

Explore opportunities in

NATURAL RESOURCES SYSTEMS

AGRICULTURE, FOOD & NATURAL RESOURCES CLUSTER

CAREER AND TECHNICAL EDUCATION

2017

Do you enjoy...

- ▶ **Managing spaces & territory**
 - ▶ Maximizing the use of resources
 - ▶ Environmental conservation
 - ▶ Geology, Ecology or Forestry
 - ▶ Working with plants & animals
 - ▶ Supervising & leading teams
 - ▶ Being outdoors
 - ▶ Managing natural resources
 - ▶ Interacting with nature
- ▶ **Working independently**

Minnesota employers want you!

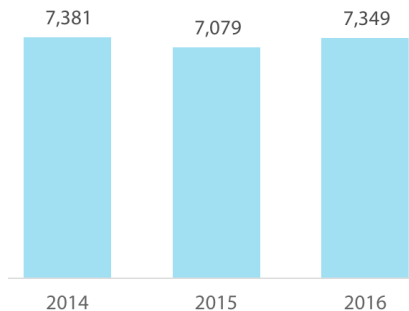
Learn just how far you can **GROW** in these high-demand careers.



Natural Resources Systems Career Pathway

The natural resources systems pathway includes jobs that involve the study, development, use, maintenance, management and analysis of resources found in the natural world. This is a broad pathway which includes work related to recreation, conservation, wildlife, mining, logging, and drilling - among others.

Natural Resources Jobs Posted Online in Minnesota



Hiring Statistics in Minnesota (2016)

Growth in jobs 2015-2016:	3.8% (steady)
Number of employers:	1,060 employers
Overall outlook:	Bright
Median salary:	\$38,300 / year

Top Occupations

- Industrial Truck & Tractor Operators (24%)
- Recreation Workers (20%)
- Environmental Science & Protection Technicians (13%)
- Environmental Compliance Inspectors (5%)
- Mechanical Engineering Technicians (4%)

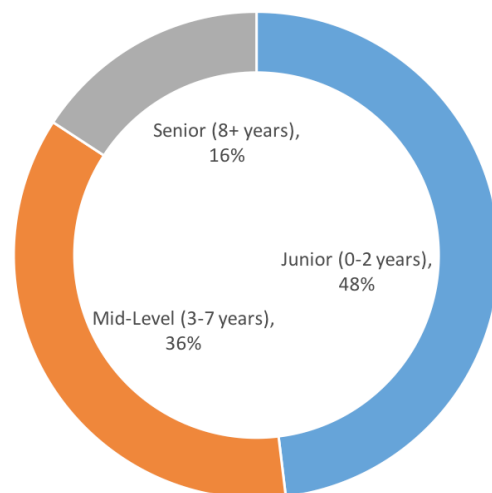
Sample First-Year Job Titles in this Pathway

- Boat and Water Safety Officer, Aitkin County
- Forest Fire Response Lead, State of Minnesota
- Park & Natural Resource Specialist, Olmsted County

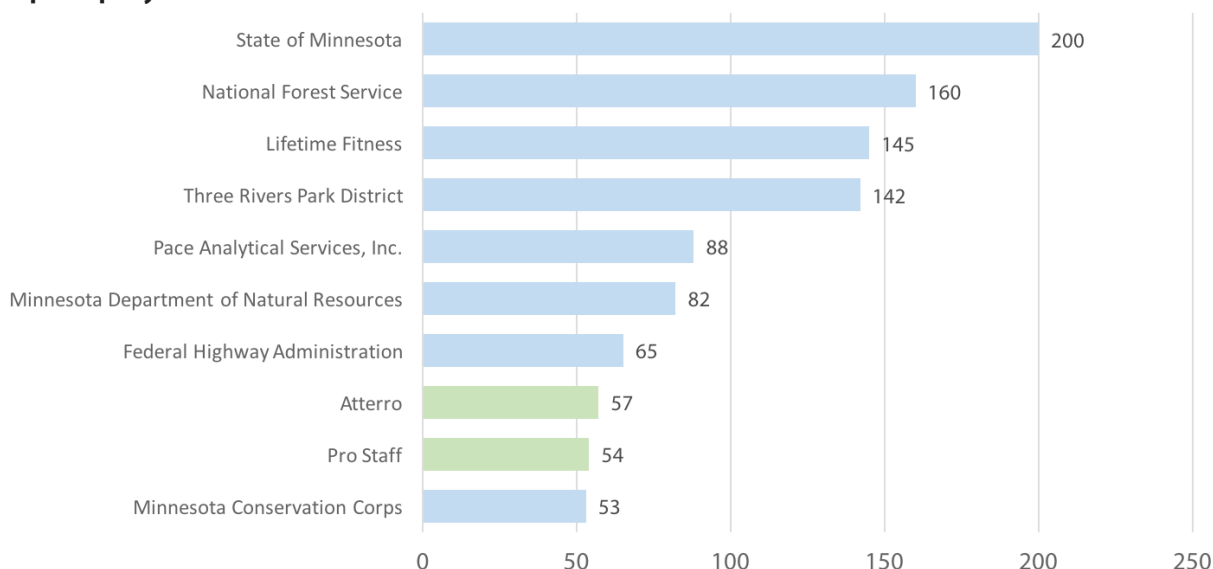
Sample Senior Job Titles in this Pathway

