with the compliance requirements referred to above is considered material if there is a substantial likelihood that, individually or in the aggregate, it would influence the judgment made by a reasonable user of the report on compliance about the University's compliance with the requirements of each major federal program as a whole.

In performing an audit in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material noncompliance, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the University's compliance with the compliance requirements referred to above and performing such other procedures as we considered necessary in the circumstances.
- Obtain an understanding of the University's internal control over compliance relevant to the audit in order to design audit procedures that are appropriate in the circumstances and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control over compliance. Accordingly, no such opinion is expressed.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and any significant deficiencies and material weaknesses in internal control over compliance that we identified during the audit.

Report on Internal Control Over Compliance

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A material weakness in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A significant deficiency in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the *Auditor's Responsibilities for the Audit of Compliance* section above and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies in internal control over compliance. Given these limitations, during our audit we did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above. However, material weaknesses or significant deficiencies in internal control over compliance may exist that were not identified.

Our audit was not designed for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, no such opinion is expressed.

To the Board of Trustees
Michigan Technological University

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Plante & Moran, PLLC

March 20, 2023

Schedule of Expenditures of Federal Awards

Year Ended June 30, 2022

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Student Financial Assistance Cluster					
Department of Education					
Federal Supplemental Educational Opportunity Grant	Direct	84.007	P007A212046	$ -	$ 226,539
Federal Work-Study Program	Direct	84.033	P033A212046	-	249,167
Federal Pell Grant Program	Direct	84.063	P063P210234	-	5,031,356
Federal Perkins Loan Program	Direct	84.038	N/A	-	5,634,975
Federal Direct Student Loans	Direct	84.268	P268K220234	-	25,117,885
Total Student Financial Assistance Cluster				-	36,259,922
Research and Development Cluster					
U.S. Department of Agriculture					
Biotechnology Risk Assessment Research	Direct	10.219	2016-33522-25626	-	526
Agriculture and Food Research Initiative (AFRI)	Direct	10.310	2017-67013-26261	-	104,613
Agriculture and Food Research Initiative (AFRI)	Direct	10.310	2020-67023-31638	-	148,031
Agriculture and Food Research Initiative (AFRI)	Direct	10.310	2022-67014-37035	-	15,190
Passed through the Pennslyvania State University:					
Agriculture and Food Research Initiative (AFRI)	Pass-through	10.310	S002482-USDA	-	2,128
Passed through the University of Nebraska - Lincoln:					
Sustainable Agriculture Research and Education	Pass-through	10.215	26-6122-0947-002	-	3,019
Cooperative Forestry Research	Direct	10.202	ADVANCE ACCOUNT	-	98,175
Cooperative Forestry Research	Direct	10.202	NI20MSCFRXXXG044	-	5,094
Cooperative Forestry Research	Direct	10.202	NI21MSCFRXXXG022	-	235,723
Subtotal U.S. Department of Agriculture				-	612,499
U.S. Department of Agriculture - Forest Service					
Black Ash Wetland Ecosystem Processes	Direct	10.RD	17-JV-11242307-133	-	47,853
Applied Carbon Research and Management	Direct	10.RD	20-CR11242306-109	-	11,607
Estimating Upland Watersheds Risk to Increased Sediment, Ash and Nutrients Due to Wildfires in the Continental US	Direct	10.RD	20-JV-11221634-214	-	18,165
Long-term Effects of Hurricane Hugo and Prescribed Fire Management on Sustainability of Coastal Plain Forests	Direct	10.RD	21-JV-11330180-051	-	39,242
Analysis support and expert knowledge for scaling aggregated, object-based estimations of fuels, energy flux, and emissions	Direct	10.RD	21-CR-111221633-152	-	21,232
GLRI Plant Sample Tissue Analysis for d13C	Direct	10.RD	1263PX20P0042/998535	-	
Student Remote Sensing Support of Satellite Detection Surveys	Direct	10.RD	18-CR-11221676-160	-	5,158
Advancement of the Riparian Buffer Delineation Model and Its Utility Across a Variety of Ecosystems	Direct	10.RD	18-CS-11132422-306	-	133,440
Using UAS Based LiDAR to Map Archaeology Features	Direct	10.RD	19-PA-11091000-012	-	5,153
Demonstrate the Durability of Enhanced Domestic Hardwoods for U.S. Army Tactical Trailer Decking	Direct	10.RD	19-JV-11111133-064	-	37,814
Ottawa NF- Assessment of Stream Restoration to Inform Future Efforts to Maintain Coldwater Streams	Direct	10.RD	21-PA-11090700-002	-	9,589
Cooperative Forestry Assistance	Direct	10.664	20-DG-11094200-008	-	26,373
Cooperative Forestry Assistance	Direct	10.664	19-DG-11420000-032	-	43,355
Forest Health Protection	Direct	10.680	20-DG-11094200-241	-	29,383
Forest Health Protection	Direct	10.680	21-DG-11094200-063	-	18,360
Partnership Agreements	Direct	10.699	17-JV-11242306-044	-	37,746
Partnership Agreements	Direct	10.699	20-CS-11242306-096	-	160,831
Partnership Agreements	Direct	10.699	20-CS-11242306-119	-	105,732
Partnership Agreements	Direct	10.699	19-CR-11242306-025	-	86,872
Partnership Agreements	Direct	10.699	18-CR-11242306-072	-	21,938
Partnership Agreements	Direct	10.707	20-JV-11330180-087	-	22,537
Partnership Agreements	Direct	10.707	21-JV11242307-050	-	30,832
Partnership Agreements	Direct	10.707	21-JV-11242307-084	-	4,536
Collaboration for Research and Capacity Building in Wetland Carbon Cycling in Tropical Ecosystems	Direct	10.RD	17-JV-11242306-017	-	7,036
Coastal Wetland Re-Connection	Direct	10.RD	17-PA-11091000-026	-	18,741
Subtotal U.S. Department of Agriculture - Forest Service				-	943,525
Total U.S. Department of Agriculture				-	1,556,024
U.S. Department of Commerce - National Institute for Standards and Technology					
Science, Technology, Business and/or Education Outreach	Direct	11.620	70NANB21H037	7,000	105,428
Subtotal U.S. Department of Commerce - National Institute for Standards and Technology				7,000	105,428
U.S. Department of Commerce - National Oceanic and Atmospheric Administration					
Passed through Board of Supervisors of Louisiana State University					
Gulf Coast Ecosystem Restoration Science, Observation, Monitoring, and Technology	Pass-through	11.451	SUBAWARD NO. PO-0000038194	-	24,479
Passed through University of Michigan					
Ocean Exploration	Pass-through	11.011	SUBK00014120	-	35,008
Passed through Great Lakes Observing System:					
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	IOOS025/SGL-14	-	36,326
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	IOOS098/HFR-02	-	1,216
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	PROJECT NUMBER: IOOS/NBN-01	-	13,167
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	NA16NOS0120025 IOOS/HFR-01	-	103,759
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	IOOS098/YR2-NBN-11	-	32,438
Passed through Michigan Department of Environment, Great Lakes, and Energy:					
Coastal Zone Management Administration Awards	Pass-through	11.419	Project #: 2022-309-Toolkit Te	-	8,183
Coastal Zone Management Administration Awards	Pass-through	11.419	PROJECT21 RESILIENCY 003	-	43,081

