Companion Document to the:
Labor Market Information (LMI) Instructions & Guidance

Learning that works for Delaware CTE™

Delaware Department of Education

Appendix: Labor Market Information (LMI) Review

Delaware CTE Program of Study Application

Table 1: LEA Information

(see instructions on page 2, LMI Instructions & Guidance Document)

Career Cluster:	Agriculture, Food, and Natural Resources
Career Pathway:	Natural Resource Systems
CTE Program of Study:	*Natural Resource Management*
High School and LEA Name:	
County:	

Table 2: Labor Market Information (LMI) Benchmarks by Geographic Region

(see instructions on page 2, LMI Instructions & Guidance Document)

Region	Employment 2016	Employment Change 2014-24	Employment Growth 2014-24	Avg. Wage 2016
United States	140,400,040	9,788,900	6.5%	$49,630
Delaware	440,760	37,150	8.1%	$50,930
District of Columbia	702,380	46,040	6.0%	$80,950
Maryland	2,640,900	504,540	18.2%	$56,120
New Jersey	3,955,350	275,310	6.5%	$56,030
Pennsylvania	5,747,020	345,920	5.7%	$47,540
Virginia	3,760,550	368,050	9.3%	$53,090

	Table 3: LMI by Career Cluster & Pathway *(see instructions on page 4, LMI Instructions & Guidance Document)*					**2012-2022**			
Cluster Code	**Cluster/Pathway Title**	**Middle Skill**	**High Skill**	**High Wage**	**High Demand**	**Employment 2016**	**Employment Change 2014-2024**	**Employment Growth 2014-2024**	**Average Wage 2016**
1	**Agriculture, Food, and Natural Resources**	**X**				**3533**	**46**	**0.5%**	**$57,142**
	Rank Select Career Cluster by the Following Categories ->					*(15 out of 16)*	*(16 out of 16)*	*(16 out of 16)*	*(6 out of 16)*
1.05	Natural Resources Systems	X	X	X		422	-15	-2.0%	$193,276
	Rank Select Career Pathway by the Following Categories ->					*(3 out of 7)*	*(5 out of 7)*	*(5 out of 7)*	*(1 out of 7)*
1.05	Natural Resource Systems – Mid-Atlantic States					19,360	1,130	5.8%	$121,756
1.05	Natural Resource Systems – United States					172,450	2,800	1.3%	$75,297
1.01	Food Products and Processing Systems	X		X		225	-19	-6.7%	$34,382
1.02	Plant Systems		X			367	-103	-5.9%	$41,955
1.03	Animal Systems					816	55	2.6%	$23,330
1.04	Power, Structural & Technical Systems	X				154	26	6.0%	$35,704
1.06	Environmental Service Systems	X		X		1549	109	8.0%	$46,903
1.07	Agribusiness Systems	X					-7	-.02%	

Table 3: LMI by Career Cluster & Pathway (Questions/Analysis)

(see instructions on page 5, LMI Instructions & Guidance Document)

1. How does the employment, the employment change, the employment growth rate, and the average wage for the identified career cluster compare to LMI for other clusters in the State of Delaware? Is the career cluster rated as high wage and high demand?

   The Agriculture, Food, and Natural Resources Career Clusters rank in the top six (6) for average wage. The career cluster rating is Middle Skill.

2. How does the employment, the employment change, the employment growth rate, and the average wage for the identified career pathway compare to LMI at the cluster level? How does the identified pathway level LMI in Delaware compare to the pathway level LMI in the Mid-

Atlantic and/or the United States? How does the identified pathway level LMI in Delaware compare to the other pathway level LMI in Delaware?

Average wage is significantly higher at the career pathway level than at the cluster level. Employment change and employment growth numbers increase by over 2% as you move out of the state of Delaware and into the Mid-Atlantic and larger United States region. Related pathways have lower wage potential, but show slightly higher employment, employment change and employment growth numbers within the state of Delaware.

Table 4: LMI by Standard Occupation Code (SOC)

(see instructions on page 6, LMI Instructions & Guidance Document)

						2012-2022			
SOC Code	**Occupation Title**	**Middle Skill**	**High Skill**	**High Wage**	**High Demand**	**Employment 2015**	**Employment Change 2014-2024**	**Employment Growth 2014-2024**	**Average Wage 2015**
11-9121	Natural Scientist Manager		X	X		530	-30	-4.6%	$181,820
11-9121.02	Water Resource Specialist		X	X		440	490	12%	$117,800
17-2081	Wastewater Engineer		X	X	X	170	180	8.4%	$93,930
19-4091	*Environmental Protection Technician*	X		X		280	310	10.8%	$37,200
19-1013	*Soil & Plant Scientist*		X	X	X	80	80	0%	$48,110
19-1022	*Microbiologist*		X	X		160	170	3%	$50,340
19-1031	*Environmental Engineer*		X	X	X	170	180	8.4%	$84,810
19-2042	*Geoscientist*		X	X		70	80	10%	$89,230
19-4099	*Precision Agriculture Technician*	X		X	X	140	150	4.7%	$51.530
45-2011	*Agricultural Inspector*		X	X		150	160	2.6%	$46,160

Table 4: LMI by Standard Occupation Code (SOC) (Questions/Analysis)

(see instructions on page 7, LMI Instructions & Guidance Document)

3. How closely related to the program of study are the identified occupations (SOCs)?

The Natural Resource Management program of study is a three (3) course Career & Technical Education (CTE) instructional program designed to provide students with exposure to topics in conservation management and maintenance of natural resources. Students will learn

responsible stewardship practices of air, soil, water, land, fish, and wildlife resources for economic, recreation, and health purposes. The SOCs listed in table 4 are directly related to the program of study.