- Conservation Officer, Department of Natural Resources
- Mine Supervisor, Unimin Corporation
- Senior Hydrogeologist & Environmental Compliance Specialist, Amec Foster Wheeler

Experience Level Sought*



Top Employers who Recruited in 2016



Top 5 Certifications

1. First Aid Certification ↗
2. CPR
3. Class D Driver's License ↗
4. Occupational Safety & Health Administration (OSHA) ↗
5. Safety Inspections Technician ↗

↗ Rising Skills (+5% or more from 2015 to 2016)

▲ Matches to CTE Foundation Knowledge/Skill

Top 10 Hard Skills

1. Forklifts ↗
2. Quality Assurance/Control ↗
3. Reading/Writing Blueprints ↗
4. Mathematics ↗
5. Equipment Maintenance ↗
6. GS+ ↗
7. Quality Systems ↗
8. Pallet Jacks ↗
9. Technical Support ↗
10. Preventive Maintenance ↗

Top 10 Soft Skills

1. Communication Skills ↗ ▲
2. Detail-Oriented ↗
3. Organizational Skills ↗
4. Resource Management ↗
5. Work Independently ↗
6. Creativity ↗ ▲
7. Problem Solving ▲
8. Teamwork ▲
9. Integrity ↗ ▲
10. Coaching ↗ ▲