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Passed through Mid-Atlantic Fishery Management Council					
Fisheries-Independent Survey For Golden (Lopholatilus Chamaelonticeps) Tilefish Throughout the Range from Georges Bank to Cape Hatteras	Pass-through	11.RD	NA15NMF4410006	$ -	$ 7,535
Passed through Ohio State University					
Center for Sponsored Coastal Ocean Research_Coastal Ocean Program	Pass-through	11.478	PO#RF01495490/PROJECT #60061695	-	48,315
Passed through Regents of the University of Michigan					
Sea Grant Support	Pass-through	11.417	NA180AR4170102 /SUB3004932531	-	(1,385)
Sea Grant Support	Pass-through	11.417	SUBK00012244	-	36,384
Sea Grant Support	Pass-through	11.417	SUBK00012245	-	132,546
Sea Grant Support	Pass-through	11.417	SUBK00016577	-	1,355
Passed through Regents of the University of Michigan (Continued)					
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Pass-through	11.432	SUBK00015596 PO# 3006671074	-	22,568
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Pass-through	11.432	SUBK00015597 PO#3006670584	-	118,214
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Pass-through	11.432	Subcontract No. SUBK00011367	-	122,712
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Pass-through	11.432	SUBK00011609 PO 3005745206	-	17
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Pass-through	11.432	SUBK00011313 PO#3005725813	-	46,863
Passed through University of Wisconsin-Madison					
Weather and Air Quality Research	Pass-through	11.459	0000001819	-	9,870
Subtotal U.S. Department of Commerce - National Oceanic and Atmospheric Administration				-	842,651
Total U.S. Department of Commerce				7,000	948,079
U.S. Department of Defense - U.S. Air Force					
Experiments, Scenarios, CONOPS, and Prototype Engineering (ESCAPE)	Direct	12.RD	FA8750-16-C-0072	-	257,524
Multi-Scale Fusion & Allocation for Heterogeneous Sensing (MSFAHS)	Direct	12.RD	FA8750-21-C-1003	-	436,430
Air Force Defense Research Sciences Program	Direct	12.800	FA9550-17-1-0201	-	76,284
Air Force Defense Research Sciences Program	Direct	12.800	FA9550-20-1-0434	-	76,937
Passed through Applied Research Solutions, Inc					
Fusion of Observation, Interence and Learning (FOIL)	Pass-through	12.RD	SUB CON NO. S00016/PO S00016	-	286,231
Passed through ARCTOS Technology Solutions, LLC					
2021-2022 Aerospace Propulsion Outreach Program	Pass-through	12.RD	SUB 212014.05.00.2016.00.19-C6	-	18,173
Passed through ORB Aerospace					
STTR: EVTOL Business Development	Pass-through	12.RD	#2008021	-	36,543
Passed through Pennslyvania State University					
Air Force Defense Research Sciences Program	Pass-through	12.800	Sub No. S001884-AFOSR	-	97,237
Passed through A-Tech, LLC					
The Amon Hen Project	Pass-through	12.RD	MTU SUBCONTRACT #180637	-	26,912
Passed through Booz-Allen-Hamilton					
Research, Analysis and Development for Advanced Signal Processing of a CDO Environment	Pass-through	12.RD	Sub #S903841BAH; Prime #FA8075	-	41,611
Passed through DZYNE Technologies					
STUDENT DESIGN: Waterborne Survival Rescue and Recovery Device	Pass-through	12.RD	MON0001-S-016-3	-	14,555
Passed through Endectra, LLC					
Multifunctional Integrated Cargo Pocket UAS Phase II	Pass-through	12.RD	MTU AGREEMENT #2005006	-	158,784
Passed through Leidos Inc.					
Opera TO2	Pass-through	12.RD	P010151900-2	-	30,346
PRIDE (Passive Radio Frequency Identification Environment)	Pass-through	12.RD	P010189654 / FA8650-16-C-1732	-	3,655
ACME 4 (RFP No: SRG2016-BAA-XXX-03RB)	Pass-through	12.RD	SUBCONTRACT NO P010192299	-	282,303
Passed through Northrop Grumman					
PRECISE	Pass-through	12.RD	PO #5300003528	-	55,977
Passed through SRICO Inc.					
Materials Processing for Heterogeneous Integration of Optical Isolators: Phase 2	Pass-through	12.RD	SUB NO. 17089MTU	-	13,654
Passed through Utah State University Research Foundation					
Auris: A Cubesat to Characterize and Locate Geostationary Communications Emitters	Pass-through	12.RD	CP0053711	-	20,979
Auris nanosatellite development Phase B	Pass-through	12.RD	CP0072013	-	36,038
Subtotal U.S. Department of Defense - U.S. Air Force				-	1,970,173
U.S. Department of Defense - U.S. Army					
Basic Scientific Research	Direct	12.431	W911NF-14-2-0088	-	2,660
Basic Scientific Research	Direct	12.431	W911NF-22-2-0066	-	34,290
Robotic Platform Soil and Terrain Chracterization for Close to Real Time GO/NOGO Maps	Direct	12.RD	W9132T21C0016	-	310,348
Development of a Diesel Electric Hybrid HMMWV Demonstration Platform with Power Sharing	Direct	12.RD	W50RAJ2290011	262,309	632,170
OPFOR Hierarchical AI for Field Exercises and Training	Direct	12.RD	W912CG-21-C-0016	-	180,703
MPVs Product Improvements	Direct	12.RD	W56HZV-19-C-0053 WD09	-	561,321
US DoD Army Ground Vehicle Systems Center	Direct	12.RD	W56HZV-19-C-0053 WD10	-	53,290

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
M109 Fan Noise	Direct	12.RD	W56HZV-19-C-0053 WD 014	$ 32,510	$ 81,132
Snow Mobility & Soil Testing	Direct	12.RD	W56HZV-19-C-0053	-	1,038
Sensors for Adaptive Armor	Direct	12.RD	W56HZV-19-C-0053	107,605	112,848
Vehicle Load Acquisition	Direct	12.RD	W56HZV-19-C-0053 WD 017	-	9,451
CASSINO	Direct	12.RD	W56HZV-19-C-0053 WD 018	-	211,082
US DoD Army, Ground Vehicle Systems Center	Direct	12.RD	W56HZV-19-C-0053 WD 018	-	329,227
ONR PAM	Direct	12.RD	W56HZV-19-C-0053 WD 019	2,435	(594)
M1E1 Track Loads	Direct	12.RD	W56HZV-19-C-0053 WD 08	-	(1,547)
Snow Mobility & Soil Testing	Direct	12.RD	W56HZV-19-C-0053 WD 015	-	3,356
Defense Mobility System	Direct	12.RD	W56HZV-19-C-0053 P00023 WD016	745,848	767,810
Sensors for Adaptive Armor	Direct	12.RD	W56HZV-19-C-0053 P00030 WD 023	383,705	402,667
US DoD Army, Ground Vehicle Systems Center	Direct	12.RD	W56HZV-19-C-0053 WD 009	-	86,942
MPVS	Direct	12.RD	W56HZV-19-C-0053 WD 009	-	37,408
EHP Roller Technical Manual	Direct	12.RD	W56HZV-19-C-0053 WD 025	-	33,562
HEMTT CROWS Testing	Direct	12.RD	W56HZV-19-C-0053 WD 026	-	247,850
HEMTT CROWS Testing	Direct	12.RD	W56HZV-19-C-0053 WD 026	-	49,141
M1E1 Track Loads Phase 4	Direct	12.RD	W56HZV-19-C-0053 WD 027	93,341	698,454
MMPV Type II Testing	Direct	12.RD	W56HZV-19-C-0053 WD 030	-	274,968
ONR PAM	Direct	12.RD	W56HZV-19-C-0053 WD 028	551,989	930,291
Sensors for Adaptive Armor	Direct	12.RD	W56HZV-19-C-0053 WD 023	1,163,566	1,298,099
Snow Mobility	Direct	12.RD	W56HZV-19-C-0053 WD29	-	59,904
JLTV Trailer Testing	Direct	12.RD	W56HZV-19-C-0053 WD 031	-	174,986
CASSINO	Direct	12.RD	Mod. P00054 WD 018 REV 003	-	126,686
Robotic Live Fire Test Stand	Direct	12.RD	Mod. P00055 WD 033	-	42,242
Water Bison	Direct	12.RD	Mod P00056 WD 032	-	77,065
Sensors for Adaptive Armor	Direct	12.RD	Mod P00057 WD 035	-	3,984
Wear Plate & Center Guide Testing	Direct	12.RD	Mod P00058 WD 034	-	10,318
Sensors For Adaptive Armor	Direct	12.RD	Mod P00059 WD 023 REV 003	17,332	20,254
ONR PAM	Direct	12.RD	W56HZV-19-C-0053 WD 28	-	44,193
EHP Roller Software	Direct	12.RD	Mod P00062 WD 037	-	1,311
Passed through SOSSEC, Incorporated					
Modeling and Algorithm Development for Adaptive Adversarial AI for Complex Autonomy	Pass-through	12.RD	ERDC-MECI-PLA-0003	-	238,621
Passed through University of California at San Diego					
Deployment of an Experimental Buoy - 2020	Pass-through	12.RD	PO #PUR00068728-0	-	227
Deployment and Recovery of an Experimental Buoy - 2021	Pass-through	12.RD	UC PUR00319719	-	8,633
Deployment and Recovery of Experimental Buoy - 2022	Pass-through	12.RD	Univ Calif PUR00416739	-	3,967
Passed through Fibertek					
Surface and Buries Object Detection Using UAS-based RADAR	Pass-through	12.RD	Agreement #820739129	-	(85)
DO 91, Detection and Classification Algorithm for UAV Radar	Pass-through	12.RD	AGREEMENT NO 821739018	-	169,032
Passed through Helios Remote Sensing Systems					
Soldier-Borne Radar Detector	Pass-through	12.RD	Subcontract No. 1315-S01-HRSSI	-	15,871
Soldier-borne Radar Detector - Phase II	Pass-through	12.RD	Subcontract No. 1335-S01-HRSSI	-	27,844
Passed through Mettle Ops					
Soft Catch Frame	Pass-through	12.RD	PO NO. 321 REV 4; T&CS 8/4/20	-	(135)
Passed through Stevens Institute of Technology					
STUDENT DESIGN: SERC Facial Obscuration	Pass-through	12.RD	2103140-05 Prime #HQ003419D003	-	2,500
Passed through National Center for the Advancement of STEM Education					
ENTERPRISE: Robot Leader Follower	Pass-through	12.431	Grant #W15QKN-14-1-0001	-	4,455
ENTERPRISE: Robot Leader Follower Phase 2	Pass-through	12.RD	GRANT W15QKN-20-1-1000	-	7,199
ENTERPRISE: Robot Leader Follower Phase 3	Pass-through	12.RD	Contract # P0001/W15QKN-20-1-1	-	7,102
ENTERPRISE: Real Time Strategy Game for Military Commanders Phase 2 and Investigation of VR/AR/XR Technology Applied with Eye and Hand Interaction	Pass-through	12.RD	Agreement # P0001/Grant W15QKN	-	6,297
Passed through Regents of the University of Michigan					
Research and Technology Development	Pass-through	12.910	SUBK00011121 PO#3005466601	-	15,296
Research and Technology Development	Pass-through	12.910	SUBK00017449	-	16,715
Research and Technology Development	Pass-through	12.910	SUBK00011314 PO#3005489743	-	20,227
Passed through Advanced Matrix-AEM Group JV, LLC					
Keweenaw Stamp Sands Geotechnical and Chemical Investigation	Pass-through	12.RD	SC#-JV0004 (W911XK-16-D-0014)	-	32,460
Subtotal U.S. Department of Defense - U.S. Army				3,360,640	8,485,136
U.S. Department of Defense - U.S. Navy					
Hydrodynamic Control Using X-Band Radar for Wave Energy Converter Technology	Direct	12.RD	N39430-16-C-1883	6,745	6,745
Basic and Applied Scientific Research	Direct	12.300	N00014-20-1-2230	-	139,254
Passed through A-Tech, LLC					
Amon Hen Phase II Extension	Pass-through	12.RD	Subcontract Number 0000003387	-	55,000
Passed through Soar Technology, Inc.					
Resilient Autonomous Subsystems for Unmanned Air Systems (UAS)	Pass-through	12.RD	SC-21-04-10487	-	53,760
Passed through Advanced Technology & Research Corporation					
Ship Vibration Mitigation for Additive Manufacturing Equipment	Pass-through	12.RD	SUB NO. ATR-20-S-103010-01	-	14,256
Ship Vibration Mitigation for Additive Manufacturing Equipment: Phase 2	Pass-through	12.RD	ATR-22-S-103019-01 N68335-22-C	-	144,292
Passed through Applied Research in Acoustics LLC (ARiA)					
Redesign and Implementation of USDA Proxy Language-Phase II	Pass-through	12.RD	MTU#2102054	-	84,413

