



2021 ROW Management Annual Report

vermont electric power company



3/30/2022

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2021 Right of Way Management Team Summary Report

The Right of Way Management Program at VELCO completed all the scheduled Vegetation Management and Access Construction work for 2021. The Right of Way Management Team remains focused on maintaining the rights of way throughout the VELCO system in a professional manner consistent with the goals of safety, reliability, environmental, regulatory compliance, security, access, fire hazard, emergency restoration, visibility and line of sight requirements.

The Right of Way Management Team welcomed 2 new members in late 2021. Devon Snyder joined us in November as a Right of Way Forester. Tyler Truman accepted a position in December for a newly created in house access construction coordinator. Devon brings an ecology and strong technical GIS skills to the team and Tyler brings a construction management background. We are excited about the skills they bring to team to further advance the programs.

Emerald Ash Borer (EAB) continues to spread through detections of the insect around the state since it's initial discovery in VT in 2018. VELCO is currently three quarters way through the EAB mitigation plan with completion of the 2021 scope of work. By removing as many of the ash trees capable of contacting conductors if the tree fails, we will reduce the risk that the destructive invasive insect will have on the reliability of the VELCO transmission system.

The Vegetation Management Team worked very closely with IT Team to fully develop a new Work Management system. The system is built upon 2 platforms including a field based data collection and scoping tool as well as a Power BI dashboard for data analysis. The work management system allows for improved budget development, completed work

status, cost tracking and overall system performance.

The Access Team made great strides in improving project scoping, cost estimating, and tracking tools. The tools are providing real time data to further support capital projects. The data management tools will be the foundation for developing tools that are being modeled after the scoping and tracking tools developed for vegetation management.

The ROW Management Team completed several Products and services engagements. The projects generate revenue for VELCO and provide a cost effective services such as mat rentals, access construction, aerial patrols, vegetation management to our owners and others to provide for a sustainable Vermont.