Occupation	Job Titles	Total Job Count 2016	Change from 2015	Median Salary	Most common Education Level Requirement
Industrial Truck and Tractor Operators	Lake Minerals Utility Operator, Picking/Forklift Operator, Wrap Machine Operator, Hoist Operator, Lift Operator	1744	4%	\$ 24,390	GED/High School
Recreation Workers	Recreation Assistant, Parks & Recreation Maintenance Worker, Activities Coach, Outdoor Living Skills Assistant, Rock Climbing Instructor, Trail Guide	1492	7% ↗	\$ 26,737	GED/High School
Environmental Science and Protection Technicians, Including Health	Biological Science Technician, Lab Analyst, Environmental Protection Technician	921	3%	\$ 41,568	Bachelor's Degree
Environmental Compliance Inspectors	Highway Department Environmental Technician, Compliance Analyst - Substation, Environmental/Sourcing Specialist	384	-30%	\$ 56,450	Bachelor's Degree
Mechanical Engineering Technicians	Mechanical Assembly Technician, Pre-Scale Technician, Hydraulic Power Mechanical Assembly Technician	314	15% ↗	\$ 42,950	Associate Level
Forest and Conservation Technicians	Burn Crew Member, Prairie Restoration Technician, Forest Crew Member, Forestry Technician, Natural Resource Technician	270	18% ↗	\$ 34,128	Associate Level
Park Naturalists	Interpretive Program Coordinator, Park Ranger, Park and Natural Resource Specialist, Cultural Heritage Interpreter	251	19% ↗	\$ 36,641	Bachelor's Degree
Natural Sciences Managers	Environmental Program Manager, Fisheries Director, Health Sciences Manager, Natural Science Manager	193	-52%	\$ 96,402	Bachelor's Degree
Biological Science Teachers, Postsecondary	Temporary Biology Faculty, Chemistry Adjunct Instructor	192	0%	\$ 52,770	Bachelor's Degree
Soil and Water Conservationists	Conservation Coordinator, Natural Resources Conservationist, Easement Development Specialist, Soil Conservationist	181	95% ↗	\$ 53,149	Bachelor's Degree
Zoologists and Wildlife Biologists	Black Bear Educator, Aquarist Educator, Biological Science Technician, Fish Biologist	181	15% ↗	\$ 57,243	Bachelor's Degree
Environmental Scientists and Specialists, Including Health	Environmental Analyst, Environmental Programs Specialist	141	76% ↗	\$ 65,208	Bachelor's Degree
Refuse and Recyclable Material Collectors	Residential Driver, Recycling Processor, Waste Collector	124	-3%	\$ 27,664	GED/High School
First-Line Supervisors of Construction Trades and Extraction Workers	Project Manager Assistant, Construction Coordinator	89	10% ↗	\$ 57,359	GED/High School
Foresters	Preserve Management Assistant, Ecoregion Manager, Forester, Utility Arborist, Forestry Specialist	82	49% ↗	\$ 58,295	Bachelor's Degree
Paper Goods Machine Setters, Operators, and Tenders	Folder Operator, Machine Adjuster, Tube Bender, Box on Demand Operator	71	-23%	\$ 28,011	GED/High School
Fire-Prevention and Protection Engineers	Fire Protection Designer, Fire Protection Inspector, Fire Protection Project Manager	66	38% ↗	\$ 69,509	Bachelor's Degree
Geological Sample Test Technicians	Test Technician, Sample Receiver, Laboratory test Technician, Geological Tester	63	17% ↗	\$ 34,862	Bachelor's Degree
Sawing Machine Setters, Operators, and Tenders, Wood	Bandmill Operator, Cut Off Saw Operator, Edgerman, Panel Saw Operator, Planer	49	-4%	\$ 25,432	GED/High School
Environmental Science Teachers, Postsecondary	Director of Assessment and Research, Assistant Professor of Environmental Science	48	17% ↗	\$ 40,354	Bachelor's Degree

↗ Rising Jobs (+5% or more from 2015 to 2016)

☀ Bright Future Jobs (DEED-identified)

🌿 Green Jobs (DEED-identified)














Data collected from online job postings between 2013 and 2016 from CEB TalentNeuron Recruit in January 2017 (www.wantedanalytics.com). Report developed by RealTime Talent February 2017 with the support of AgCentric, the Southern Minnesota Center for Agriculture, GreenSeam, AgriGrowth, the Minnesota Department of Agriculture, Career and Technical Education Consortium Leaders, and faculty from Minnesota State colleges and universities across the state.