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Passed through Sandia National Laboratories					
Meta-Stability of Pulsed Load Microgrids	Pass-through	12.RD	PO#1746491/REVISION:13	$ -	$ 6,858
Subtotal U.S. Department of Defense - U.S. Navy				6,745	504,578
U.S. Department of Defense - Defense Advance Research Project					
Bayesian Adaptive Robotic Control System (BARCS)	Direct	12.RD	2103140-02 HR001118C0124	-	142,457
Autonomous Storming, Norming and Performing	Direct	12.RD	HR00112090021	66,909	70,030
The Grand Deception	Direct	12.RD	HR001120C0075	-	171,129
Hierarchical Adversarial Response Machine (HARM)	Direct	12.RD	HR00112090113	-	269,379
Odometry and Machine Navigation Inferred from 360° Video					
Passed through Centauri					
Passed through Florida Institute for Human and Machine Cognition					
Research and Technology Development	Pass-through	12.910	FA8650-17-2-7711-1	-	106,185
Passed through University of Arizona					
Research and Technology Development	Pass-through	12.910	Subaward No. 617338	-	30,000
Passed through Leidos, Inc.					
Providence TA-2	Pass-through	12.RD	Subcontract No. P010244078	-	347,959
Passed through BAE Systems					
Bullion	Pass-through	12.RD	Subcontract Number 1130876	-	50,000
Passed through Moire Incorporated					
Topology-Agnostic Resource Management and Control (TARMAC)	Pass-through	12.RD	MTU #2109080	-	65,188
Passed through Soar Technology, Inc.					
URBAN RECONNAISSANCE THROUGH SUPERVISED AUTONOMY (RUSA) PROGRAM - PHASE	Pass-through	12.RD	SUBCONTRACT NUMBER: SC-20-030	-	649,564
Passed through Centauri					
Moving Target Recognition	Pass-through	12.RD	SUB NTG0002644	-	2,086,452
Subtotal U.S. Department of Defense - Defense Advance Research Project				66,909	3,988,343
U.S. Department of Defense					
Basic and Applied Scientific Research	Direct	12.300	N00174-19-1-0004	-	80,580
Basic and Applied Scientific Research	Direct	12.300	N00014-20-1-2793	-	(180)
Basic and Applied Scientific Research	Direct	12.300	N00014-21-1-2877	-	110,920
Science, Technology, Engineering & Mathematics (STEM) Education,					
Outreach and Workforce Program	Direct	12.330	N00014-20-1-2263	-	18,750
Basic Scientific Research	Direct	12.431	W911NF2020273	-	5,715
Research and Technology Development	Direct	12.910	HR0011-20-2-0033	496,041	1,992,575
High Order Modulation Studies	Direct	12.RD	FA8650-20-C-7035	-	47,210
Automated Bathymetry Generation and Algorithm	Direct	12.RD	HM157520P0058	-	369,383
Passed through American Foundry Society Inc					
Integration of ICME Tools in Casting Design and Process Optimization for Intelligent Manufacturing	Pass-through	12.RD	AFS; Prime #SP4701-17-D-1134	-	5,171
Passed through Kestrel Corporation					
CLEARVIEW Spotter Scope	Pass-through	12.RD	SUBCONTRACT FOR 1907011P2	-	54,908
Passed through Soar Technology, Inc.					
RL-ICE PHII	Pass-through	12.RD	SC-21-001-10458	-	93,525
Localization through Optimized Coordination of Unmanned Sensor Teams for RAIDER (LOCUST-R)	Pass-through	12.RD	SC-21-009-10494	-	47,042
Passed through Booz-Allen-Hamilton					
RECON	Pass-through	12.RD	P5331 / A3375	-	38,075
Passed through Applied Research in Acoustics LLC (ARiA)					
Non Real-Time Hardware Assisted Computer System Simulation	Pass-through	12.RD	Agreement #2104044	-	50,000
Passed through MTRI Inc.					
Online and Offline Terrain Strength Estimation Using Remote Sensing for Ground Vehicle Mobility Planning	Pass-through	12.RD	MTU Agreement 2110030	-	38,264
Heterogeneous O?W? Learning System (HOWLS)	Pass-through	12.RD	MTU#2106030	-	30,304
Passed through Etegent Technologies Ltd.					
Algorithm Performance Evaluation with Low Sample Size	Pass-through	12.RD	SUBCONTRACT NO. ETE.21.012.01	-	11,869
Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA)	Pass-through	12.RD	Subcontract No. ETE.22.011.01	-	34,983
Passed through GKN Aerospace Transparency Systems, Inc.					
Laser Metal Deposition with Wire (LMD-w) AM Process for Ti 6Al-4V	Pass-through	12.RD	GKN PO#000000145122	-	11,454
Passed through Riverside Research Institute					
Elliptical Geometry Research	Pass-through	12.RD	PO# RR002335/GS05Q17BMA0011	-	48,963
Passed through Ideal Innovations, Inc. (I3)					
Real-time Radio-Frequency Characterization of Unmanned Airborne Systems	Pass-through	12.RD	SUBCONTRACT AGMT 18F0117-MI	-	131,875
Passed through QuesTek Innovations LLC					
QuesTek Innovations	Pass-through	12.RD	MTU SO #2108038; PO#2834	-	5,000
Meltspinning	Pass-through	12.RD	MTU SO #2110046; PO# 2878	-	3,862
Passed through Lawrence Livermore National Security LLC					
Theoretical Support for Gas-Gun Experiments: Towards Mutual Suppression of Shockwave Instabilities	Pass-through	12.RD	B645370	-	43,506
Passed through Leidos, Inc.:					
StarFall	Pass-through	12.RD	SubP0120237489/Prime 20-C-8957	-	88,494
Ridgeback TO1	Pass-through	12.RD	P010259696 & W31P4Q-21-D-R001	-	42,073
PERSEUS SUPPORT	Pass-through	12.RD	P010247684; PRIME 16-C-0048	-	37,902
IVY	Pass-through	12.RD	P010252458; PRIME 21-C-2001	-	325,280
SPARTA	Pass-through	12.RD	PO10253718	-	1,235,268