4. Are there adequate state-level projected job openings or employment growth projections at the occupation level to justify starting a new program of study? Do the occupations related to the program of study rank as high skill, high wage and/or high demand?

   The number of job openings projected for the cluster and pathway as well as the related SOCs will support a natural resource management program of study. All related SOCs and the cluster and pathway are rated as either middle skill, high skill, or high wage.

Table 5: LMI Supply Indicators by Secondary & Post-Secondary Levels

(see instructions on page 8, LMI Instructions & Guidance Document)

Program Code (CIP)	Program (CIP) Title	School	Program Completion/Enrollment 2012-13	2013-14	2014-15	2015-2016
Total Secondary Programs of Study			393	416	451	642
1.05301	Natural Resources and Environmental Science	Appoquinimink High School	0	22	0	38
1.05301	Natural Resources and Environmental Science	Caesar Rodney High School	70	67	60	56
1.05301	Natural Resources and Environmental Science	Cape Henlopen High School	58	68	62	63
1.05301	Natural Resources and Environmental Science	Christiana High School	126	130	169	171
1.06601	Environmental and Natural Resource Science	Dover High School	0	35	62	61
1.05301	Natural Resources and Environmental Science	Lake Forest High School	0	0	0	83
1.05301	Natural Resources and Environmental Science	Middletown High School	41	52	58	94
1.05301	Natural Resources and Environmental Science	Smyrna High School	98	42	40	69
1.06601	Environmental and Natural Resource Science	Thomas McKean High School	0	0	0	7
Total Post-Secondary Programs of Study			282	274	356	383
26.0101	Biology/Biological Science, General	DTCC	6	12	10	17
26.0101	Biology/Biological Science, General	University of Delaware	133	122	124	137
26.0101	Biology/Biological Science, General	Delaware State University	6	20	17	31
26.0101	Biology/Biological Science, General	Wesley College	3	1	5	3
41.999	Science Technologies/Technicians	DTCC	0	0	4	5
03.0199	Natural Resources Conservation and Research, Other	Delaware State University	0	2	3	6

03.0201	Natural Resources Management and Policy	Delaware State University	8	1	7	8
03.0299	Natural Resources Management and Policy, Other	Delaware State University	4	0	2	0
15.0507	Environmental Engineering Technology	Delaware Technical Community College	0	0	5	5
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician	Delaware Technical Community College	2	2	2	2
03.0104	Environmental Science	University of Delaware	35	28	40	34
03.0103	Environmental Studies	University of Delaware	16	16	24	22
14.1401	Environmental/Environmental Health Engineering	University of Delaware	20	20	32	37
03.0199	Natural Resources Conservation and Research, Other	University of Delaware	11	20	32	25
03.0201	Natural Resources Management and Policy	University of Delaware	5	4	7	7
03.0601	Wildlife, Fish and Wildlands Science and Management	University of Delaware	23	21	30	32
03.0104	Environmental Science	Wesley College	6	4	6	5
03.0103	Environmental Studies	Wesley College	4	1	0	0
03.0201	Natural Resources Management and Policy	Wilmington University	0	0	6	7

Table 5: LMI Supply Indicators by Secondary & Post-Secondary Levels (Questions/Analysis)

(see instructions on page 9, LMI Instructions & Guidance Document)

5. How is the secondary program of study articulated to or in any way related to the identified post-secondary program(s)?

The natural resource management program of study is a broad program that connects to various related two- and four- year institutions of higher education. Specifically, the natural resource management program of study will prepare students for related study in Natural Scientist Management, Microbiology, Water Resource Management, Wastewater Engineering, Environmental Protection Technician, Soil & Plant Science, Environmental Engineering, Geoscience, and Precision Agricultural.

6. How does the annual completion data at the secondary and post-secondary level compare to the projected career pathway-related projected job openings in Table 4?

   As illustrated by the number of enrolled students, there is high interest in natural resource management programs at the postsecondary level. Therefore, a natural resource management program of study at the secondary level will better prepare students with the skills and knowledge to enter post-secondary programs. This work will lead to students achieving articulated credit while in high school and lessening the amount of time required to enter the workforce.

Table 6: Other LMI Data Including Real-Time LMI (Questions/Analysis)

(see instructions on page 10, LMI Instructions & Guidance Document)

7. Are there additional LMI data (demand & supply) at the local, county, state, or Mid-Atlantic region that support starting a new program of study in this pathway? This includes additional occupations for which there is not an SOC, any other analysis of LMI data, and any additional information on demand & supply factors that influence employment which can include real-time labor market information.