Natural Resources Systems Career Pathway


Natural Resources Systems Career Pathway


Occupation	Job Titles	Total Job Count 2016	Change from 2015	Median Salary	Most common Education Level Requirement
Forest Fire Fighting and Prevention Supervisors	Burn Crew Member - Prairie Recovery Project, Forest Fire Response Lead	48	380% ↑	\$ 54,950	GED/High School
Geoscientists, Except Hydrologists and Geographers	Geologist, Minerals/Metallurgy/Mining Researcher	42	45% ↑	\$ 73,829	Bachelor's Degree
Service Unit Operators, Oil, Gas, and Mining	Equipment Operator, Gas Equipment Operator, Mining Operator	41	156% ↑	\$ 49,732	GED/High School
Forest Firefighters	Wildland Firefighter, Forestry Aid, Fire Apprentice	35	218% ↑	\$ 32,567	Associate Level
Mining and Geological Engineers, Including Mining Safety Engineers	Engineering Manager, Mine Engineering Manager, Mine Engineering Superintendent	35	-5%	\$ 79,874	Bachelor's Degree
Earth Drillers, Except Oil and Gas	Horizontal Directional Drill Operator, Water Well Drilling Assistant, Foundations Operator/Driller	34	0%	\$ 41,656	GED/High School
Precision Agriculture Technicians	Area Precision Ag Specialist, Crop Technician	30	-30%	\$ 49,933	Bachelor's Degree
Rotary Drill Operators, Oil and Gas	Directional Drill Operator, Relief Driller, Drill Foreman	29	93% ↑	\$ 49,200	GED/High School
Hazardous Materials Removal Workers	Wildlife Removal, Small Wildlife Removal Technician	29	2800% ↑	\$ 37,277	Bachelor's Degree
Conveyor Operators and Tenders	Elevator Operator, Conveyor Operator, Conveyor Tender	16	167% ↑	\$ 27,850	GED/High School
Cartographers and Photogrammetrists	Cartographer, GIS Technician, Map and Geospatial Data Librarian	16	60% ↑	\$ 51,538	Bachelor's Degree
Gas Plant Operators	C&M Locater - LCL340, Evaporator Operator, Fill Plant Operator	15	-35%	\$ 57,133	GED/High School
Explosives Workers, Ordnance Handling Experts, and Blasters	Specialist Blasting, Explosive Ordnance Disposal Technician	11	57% ↑	\$ 41,207	Associate Level
Commercial Divers	Divemaster, Commercial Diver	11	175% ↑	\$ 60,419	GED/High School
Forest and Conservation Workers	Conservation Officer, Crew Leader, Field Laborer, Foreman, Forest Resource Specialist	10	-38%	\$ 29,220	Bachelor's Degree
Excavating and Loading Machine and Dragline Operators	Backhoe Operator, Dragline Oiler, Dragline Operator, Excavator Operator	10	-68%	\$ 35,900	GED/High School
Petroleum Pump System Operators, Refinery Operators, and Gaugers	Control Room Operator, Board Operator, Crude Unit Operator	9	-18%	\$ 50,733	Associate Level
Ship and Boat Captains	Boat and Water Safety Officer, Boat Captain, Towboat Pilot	7	600% ↑	\$ 55,143	Associate Level
Range Managers	Conservationist, Grassland Conservationist, Habitat Management Coordinator, Land Management Supervisor	7	0%	\$ 64,918	Bachelor's Degree
Logging Equipment Operators	Chainsaw Logging Equipment Operator, Groundsmen Equipment Operator, Cutter Operator, Delimber Operator, Feller Buncher Operator	7	-13%	\$ 37,571	GED/High School
Loading Machine Operators, Underground Mining	Load Haul Dump Operator, Loader Operator, Loading Machine Operator, Miner	7	-36%	\$ 34,326	GED/High School
Plant and System Operators, All Other	Pipeline Operator, Hydroelectric Plant Technicians, Biomass Plant Technicians, Methane Gas Generation System Technicians	6	50% ↑	\$ 41,825	Bachelor's Degree
Fishers and Related Fishing Workers	Fisher, Fish Netter/Remover	6	500% ↑	\$ 39,153	GED/High School
Gas Compressor and Gas Pumping Station Operators	Compressor Operator, Station Operator, Field Operator, Filler	5	67% ↑	\$ 40,400	GED/High School
Pump Operators, Except Wellhead Pumps	Chemical Operator, Day Light Relief Operator, Logistics Technician	4	300% ↑	\$ 39,500	GED/High School
Fish and Game Wardens	District Wildlife Manager, Fishery Census Worker, Law Enforcement Officer, Natural Resource Officer	4	-56%	\$ 54,168	GED/High School
Roof Bolters, Mining	Bolt Machine Operator, Roof Bolter Operator, Underground Coal Miner	3	0%	\$ 41,920	GED/High School
Rock Splitters, Quarry	Blaster, Driller, Quarry Worker, Rock Splitter, Splitter Operator	2	100% ↑	\$ 28,779	GED/High School
Mine Cutting and Channeling Machine Operators	Bore Miner Operator, Coal Miner, Longwall Shearer Operator, Underground Heavy Equipment Operator	2	0%	\$ 41,000	GED/High School
Surveying Technicians	Chainman, Engineering Assistant, Field Crew Chief, Instrument Man	2	0%	\$ 37,000	GED/High School
Mates - Ship, Boat, and Barge	Ship Mate	2	100% ↑	\$ 70,000	GED/High School
Tank Car, Truck, and Ship Loaders	Bulk Tank Car Unloader, Load Out Person	2	100% ↑	\$ 26,020	GED/High School