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Passed through Loukus Technologies, Inc.					
Intelligen Pre-Alloying of Cerium Master Alloys to Optimize Magnesium and Aluminum Alloy Strength and High Temperature Properties	Pass-through	12.RD	MTU #2104020; LIFT #21002	$ -	$ 3,649
Passed through Northrop Grumman Corporation					
Sun King	Pass-through	12.RD	Northrop Grumman PO#5300005408	-	89,312
Passed through Signature Research Inc					
Algorithms for Look-Down Infrared Target Exploitation-Phase II	Pass-through	12.RD	PO#01-383-02S1	-	264,629
Information Theory Approaches for Machine Learning Algorithm Performance Assessment with Limited Testing Data	Pass-through	12.RD	PO#01-417-01S1 HM0476-21-C-003	-	49,410
Passed through Stevens Institute of Technology:					
ENTERPRISE: 2019 AFRL 01 Cooling Aid for Maintainers in Protective Gear	Pass-through	12.RD	Subcontract #2102964-01	-	505
ENTERPRISE: SERC Pressure Measurements of Blank Ammunition	Pass-through	12.RD	2103140-09 Prime HQ003419D0003	-	5,000
ENTERPRISE: Dry Combat Submersible Atmospheric Monitoring, Conditioning, and Purification	Pass-through	12.RD	2102140-02 Prime HQ003419D0003	-	3,532
SENIOR DESIGN: SERC Future Vehicle Stopping	Pass-through	12.RD	SUB#2102964-04;	-	2,464
STUDENT DESIGN: SERC Wearable Technologies	Pass-through	12.RD	2103140-06 Prime #HQ003419D003	-	(169)
STUDENT DESIGN: SERC Dry Combat Submersible Regenerative Charging	Pass-through	12.RD	2103140-03 Prime#HQ003419D0003	-	2,094
STUDENT DESIGN: SERC Ground Force Commander Simulator Phase 2	Pass-through	12.RD	2103140-07 Prime # HQ003419D00	-	771
Subtotal U.S. Department of Defense				496,041	5,423,968
Total U.S. Department of Defense				3,930,335	20,372,198
U.S. Department of Housing and Urban Development					
Healthy Homes Technical Studies Grants	Direct	14.906	MILTS0007-17 AMEND NO. 1	44,560	77,993
Healthy Homes Technical Studies Grants	Direct	14.906	MILTS0023-21	11,459	27,758
Total U.S. Department of Housing and Urban Development				56,019	105,751
U.S. Department of Interior - Bureau of Indian Affairs					
Cooperative Landscape Conservation	Direct	15.156	A19AC00030	-	6,097
Passed through Navajo Technical University					
Green Technology for in-place Reclamation of Coal Mine Spoil GOB Piles in Abandoned Mine	Pass-through	15.255	NTU-32351-21	-	10,671
Passed through Keweenaw Bay Indian Community					
Study on Stream Temperature Controls at Menge Creek, Falls River, and Silver River Catchments	Pass-through	15.RD	TIER II SERVICES AGREEMENT	-	4,137
Climate Resiliency Plan and amendment of the Integrated Resource Management Plan	Pass-through	15.RD	KBIC SERVICES AGRMNT #2101026	-	21,382
Methyl Mercury Source and Availability in the Torch Lake Watershed	Pass-through	15.RD	KBIC SERVICES AGMT FR #2001056	-	11,170
Assessment of risk from cumulative toxicity of chemical contaminants in Lake Superior fish to Keweenaw Bay Indian Community	Pass-through	15.RD	SERVICES AGREEMENT#2102002	-	8,859
Subtotal U.S. Department of Interior - Bureau of Indian Affairs				-	62,316
U.S. Department of Interior - Fish & Wildfire Service					
Cooperative Landscape Conservation	Direct	15.669	F20AC11140-00	-	20,502
Cooperative Ecosystem Studies Units	Direct	15.678	F18AC00039	-	53,880
Passed through Michigan Department of Natural Resources					
Wildlife Restoration and Basic Hunter Education	Pass-through	15.611	MOA_MTU_CKMR	-	44,461
Passed through SharedGeo					
Great Lakes Monitoring Outreach and Data Sharing	Pass-through	15.RD	SharedGeo Preferred Vendor Agr	-	20,275
Subtotal U.S. Department of Interior - Fish & Wildfire Service				-	139,118
U.S. Department of Interior - U.S. Geological Survey					
U.S. Geological Survey_ Research and Data Collection	Direct	15.808	G21AC10141-00	-	27,105
U.S. Geological Survey_ Research and Data Collection	Direct	15.808	G21AC10745-00	-	59,631
U.S. Geological Survey_ Research and Data Collection	Direct	15.808	G18AC00365	-	86,357
National Cooperative Geologic Mapping Program	Direct	15.810	G21AC10681-00	-	21,183
Torch Lake Invertebrate sampling	Direct	15.RD	CONFIRMING ORDER #2110027	-	4,248
Passed through AmericaView:					
National Land Remote Sensing_Education Outreach and Research	Pass-through	15.815	MOD NO. 004	-	18,466
National Land Remote Sensing_Education Outreach and Research	Pass-through	15.815	AV18-MI-01 MODIFICATION NO. 03	-	14,483
Passed through Western Michigan University					
U.S. Geological Survey_ Research and Data Collection	Pass-through	15.808	SUBAWARD #10471	-	35,076
Subtotal U.S. Department of Interior - U.S. Geological Survey				-	266,549
U.S. Department of Interior - National Park Service					
Monitoring Genetic Health of Isle Royale Wolves	Direct	15.RD	MTU CO#1909093	-	43,394
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P16AC01398	-	85,214
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P18AC00178	-	17,600
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P19AC00286	-	40,278
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P20AC00377	-	32,203
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P21AC11836-00	-	650

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P22AC00193-00	$ -	$ 18,304
Subtotal U.S. Department of Interior - National Park Service				-	237,643
Total U.S. Department of Interior				-	705,626
U.S. Department of Labor					
Occupational Safety and Health_Susan Harwood Training Grants	Direct	17.502	SH-37201-21-60-F-26	-	31,521
U.S. Department of State					
Passed through University of Nebraska Omaha					
Public Diplomacy Programs	Pass-through	19.040	45-24020-1031-312	-	25,023
U.S. Department of Transportation					
Passed through Engineering & Software Consultants, Inc					
Mapping of Unit/Product System Processes for Pavement Life Cycle Assessment and Demonstration Case Studies	Pass-through	20.RD	ESCINC SUBCONTRACT#: 18-49	-	14,742
Passed through Genex Systems					
Real-Time Monitoring and Modeling of Scour - Phase II	Pass-through	20.RD	469-SBIRDOTPH2-20FH3-1	-	8,997
Passed through MTRI Inc.					
Automated, Drone-based Grade Crossing Inspection Phase II	Pass-through	20.RD	PRIME AWA#6913G620C100017	-	29,291
Subtotal U.S. Department of Transportation				-	53,030
U.S. Department of Transportation - Federal Aviation					
Passed through Iowa State University					
Small Unmanned Aircraft System (sUAS) for Pavement Inspection	Pass-through	20.RD	Award # 023139B	-	82,869
Passed through Old Dominion University Research Foundation					
ENTERPRISE: The Runway Intersection Marking Next Steps Proposal	Pass-through	20.RD	SUBAWARD NO. 21-165-400204-010	-	14,595
Subtotal U.S. Department of Transportation - Federal Aviation				-	97,464
U.S. Department of Transportation - Federal Highway					
Autonomous Winter Road Maintenance Decision Making Enabled by Boosting Existing Transportation Data Infrastructure with Deep and Reinforcement Learning	Direct	20.RD	693JJ320C000022	-	175,026
Passed through Michigan Dept of Transportation					
Metropolitan Transportation Planning and State and Non-Metropolitan Planning and Research	Pass-through	20.505	Contract No. 2019-0311 Auth Z3	-	92,725
Metropolitan Transportation Planning and State and Non-Metropolitan Planning and Research	Pass-through	20.505	Contract No. 2019-0311, Aut Z1	22,463	230,712
Metropolitan Transportation Planning and State and Non-Metropolitan Planning and Research	Pass-through	20.505	2019-0311, Z2/ JN 211062NI	-	112,596
Subtotal U.S. Department of Transportation - Federal Highway				22,463	611,059
U.S. Department of Transportation - Federal Railroad					
Effect of In-Vehicle Auditory Alerts on Driver Behaviors at Highway-Rail Grade Crossings	Direct	20.RD	693JJ618C000027	54,163	93,515
Railroad Artificial Intelligence Intruder Learning System (RAIILS)	Direct	20.RD	693JJ619C000001	-	86,855
Developing Safe and Efficient Driving and Routing Strategies at Railroad Grade Crossings Based on Highway-Railway Connectivity	Direct	20.RD	693JJ6-19-C-000022	413	211,269
An Integrated and Automated Decision Support System for Ground Hazard Risk Mitigation for Railway using Remote Sensing and Traditional Condition Monitoring Data	Direct	20.RD	693JJ631C000004	-	60,835
Wire Arc Additive Manufacturing (WAAM) for Weld Enhanced Cast Steel Coupler Knuckles	Direct	20.RD	Contract No. 693JJ622C00001	-	374
Expanding Summer Youth Programs in Rail through Virtual Learning and a National Campus Network	Direct	20.RD	693JJ621C000014	-	39,658
Subtotal U.S. Department of Transportation - Federal Railroad				54,576	492,506
Total U.S. Department of Transportation				77,039	1,254,059
National Aeronautics and Space Administration					
Exploring CV19 Impacts on Great Lakes Water Quality	Direct	43.RD	80NSSC20P2097	-	55,250
Science	Direct	43.001	80NSSC17K0287	-	213,261
Science	Direct	43.001	80NSSC17K0262	16,369	28,242
Science	Direct	43.001	80NSSC19M0107SUP#P00001	96,696	192,537
Science	Direct	43.001	80NSSC20K0367	-	(28)
Science	Direct	43.001	80NSSC20K0983	-	42,641
Science	Direct	43.001	80NSSC20K1480	-	95,675
Science	Direct	43.001	80NNSC20M022	15,244	121,440
Science	Direct	43.001	80NSSC20K1773	160,323	223,282
Science	Direct	43.001	80NSSC21K0174	-	57,545
Science	Direct	43.001	80NSSC20K0679	-	40,817
Space Operations	Direct	43.007	80NSSC19K0160	-	16,752
Space Technology	Direct	43.012	NNX17AJ32G	1,865,031	2,353,472
Space Technology	Direct	43.012	80NSSC18K0252	5,030	40,131
Space Technology	Direct	43.012	80NSSC21K0769	77,594	742,243
Space Technology	Direct	43.012	80NSSC21K1699	-	48,329
Science	Direct	43.001	80NSSC21K1162	-	68,883