Respectfully Submitted,

The Right of Way Management Team

Jeffrey Disorda, Vegetation and Access Construction Manager

Jacob Watrous, Access Construction Lead

William Conn, Right of Way Forester

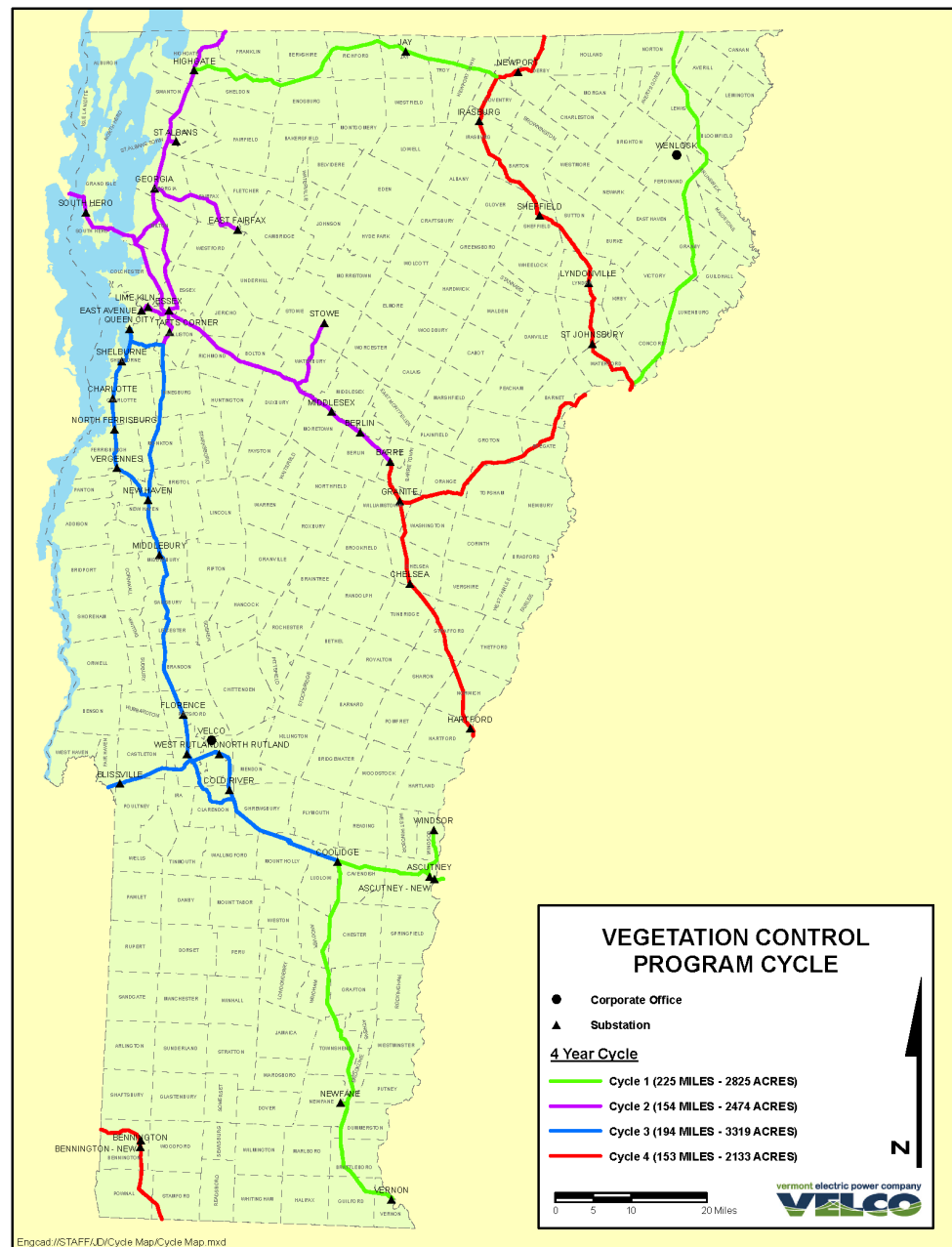
Scott Carlson, Right of Way Forester

Devon Snyder, Right of Way Forester

Tyler Truman, Access Coordinator

2021 Work Plan: Vegetation Management Cycle 4

K26	HARTFORD TO WILDER
K28	ST JOHNSBURY TO LYNDONVILLE
K39	LYNDONVILLE TO SHEFFIELD
K47	SHEFFIELD TO IRASBURG
K50	CHELSEA TO HARTFORD
K51	GRANITE TO CHELSEA
K54	BARRE TO GRANITE
K60	ST JOHNSBURY TO LITTLETON NH
1400 (K48)	BORDER TO NEWPORT
K46 I-MT	IRASBURG TO MOSHER'S TAP
K4	BENNINGTON TO NORTH ADAMS
K6	BENNINGTON TO HOOSICK
K300	NEWPORT TO MOSHER'S TAP
F206	GRANITE TO COMERFORD