Natural Resources Systems

Occupation	Job Titles	Total Job Count 2016	Change from 2015	Median Salary	Most common Education Level Requirement
Aquacultural Managers	 Aquaculture Cooperative Marketing Director, Aquaculture Director, Facility Operations Manager	1	0%	\$ 61,116	Bachelor's Degree
Mine Shuttle Car Operators	Coal Hauler Operator, Ram Car Operator, Shuttle Car Operator	1	-50%	\$ 95,000	GED/High School
Derrick Operators, Oil and Gas	Derrick Operator, Floor Hand	1	0%	\$ 61,000	GED/High School
Continuous Mining Machine Operators	 Bore Miner Operator, Continuous Mine Operator	1	0%	\$ 53,000	GED/High School
Water Resource Specialists	  Hydrogeologist, National Stormwater Leader, Water Resource Specialist	1	0%	\$ 64,000	Bachelor's Degree
Fallers	Faller, Arborist, Timber Cutter	1	-67%	\$ 40,000	GED/High School
Environmental Economists	  Natural Resource Economist, Pricipal Associate, Principal Research Economist, Environmental Economist	0	0%	-	Master's Degree
Industrial Ecologists	  Industrial Ecologist, Environmental Consultant, Environmental Sustainability Manager	0	0%	-	Bachelor's Degree
Surveyors	Land Surveyor, Surveyor, Geodetic Surveyor, Engineering Technician	0	-100%	-	Associate Level
Mapping Technicians	Mapper, Mapping Technician	0	-100%	-	Associate Level
Geothermal Production Managers	  Maintenance Manager, Operations Supervisor, Geothermal Production Manager, Power Plant Operations	0	0%	-	Bachelor's Degree
Remote Sensing Technicians	  Aerial Photo Lab Manager, CAD Tech, Aerial Sensing Equipment Technician	0	0%	-	Associate Level
Wellhead Pumpers	Gauger, Lease Operator, Multi-Skilled Operator, Operations Technician	0	0%	-	GED/High School
Roustabouts, Oil and Gas	Floor Hand, Oil Field Roustabout, Rig Hand	0	0%	-	GED/High School
Log Graders and Scalers	Log Inspector, Log Check Scaler, Log Scaler, Log Yard Manager	0	-100%	-	GED/High School
Helpers--Extraction Workers	Blasting Helper, Coal Miner, Miner Operator Helper	0	0%	-	GED/High School
Geophysical Data Technicians	 Exploration Manager, Field Engineer, Geological E-Logger, Geological Technician	0	0%	-	GED/High School
First-Line Supervisors of Aquacultural Workers	Fish Hatchery Manager, Fish Hatchery Specialist, Hatchery Manager, Trout Farm Manager	0	-100%	-	Associate Level

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 Bright Future Jobs (DEED-identified)

 Green Jobs (DEED-identified)

About RealTime Talent

RealTime Talent is a collaboration between public agencies, private industry, higher education, and workforce developers. We are focused on helping decision-makers better align our workforce with our growing economy. Since August 2015, we have trained more than 1,000 leaders across Minnesota to use real-time job posting data to help find solutions to our state's greatest workforce challenges. We are proud to be considered a "hub" for data innovation and exploration. Our four main areas of work for FY2017 include:

- Identify and evaluate new tools which bring efficiency to the "education to employment / re-employment" process
- Foster data use innovation through access to new data, development of reports and templates, and engaging users in best practices for comparing multiple data sources
- Provide customized, customer-centered research and reports upon request, each designed to support local or industry needs
- Provide training and technical assistance to ensure professionals across Minnesota have the capacity to use and share data and other resources.

RealTime Talent provides customized research and data analysis services to employers, non-profits, workforce centers, chambers of commerce, educators, and administrators to maximize learning from new data sources. Products include industry fact sheets, occupational snapshots, employer engagement strategizing, custom surveys, and job market analytics utilizing the real-time data tool TalentNeuron Recruit among other unique LMI data sources. Industry research has focused in healthcare, information technology, agriculture, construction, transportation and manufacturing.

Prepared By

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Based on Agriculture, Food and Natural Resources
Career Pathways from Minnesota State CTE