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Science	Direct	43.001	NNX16AN09G	$ -	$ 87,029
Science	Direct	43.001	80NSSC19M0108 SUPPLEMENT #P003	-	117,054
Science	Direct	43.001	80NSSC19K0771	-	48,353
Science	Direct	43.001	80NSSC21K0928	-	36,385
Passed through Arizona State University:					
STUDENT DESIGN: Landing System for Uncertain Terrain	Pass-through	43.RD	NASA PRIME NNM16AA09C	-	1,001
STUDENT DESIGN: Robotic Explorer for Hypothesized Surfaces	Pass-through	43.RD	NASA PRIME NNM16ZZ09C	-	1,001
STUDENT DESIGN: Sampling System for Hypothesized	Pass-through	43.RD	NASA PRIME NNM16AA09C	-	1,001
STUDENT DESIGN: Returning Samples of Hypothesized Surfaces	Pass-through	43.RD	NASA PRIME NNM16ZZ09C	-	1,001
Passed through Honeybee Robotics					
RedWater: Extraction of Water from Mars' Ice Deposits	Pass-through	43.RD	Prime 80HQTR19C0017	-	47,193
Passed through Jet Propulsion Laboratory					
SMAPVEX21 Planning and Vegetation Sampling Supplement	Pass-through	43.RD	Subcontract No. 1662109	-	15,773
Passed through Miami University					
Science	Pass-through	43.001	MCCARTY-NASA-MICHTECH-G03016	-	12,023
Passed through Grand Valley State University					
Science	Pass-through	43.001	Subaward No. 214005-MTU-01	-	9,527
Passed through Trans Astronautica Corporation					
NIAC Phase 2: Lunar Polar Mining Outpost	Pass-through	43.RD	CO #2001052	-	775
Passed through Purdue University					
Science	Pass-through	43.001	Subaward No. 12000414-017	-	21,545
Passed through University of Central Florida					
Exploration	Pass-through	43.003	24086235-03	-	24,621
Passed through University of Maryland College Park:					
Science	Pass-through	43.001	53894-Z6044201	-	79,333
Science	Pass-through	43.001	60783-Z6098201	-	18,361
Science	Pass-through	43.001	77464-Z6207201	-	98,014
Passed through University Corporation for Atmospheric Research					
Science	Pass-through	43.001	SUBAWD002090/P2010817	-	111,127
Passed through Texas State University					
Education	Pass-through	43.008	22008-83824-2	-	25,739
Passed through University of Michigan:					
Education	Pass-through	43.008	SUBK00015391 PO#3006462575	-	9,481
Passed through Colorado School of Mines					
Space Technology	Pass-through	43.012	Subaward No. 402157-5802	-	8,428
Total National Aeronautics and Space Administration				2,236,287	5,115,237
National Endowment for the Humanities					
Promotion of the Humanities_Office of Digital Humanities	Direct	45.169	HAA-271717-20	-	8,434
Passed through Wayne State University					
Promotion of the Humanities_Division of Preservation and Access	Pass-through	45.149	Subaward No. WSU22120	-	8,858
Total National Endowment for the Humanities				-	17,292
National Science Foundation					
Engineering Grants	Direct	47.041	1451959	-	20,527
Engineering Grants	Direct	47.041	1605105	-	29,429
Engineering Grants	Direct	47.041	1639342	48,577	174,246
Engineering Grants	Direct	47.041	1651135	-	39,309
Engineering Grants	Direct	47.041	1710862	-	3,604
Engineering Grants	Direct	47.041	1742656	-	5,396
Engineering Grants	Direct	47.041	1709991	-	44,313
Engineering Grants	Direct	47.041	1749634	-	3,299
Engineering Grants	Direct	47.041	1739422	-	230
Engineering Grants	Direct	47.041	1818906	-	140,797
Engineering Grants	Direct	47.041	1751454	-	3,557
Engineering Grants	Direct	47.041	1804685	-	9,559
Engineering Grants	Direct	47.041	1762520	-	34,311
Engineering Grants	Direct	47.041	1807552	-	4,776
Engineering Grants	Direct	47.041	1827364	33,088	285,121
Engineering Grants	Direct	47.041	1846795	-	47,326
Engineering Grants	Direct	47.041	1918585	-	93,231
Engineering Grants	Direct	47.041	1937983	-	40,688
Engineering Grants	Direct	47.041	1920013	-	41,269
Engineering Grants	Direct	47.041	2031677	-	113,569
Engineering Grants	Direct	47.041	2015919	-	2,635
Engineering Grants	Direct	47.041	2025449	-	55,542
Engineering Grants	Direct	47.041	2024970	-	81,067
Engineering Grants	Direct	47.041	2105887	-	29,954
Engineering Grants	Direct	47.041	2050739	-	99,023
Engineering Grants	Direct	47.041	2119019	-	97,478
Engineering Grants	Direct	47.041	2129093	-	42,746
Engineering Grants	Direct	47.041	2143608	-	51,340
Engineering Grants	Direct	47.041	2138522	-	16,809
Engineering Grants	Direct	47.041	2138523	-	10,601

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Mathematical and Physical Sciences	Direct	47.049	1608537	$ -	$ 18,608
Mathematical and Physical Sciences	Direct	47.049	1818467	-	50,416
Mathematical and Physical Sciences	Direct	47.049	1808052	-	71,679
Mathematical and Physical Sciences	Direct	47.049	1904215	-	54,900
Mathematical and Physical Sciences	Direct	47.049	1914549	-	186,046
Mathematical and Physical Sciences	Direct	47.049	1954041	-	77,645
Mathematical and Physical Sciences	Direct	47.049	2001076	-	118,487
Mathematical and Physical Sciences	Direct	47.049	2018254	-	39,663
Mathematical and Physical Sciences	Direct	47.049	1944211	-	110,138
Mathematical and Physical Sciences	Direct	47.049	2012944	49,079	83,766
Mathematical and Physical Sciences	Direct	47.049	2108316	-	45,805
Mathematical and Physical Sciences	Direct	47.049	2117318	-	378,978
Mathematical and Physical Sciences	Direct	47.049	2118693	-	321
Mathematical and Physical Sciences	Direct	47.049	2111359	-	39,947
Mathematical and Physical Sciences	Direct	47.049	1933342	-	7,352
Geosciences	Direct	47.050	1625598	-	33,278
Geosciences	Direct	47.050	1654128	-	9,948
Geosciences	Direct	47.050	1754244	-	166,673
Geosciences	Direct	47.050	1841852	-	52,172
Geosciences	Direct	47.050	1806287	-	10,426
Geosciences	Direct	47.050	1828866	-	55,549
Geosciences	Direct	47.050	1914526	-	78,551
Geosciences	Direct	47.050	2019649	-	112,110
Geosciences	Direct	47.050	2021768	-	150,654
Geosciences	Direct	47.050	2133229	304,697	675,351
Geosciences	Direct	47.050	2136139	-	40,239
Geosciences	Direct	47.050	2113060	-	64,769
Geosciences	Direct	47.050	1639868	-	128,256
Geosciences	Direct	47.050	2130739	-	7,678
Computer and Information Science and Engineering	Direct	47.070	1618384	-	7,526
Computer and Information Science and Engineering	Direct	47.070	1745748	-	3,058
Computer and Information Science and Engineering	Direct	47.070	1708299	-	22,301
Computer and Information Science and Engineering	Direct	47.070	1750193	-	49,950
Computer and Information Science and Engineering	Direct	47.070	1823398	-	13,023
Computer and Information Science and Engineering	Direct	47.070	1829222	-	56,999
Computer and Information Science and Engineering	Direct	47.070	1938130	-	63,501
Computer and Information Science and Engineering	Direct	47.070	1909089	-	116,587
Computer and Information Science and Engineering	Direct	47.070	1901005	-	146,311
Computer and Information Science and Engineering	Direct	47.070	1928349	-	63,042
Computer and Information Science and Engineering	Direct	47.070	1909248	-	58,738
Computer and Information Science and Engineering	Direct	47.070	2042881	11,742	22,020
Computer and Information Science and Engineering	Direct	47.070	2105006	-	37,903
Computer and Information Science and Engineering	Direct	47.070	2106754	-	7,898
Computer and Information Science and Engineering	Direct	47.070	2133279	60,612	266,683
Computer and Information Science and Engineering	Direct	47.070	2210356	-	20,018
Biological Sciences	Direct	47.074	2011257	-	95,004
Biological Sciences	Direct	47.074	1451919	-	17,673
Biological Sciences	Direct	47.074	1737877	-	39,288
Biological Sciences	Direct	47.074	1754603	30,637	154,901
Biological Sciences	Direct	47.074	1941309	-	131,985
Biological Sciences	Direct	47.074	1939399	-	150,757
Biological Sciences	Direct	47.074	2031076	259	176,040
Biological Sciences	Direct	47.074	2141535	-	47,087
Social, Behavioral, and Economic Sciences	Direct	47.075	1911453	10,054	15,382
Social, Behavioral, and Economic Sciences	Direct	47.075	1921911	-	108,583
Social, Behavioral, and Economic Sciences	Direct	47.075	2009258	-	189,099
Social, Behavioral, and Economic Sciences	Direct	47.075	2122034	-	65,546
Social, Behavioral, and Economic Sciences	Direct	47.075	2121875	10,236	46,610
Education and Human Resources	Direct	47.076	1720566	-	160,278
Education and Human Resources	Direct	47.076	1760585	-	264,258
Education and Human Resources	Direct	47.076	1935932	-	51,826
Education and Human Resources	Direct	47.076	1954908	-	88,749
Education and Human Resources	Direct	47.076	2142309	-	18,481
Education and Human Resources	Direct	47.076	1742286	-	113,456
Education and Human Resources	Direct	47.076	1758392	7,190	279,356
Education and Human Resources	Direct	47.076	2034833	-	138,000
Education and Human Resources	Direct	47.076	2043022	-	275,074
Education and Human Resources	Direct	47.076	ADVANCE ACCOUNT	-	8,500
Office of International Science and Engineering	Direct	47.079	1855690	-	102,494
Office of International Science and Engineering	Direct	47.079	2103105	-	8,956
Office of Integrative Activities	Direct	47.083	1934346	26,205	373,779
Passed through Arizona State University					
Computer and Information Science and Engineering	Pass-through	47.070	ASUB00000217	-	10,861

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Passed through Florida State University					
Computer and Information Science and Engineering	Pass-through	47.070	R000002946	$ -	$ 11,377
Passed through Baylor University					
Biological Sciences	Pass-through	47.074	#1001076-01	-	11,639
Passed through Ciudadanos del Karso					
Biological Sciences	Pass-through	47.074	SUB 1754713	-	3,039
Passed through Colorado State University					
Biological Sciences	Pass-through	47.074	SUBAWARD #G-96772-1	-	16,197
Passed through Florida International University					
Education and Human Resources	Pass-through	47.076	800010570-01UG	-	24,302
Passed through Northern Virginia Community College					
Education and Human Resources	Pass-through	47.076	Subaward No. 2112-SPL-002	-	432
Passed through Purdue University					
Education and Human Resources	Pass-through	47.076	Subaward No. 10001687-004	-	13,166
Passed through Intertribal Agriculture Council					
Social, Behavioral, and Economic Sciences	Pass-through	47.075	Sub Agreement No. IAC-Michigan	-	3,012
Passed through Kansas State University					
Biological Sciences	Pass-through	47.074	S19023	-	67,443
Passed through Northern Arizona University					
Biological Sciences	Pass-through	47.074	1003744-01	-	3,012
Passed through Pennsylvania State University					
Geosciences	Pass-through	47.050	5697-MTU-NSF-5369	-	10,573
Geosciences	Pass-through	47.050	5000075-NSF	-	323
Passed through San Diego State University Research Foundation					
Education and Human Resources	Pass-through	47.076	SA0000699	-	73,729
Passed through ZiTechnologies, Inc.					
Engineering Grants	Pass-through	47.041	RSCH #2008057 NSF AWRD#2052302	-	75,672
Passed through University of Michigan					
Engineering Grants	Pass-through	47.041	UofM Subaward SUBK00015030	-	1,538
Engineering Grants	Pass-through	47.041	SUBK00012982	-	9,777
Passed through Stabilux Biosciences Inc.					
Engineering Grants	Pass-through	47.041	MICHIGAN TECH AGMT #1702043	-	39,505
Engineering Grants	Pass-through	47.041	MTU Agreement 2005024	-	62,453
Passed through University of Nebraska - Lincoln					
Education and Human Resources	Pass-through	47.076	25-0536-0045-006	-	71,841
Passed through University of Virginia					
Education and Human Resources	Pass-through	47.076	GA11384.PO#2213323/PTE 1850296	-	43,686
Passed through Wayne State University					
Education and Human Resources	Pass-through	47.076	SUBAWARD# WSU17042	-	762
Passed through Colorado State University					
Biological Sciences	Pass-through	47.074	G-45144-02	-	27,390
Total National Science Foundation				592,376	9,149,606
Environmental Protection Agency					
P3 Award: National Student Design Competition for Sustainability	Direct	66.516	SV-83948501-0	-	19,735
Passed through EA Engineering, Science and Technology, Inc.					
ROV Survey of Lake Bottom for Mining Debris in Torch Lake - Hubbell, MI	Pass-through	66.RD	Subcontractor SO #22666	-	11,981
Total Environmental Protection Agency				-	31,716
U.S. Department of Energy					
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0022095	49,428	60,489
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0018942	-	103,274
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0018931	-	1,120
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0020053	-	137,524
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0021168	36,432	223,615
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0022128	-	96,618
University Coal Research	Direct	81.057	DE-FE0032071	-	85,895
Conservation Research and Development	Direct	81.086	DE-EE0008685	-	129,446
Conservation Research and Development	Direct	81.086	DE-EE0008800	-	183,844
Conservation Research and Development	Direct	81.086	DE-EE0009122	44,731	91,613
Conservation Research and Development	Direct	81.086	DE-EE0009209	757,807	913,143
Advanced Research Projects Agency - Energy	Direct	81.135	DE-AR0000788	34,429	1,070,378
Advanced Research Projects Agency - Energy	Direct	81.135	DE-AR0001126	171,236	297,437
Advanced Research Projects Agency - Energy	Direct	81.135	DE-AR0001336 MOD 0001	-	59,543
Passed through Argonne National Laboratory:					
Investigation to Separate Lithium-ion Battery Active Cathode Materials by Chemistry Using Froth Flotation	Pass-through	81.RD	Subcontract No. 9F-60080	-	156,303
Pengfei Xue Joint Appointment Argonne National Labs	Pass-through	81.RD	Pengfei Xue Joint Appointment	-	57,800
Alternative Fuels Research with Argonne National Laboratory	Pass-through	81.RD	9F-60098	-	25,318
FY2020 Interoperability and Grid Integration Support	Pass-through	81.RD	OF-60090	-	109,517
Torrefaction of Sorted MSW Pellets to Produce a Uniform Feedstock for Biopower	Pass-through	81.RD	Contract No. 209856	-	67,999
Passed through Battelle Memorial Institute					
Reduced Cost and Complexity for Off-Highway Aftertreatment	Pass-through	81.RD	Contract No. 554645	-	155,991

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Passed through Ames Laboratory					
Extrusion Trial	Pass-through	81.RD	MTUSO#2108051 AMES PO#A21-1963	$ -	$ 1,499
Extrusion Trials	Pass-through	81.RD	MTU SO 2111106	-	6,810
Passed through Clemson University					
Renewable Energy Research and Development	Pass-through	81.087	Sub #2184-219-2023054	-	44,419
Passed through Faraday Technology Inc.					
Office of Science Financial Assistance Program	Pass-through	81.049	SC-40-01014-401034-46	-	6,446
Passed through Gas Technology Institute					
Renewable Energy Research and Development	Pass-through	81.087	GTI Agre #S948; Project #22530	-	14,530
Passed through REMADE Institute					
Renewable Energy Research and Development	Pass-through	81.087	Subaward No. 20-01-SA-4014	20,431	92,861
Passed through General Motors LLC					
Low Mass and High Efficiency Engine for Medium-Duty Truck Applications	Pass-through	81.RD	PO#4301052432	-	167,325
Passed through Honeywell Federal Manufacturing & Technologies, LLC:					
Full Field Dynamic Response For Simulation	Pass-through	81.RD	PO#N000416796	-	62,613
Full Field Response for Simulation and Prediction	Pass-through	81.RD	PO#N000378013	-	42,115
Time-Domain & Multi-Axis Resonant Plate Shock Test	Pass-through	81.RD	PO#N000380166	-	49,251
Frequency Response Inspection of AM Parts	Pass-through	81.RD	PO#N000387435	-	38,754
Passed through Hyundai-Kia American Technical Center Inc.					
Conservation Research and Development	Pass-through	81.086	#1807015	-	158,315
Passed through Lawrence Livermore National Security LLC					
Computational Assessment of Chlorine Attack on the Surface of Aluminum Oxide	Pass-through	81.RD	Subcontract No. B650820	-	20,784
Theoretical Support for Gas-Gun Experiments: Towards Suppression of Shockwave Instabilities and Jetting	Pass-through	81.RD	Subcontract No. B651358	-	7,293
Passed through UT-Battelle, LLC					
Control of Li Surfaces for Solid-State Batteries	Pass-through	81.RD	Subcontract No. CW34152	-	36,579
Passed through Loukus Technologies					
Processing, Testing, and Analyses	Pass-through	81.RD	MTU CO 2102030	-	6,532
Passed through National Renewable Energy Laboratory					
A Compression Ignition Mono-Fueled NG High-Efficiency, High-Output Engine for Medium and Heavy Duty Applications	Pass-through	81.RD	NHQ-9-82305-06	-	178,656
Passed through Argonne National Laboratory:					
Office of Science Financial Assistance Program	Pass-through	81.049	1F-60486	-	34,827
Passed through Sandia National Laboratories:					
Enhancing the Efficiency and Resilience of PV Systems at Northern Latitudes	Pass-through	81.RD	PO #2324302	-	608
Wind Turbine and Wind Farm Controls Code Evaluation for Reduced Order Models	Pass-through	81.RD	PO #2159403	-	104,980
Meta-Stability of Pulsed Loaded Microgrids	Pass-through	81.RD	PO #2169602	-	271,357
Passed through Terves LLC					
Low Mass Magnesium Based Conductors	Pass-through	81.RD	MTU CO# 2009041	-	388
Passed through The American Center for Mobility					
Conservation Research and Development High Resolution Imaging of Structural Dynamics	Pass-through	81.086	SUBAWARD NO: DE-EE0008407-01	-	703,909
Passed through University of Wisconsin-Madison					
Office of Science Financial Assistance Program	Pass-through	81.049	AGREEMENT NUMBER 812K943	-	382,406
Passed through Regents of the University of Minnesota					
Office of Science Financial Assistance Program	Pass-through	81.049	SUBAWARD NO. H007829703	-	16,974
Total U.S. Department of Energy				1,114,494	6,477,098
U.S. Department of Health and Human Services - Centers for Disease Control					
Temporal and Spatial Characterization of Respirable Coal Mine Dust					
Using Area Monitoring Devices and X-Ray CT	Direct	93.RD	75D30119C05527	-	45,038
Mine Health and Safety Big Data Analysis and Text Mining by Machine Learning Algorithms	Direct	93.RD	75D30121C12375	50,952	118,447
Passed through Center for Construction Research and Training					
Occupational Safety and Health Program	Pass-through	93.262	MTU Agreement #2111015	-	319
Passed through Michigan Department of Health and Human Services					
Epidemiology and Laboratory Capacity for Infectious Diseases (ELC)	Pass-through	93.323	AGREEMENT #: E20224555-00	-	865,590
Subtotal U.S. Department of Health and Human Services - Centers for Disease Control				50,952	1,029,394
U.S. Department of Health and Human Services - National Institute of Heath					
Food and Drug Administration_Research	Direct	93.103	1R01FD007461-01	48,926	144,480
Discovery and Applied Research for Technological Innovations to Improve Human Health	Direct	93.286	1R15EB026197-01	-	116,458
Discovery and Applied Research for Technological Innovations to Improve Human Health	Direct	93.286	R01EB029570-01A0	39,774	305,798
Cancer Detection and Diagnosis Research	Direct	93.394	1R15CA242401-01	-	65,004
Cancer Treatment Research	Direct	93.395	1R15CA246336-01	-	112,806
Cardiovascular Diseases Research	Direct	93.837	1R15HL140596-01	31,238	55,443
Cardiovascular Diseases Research	Direct	93.837	1R15HL145654-01	3,224	87,328
Cardiovascular Diseases Research	Direct	93.837	1R15HL147299-01	43,404	46,001
Cardiovascular Diseases Research	Direct	93.837	1R01HL144739-01A1	-	233,555
Cardiovascular Diseases Research	Direct	93.837	1R15HL145655-01	-	164,862
Cardiovascular Diseases Research	Direct	93.837	1R15HL150703-01A1	-	109,179

Schedule of Expenditures of Federal Awards

Year Ended June 30, 2022

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Extramural Research Programs in the Neurosciences and Neurological Disorders	Direct	93.853	1R15NS115032-01A1	$ -	$ 79,028
Allergy and Infectious Diseases Research	Direct	93.855	1R21AI150962-01	82,136	233,601
Biomedical Research and Research Training	Direct	93.859	1R15GM137145-01	-	96,276
Biomedical Research and Research Training	Direct	93.859	2R15GM109288-02	-	48,698
Biomedical Research and Research Training	Direct	93.859	1 R15 GM114751-02	-	124,793
Biomedical Research and Research Training	Direct	93.859	1R15GM135806-01	-	150,208
Biomedical Research and Research Training	Direct	93.859	1R15GM135875-01	-	99,600
Biomedical Research and Research Training	Direct	93.859	1R15GM132873-01A1	29,069	126,587
Biomedical Research and Research Training	Direct	93.859	1R15GM137298	7,641	109,801
Biomedical Research and Research Training	Direct	93.859	1R15GM139118-01A1	2,095	108,774
Aging Research	Direct	93.866	1 R15 AG059095-01	7,864	130,906
Passed through University of Michigan					
Research and Training in Complementary and Integrative Health	Pass-through	93.213	SUBK00013369 PO# 3006735267	-	7,241
Passed through Regents of the University of Michigan					
National Center on Sleep Disorders Research	Pass-through	93.233	SUBK00003964 PO#3005929257	-	22,575
Passed through Tulane University					
Aging Research	Pass-through	93.866	TUL-HSC-559015-21/22	-	30,577
Passed through University of Wisconsin-Madison					
Child Health and Human Development Extramural Research	Pass-through	93.865	Subaward No. 0000000663	-	8,497
Subtotal U.S. Department of Health and Human Services - National Institute of Heath				295,371	2,818,076
Total U.S. Department of Health and Human Services				346,323	3,847,470
Total Research and Development Cluster				8,359,873	49,636,700
Highway Planning and Construction Cluster					
U.S. Department of Transportation - Federal Highway Administration					
Passed through Michigan Department of Transportation					
Highway Planning and Construction	Pass-through	20.205	2021-0058 AUTH Z4/JN. 211788NI	-	40,050
Highway Planning and Construction	Pass-through	20.205	2021-0058 AUTH Z1 JN 211589NI	-	476,880
Highway Planning and Construction	Pass-through	20.205	2021-0058 Authorization Z8	-	15,954
Highway Planning and Construction	Pass-through	20.205	2021-0058 Authorization Z9	-	408,984
Highway Planning and Construction	Pass-through	20.205	2021-0058, Authorization Z12	-	31,221
Total Highway Planning and Construction Cluster				-	973,089
Highway Safety Cluster					
U.S. Department of Transportation - Federal Highway Administration					
Passed through Michigan Dept of Transportation					
National Priority Safety Programs	Pass-through	20.616	2021-0058, Z7/ JN 204329NI	-	80,446
National Priority Safety Programs	Pass-through	20.616	2021-0058 AUTH Z6/ JN 204329NI	-	17,961
Total Highway Safety Cluster				-	98,407
Total Clusters				**8,359,873**	**86,968,118**
Other Federal Awards					
U.S. Department of Agriculture					
Passed through Michigan State University					
Cooperative Extension Service	Pass-through	10.500	RC110795A	-	4,743
Passed through Michigan Department of Education					
Child Care Food Program	Pass-through	10.558		-	10,961
Subtotal U.S. Department of Agriculture				-	15,704
U.S. Department of Agriculture - Forest Service					
Partnership Agreements	Direct	10.707	19-cr-11242306-094	-	6,202
Partnership Agreements	Direct	10.707	21-CR-11242306-067	-	18,948
Partnership Agreements	Direct	10.707	21-CR-11242306-080	-	47,077
Archaeological Collection Cooperative Management Ottawa National Forest	Direct	10.U01	18-CS-11090700-004	-	10
Archaeological Collection Cooperative Management Hiawatha National Forest	Direct	10.U02	20-CS-11091000-002	-	126
Responding to Climate Change Risks: Services for the USDA Northern Forests Climate Hub	Direct	10.U03	17-CR-11242306-049	-	76,363
Web Development for the Climate Change Resource Center	Direct	10.U04	18-CR-11242306-085	-	43,541
Digital Science Communication	Direct	10.U05	19-CR-11242306-118	-	50,869
Supporting Science-Management Partnerships for Climate Adaptation	Direct	10.U06	20-CR-11242306-068	-	24,824
Forest Service Research Web Modernization - Content Delivery	Direct	10.U07	20-CR-11242306-094	-	60,774
Archaeological Collection Cooperative Management-Hiawatha National Forest	Direct	10.U08	21CS-11091000-032	-	12,790
Forest Climate Adaptation Online Short Course for Latin America and/or the Caribbean	Direct	10.U09	21-CS-11132762-185	-	22,000
Belowground Ecosystem Ecologist	Direct	10.U10	21-JV-11242306-039	-	32,089
Partnership Agreements	Direct	10.699	17-CR-11242306-031	-	62,905
Partnership Agreements	Direct	10.699	18-CR-11242306-049	-	47,229
Passed through U.S. Endowment for Forestry and Communities					
Cooperative Forestry Assistance	Pass-through	10.664	E19-65	-	25,821
Subtotal U.S. Department of Agriculture - Forest Service				-	531,568
Total U.S. Department of Agriculture				-	547,272

Schedule of Expenditures of Federal Awards

Year Ended June 30, 2022

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Other Federal Awards (Continued)					
U.S. Department of Commerce - National Oceanic and Atmospheric Administration					
Marine Sanctuary Program	Direct	11.429	NA19NOS4290020	$ -	$ 1,756
Marine Sanctuary Program	Direct	11.429	NA21NOS4290004	-	24,336
Passed through Regents of the University of Michigan					
Sea Grant Support	Pass-through	11.417	/PO#3005993181	-	381
Passed through Michigan State University					
Climate and Atmospheric Research	Pass-through	11.431	Subaward No. RC106491 - MTU	-	(300)
Passed through University of Michigan					
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Pass-through	11.432	SUBK00015336	-	24,816
Total U.S. Department of Commerce				-	50,989
U.S. Department of Defense - National Security Agency					
GenCyber Grants Program	Direct	12.903	H98230-20-1-0077	-	65,086
GenCyber Grants Program	Direct	12.903	H98230-21-1-0116	-	128,496
Subtotal U.S. Department of Defense - National Security Agency				-	193,582
U.S. Department of Defense - U.S. Army					
Delivery of Professional Development Modules in Fundamentals of Electrified Propulsion Systems	Direct	12.U01	CO # 2103045	-	185
Delivery of Professional Development Module in Fundamentals of Electrified Propulsion Systems	Direct	12.U02	CO #2104018	-	212
Subtotal U.S. Department of Defense - U.S. Army				-	397
Total U.S. Department of Defense				-	193,979
U.S. Department of Interior - National Park Service					
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P20AC00379	-	9,661
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P18AC00331	-	20,134
AIS outreach and portable boat wash support for KISMA	Direct	15.U01	Confirming Order #2103046	-	9,410
AIS outreach and portable boat wash support for KISMA	Direct	15.U02	Confirming Order #2205003	-	948
Hanka Homestead Site Plan Maps	Direct	15.U03	MTU #2204046	-	1,196
Report on Collected Historic Building Fragments for Keweenaw National Historical Park	Direct	15.U04	ORDER NO. 140P6421P0052	-	6,631
Exhibit Case Revitalization at the A. E. Seaman Mineral Museum	Direct	15.U05	C2021-014	-	2,981
NPS Quincy Unit Site Plan Maps	Direct	15.U06	MTU #2202069	-	1,330
Subtotal U.S. Department of Interior - National Park Service				-	52,291
U.S. Department of Interior - Fish and Wildlife Service					
Great Lakes Restoration	Direct	15.662	F20AC10756-00	-	68,967
Subtotal U.S. Department of Interior - Fish and Wildlife Service				-	68,967
Total U.S. Department of Interior				-	121,258
U.S. Department of Labor					
Mine Health and Safety Grants	Direct	17.600	MS-36806-21-55-R-26	-	255,137
Mine Health and Safety Grants	Direct	17.600	MS-35473-20-6-R-26	-	27,876
Total U.S. Department of Labor				-	283,013
U.S. Department of State					
Educational and Cultural Exchange Programs Appropriation Overseas Grants	Direct	19.022	SBA30021GR3017	-	4,432
U.S. Department of Transportation					
Intergovernmental Personnel Act Agreement with Michigan Tech University	Direct	20.U01	ASSIGNMENT AGRMT - 7/22/21	-	73,795
U.S. Department of Transportation - Federal Highway Administration					
Passed through Michigan Department of Transportation					
Roadsoft Support for MDOT Safety Services	Pass-through	20.U02	CONT# 2019-0449 JOB NO. 201436	-	4,539
2021 FHWA National Summer Transportation Institute at Michigan Technological University	Pass-through	20.U03	CONTRACT NO. 2021-0656	-	39,575
Passed through Michigan Dept of Transportation					
Highway Training and Education	Pass-through	20.215	2018-0713, Authoriz Z10-Z13	-	426,060
Highway Training and Education	Pass-through	20.215	2018-0713, AUTHORIZATION Z7-Z9	-	171,696
Total U.S. Department of Transportation - Federal Highway Administration				-	641,870
U.S. Department of Transportation - Federal Railroad Administration					
Railroad Crossing Vehicle Warning (RCVW) Application Demonstrations with Connected Vehicles	Direct	20.U04	963JJ621C000023	-	47,964
National Aeronautics and Space Administration					
Science	Direct	43.001	80NSSC17M0076/SUPPL#002	-	177,890
Passed through Copper Country Intermediate School District					
Education	Pass-through	43.008	A2031.OTH:TASK ORDR 2102039-10	-	6,939
Education	Pass-through	43.008	MTU Task Order 2102016-11	-	1,761
Passed through University of Michigan					
Education	Pass-through	43.008	SUBK00015391 PO#3006462575	-	75,701
Education	Pass-through	43.008	SUBK00017416	-	10,038
Total National Aeronautics and Space Administration				-	272,329

Schedule of Expenditures of Federal Awards

Year Ended June 30, 2022

Federal Agency/Pass-through Agency/Program Title	Direct/Pass-through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Other Federal Awards (Continued)					
National Endowment for the Arts					
Promotion of the Arts_Grants to Organizations and Individuals	Direct	45.024	1860575-78-20	$ -	$ 10,000
Passed through Michigan Council for Arts and Cultural Affairs					
Promotion of the Arts_Partnership Agreements	Pass-through	45.025	Control Number: 22PS4318	-	24,000
Total National Endowment for the Arts				-	34,000
National Endowment for Humanities					
Promotion of the Humanities_Office of Digital Humanities	Direct	45.169	HAA-271717-20	-	95,322
Passed through Michigan Humanities Council					
Lives in Transition	Pass-through	45.U01	ARABridge22-001	-	1,500
Bad Information	Pass-through	45.U02	HU051-21	-	8,350
From the Rink to the Repository: Celebrating 100 Years of Michigan Tech Hockey	Pass-through	45.U03	MI Humanities Cou/MTU #2003042	-	6,665
Total National Endowment for Humanities				-	111,837
Small Business Administration					
Passed through Grand Valley State University					
Small Business Development Centers	Pass-through	59.037	MISBDC-2022-01 PO# P0098782	-	87
Small Business Development Centers	Pass-through	59.037	MISBDC-2020-01 PO# P0088822	-	31,042
Small Business Development Centers	Pass-through	59.037	MISBDC-2021-01 P.O. P0093600	-	379,573
Total Small Business Association				-	410,702
Environmental Protection Agency					
Environmental Finance Center Grants	Direct	66.203	00E01979	-	69,806
Passed through University of North Carolina at Chapel Hill					
Surveys, Studies, Investigations, Demonstrations, and Training					
Grants - Section 1442 of the Safe Drinking Water Act	Pass-through	66.424	5111291	-	11,311
Passed through University of New Mexico					
Surveys, Studies, Investigations, Demonstrations, and Training					
Grants - Section 1442 of the Safe Drinking Water Act	Pass-through	66.424	Subaward No. 281131 - 8737	-	63,175
Surveys, Studies, Investigations, Demonstrations, and Training Grants and					
Cooperative Agreements - Section 104(b)(3) of the Clean Water Act	Pass-through	66.436	Subaward No. 281132-8737	-	36,064
Total Environmental Protection Agency				-	180,356
Department of Energy					
Passed through Sandia National Laboratories					
Creation of a Northern-Climate Photovoltaic Test Site	Pass-through	81.U01	PO 2203470	-	128,892
U.S. Department of Education					
COVID-19 - Education Stabilization Fund - Student Aid 18004(a)(1)	Direct	84.425E	P425E203543 ACTION NO. 4	-	6,187,436
COVID-19 - Education Stabilization Fund - Institutional Portion 18004(a)(1)	Direct	84.425F	P425F202710	-	6,177,354
Passed through Michigan Department of Education					
Gaining Early Awareness and Readiness for Undergraduate Programs	Pass-through	84.334	GRANT NO. 21-00-07	-	22,016
Gaining Early Awareness and Readiness for Undergraduate Programs	Pass-through	84.334	Grant No. 21-00-07, Year 2	-	123,567
Passed through BHK Child Development Board					
GREAT EXPLORATIONS STEM CLUBS	Pass-through	84.U01	MTU CO 2012016	-	4,293
BHK Great Exploration STEM Clubs	Pass-through	84.U03	MTU SO#2201022	-	6,809
Passed through UPWARD Talent Council					
Upper Peninsula Michigan Works Contractual Training for MiLEAP Project	Pass-through	84.U02	MTU MiLEAP Contract Document	-	22,288
Total U.S. Department of Education				-	12,543,763
U.S. Department of Homeland Security - Federal Emergency Management Agency					
Passed through Michigan State Police					
Disaster Grants - Public Assistance (Presidentially Declared Disasters)	Pass-through	97.036	FEMA-4381-DR-MI	-	213,199
Total Other Federal Awards				**-**	**15,859,650**
Total Federal Awards				**$ 8,359,873**	**$ 102,827,768**

Notes to Schedule of Expenditures of Federal Awards

Year Ended June 30, 2022

Note 1 - Basis of Presentation

The accompanying schedule of expenditures of federal awards (the "Schedule") includes the federal grant activity of Michigan Technological University (the "University") under programs of the federal government for the year ended June 30, 2022. The information in the Schedule is presented in accordance with the requirements of Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (the "Uniform Guidance"). Because the Schedule presents only a selected portion of the operations of the University, it is not intended to and does not present the financial position, changes in net position, or cash flows of the University.

Note 2 - Summary of Significant Accounting Policies

Expenditures reported in the Schedule are reported on the accrual basis of accounting. Such expenditures are recognized following the cost principles contained in Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*, wherein certain types of expenditures are not allowable or are limited as to reimbursement. Negative amounts shown on the Schedule represent adjustments or credits made in the normal course of business to amounts reported as expenditures in prior years. The pass-through entity identifying numbers are presented where available.

The University has elected not to use the 10 percent *de minimis* indirect cost rate to recover indirect costs, as allowed under the Uniform Guidance, since the University has an approved indirect cost rate through its cognizant agency.

Note 3 - Adjustments and Transfers

As allowable and in accordance with federal regulations issued by the U.S. Department of Education, during the year ended June 30, 2022, the University transferred $18,000 of Federal Work-Study (FWS) Program (ALN 84.033) award funds to the Federal Supplemental Educational Opportunity Grant (SEOG) Program (ALN 84.007). Additionally, the University carried forward $13,856 and $29,120 of SEOG and FWS funds, respectively, from 2021-2022 to be spent in 2022-2023.

Note 4 - Loan Balances

Loans outstanding at the beginning of the year and loans made during the year are included in the federal expenditures presented in the schedule of expenditures of federal awards. The balances of loans outstanding consist solely of the Perkins Loan program, which had an outstanding loan balance of $4,077,300 at June 30, 2022.

Schedule of Findings and Questioned Costs

Michigan Technological University

Schedule of Findings and Questioned Costs

Year Ended June 30, 2022

Section I - Summary of Auditor's Results

Financial Statements

Type of auditor's report issued:	Unmodified		
Internal control over financial reporting:			
• Material weakness(es) identified?	____ Yes	X No	
• Significant deficiency(ies) identified that are not considered to be material weaknesses?	____ Yes	X None reported	
Noncompliance material to financial statements noted?	____ Yes	X None reported	

Federal Awards

Internal control over major programs:			
• Material weakness(es) identified?	____ Yes	X No	
• Significant deficiency(ies) identified that are not considered to be material weaknesses?	____ Yes	X None reported	
Any audit findings disclosed that are required to be reported in accordance with Section 2 CFR 200.516(a)?	____ Yes	X No	

Identification of major programs:

Assistance Listing Number	Name of Federal Program or Cluster	Opinion
84.007, 84.033, 84.038, 84.063, and 84.268	Student Financial Assistance Cluster	Unmodified
84.425	COVID-19 - Education Stabilization Fund	Unmodified

Dollar threshold used to distinguish between type A and type B programs:	$3,000,000		
Auditee qualified as low-risk auditee?	X Yes	____ No	

Section II - Financial Statement Audit Findings

Reference Number	Finding
Current Year	None

Section III - Federal Program Audit Findings

Reference Number	Finding
Current Year	None