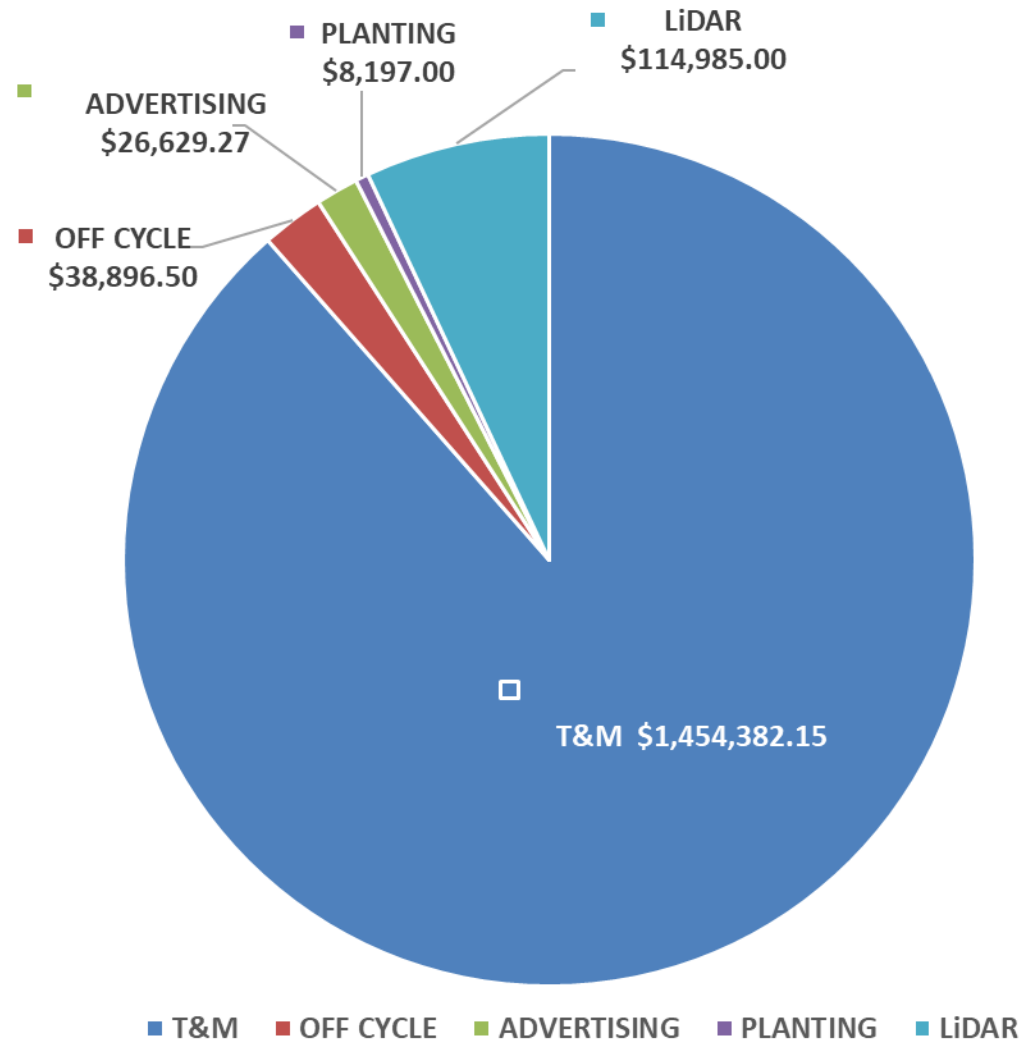
2021 Planned vs. Actual Work

Category	Units Planned	Units Actual	Change	% Change
Danger Trees	2848	2929	81	3%
Special Trees	155	168	13	8%
Widen Areas (acres)	2.46	3.49	1.03	42%
None (acres)	368.35	371.01	2.66	1%
Flat Cut Acres	729.78	836.67	106.89	15%
Cut & Stump Treat Acres	7.89	21.41	13.52	171%
Foliar Spray Acres	1259.11	1089.42	-169.69	-13%
Mow Acres	316.01	363.96	47.96	15%

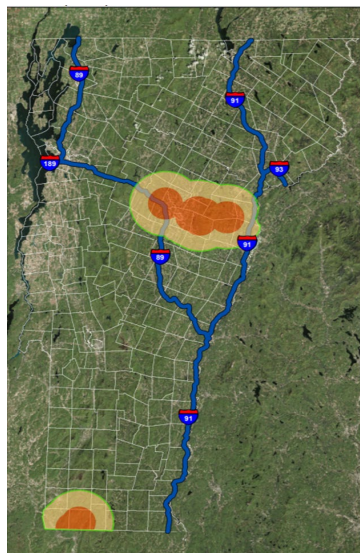
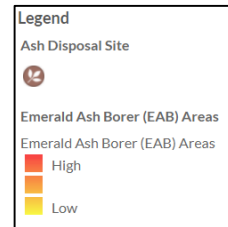


Budget Spend

- **88.5%** spent on time & materials for VELCO Planned Contracts
- **7.0%** spent on LiDAR on 1/4 of the system
- **2.4%** spent on Off-cycle work
- **1.6%** spent on advertising and notification for vegetation management programs
- **0.5%** spent on tree planting and replacement



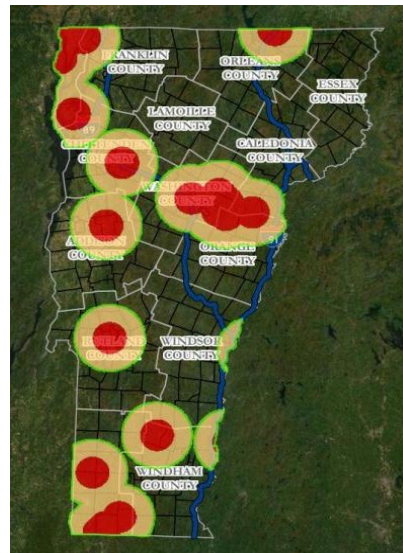
Emerald Ash Borer – Statewide Status



2018

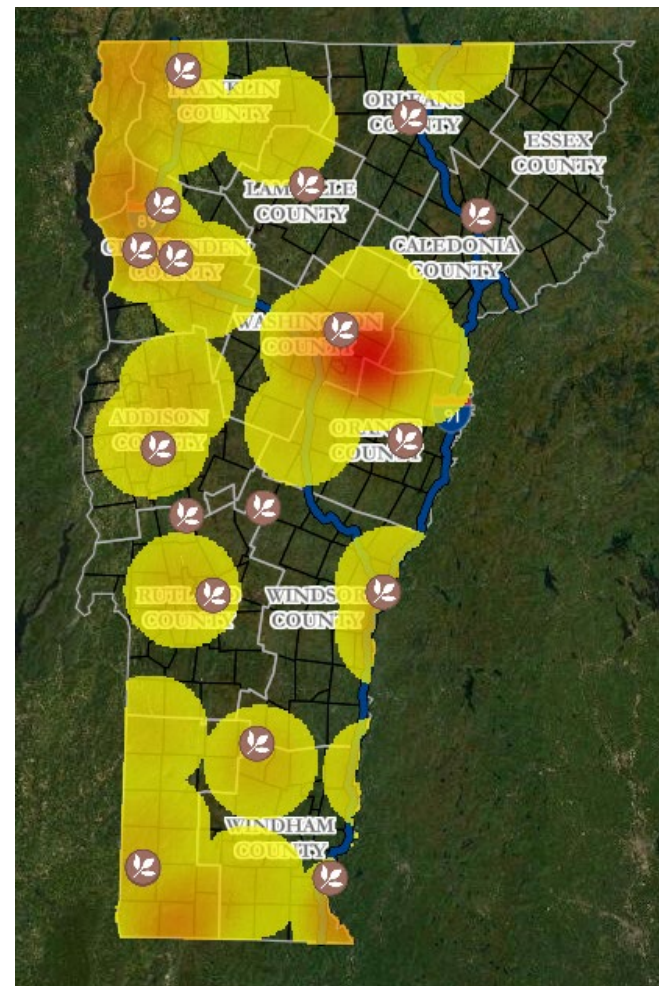


2019



2020

2021



Planned EAB Ash Trees to Cut	Actual EAB Ash Trees Cut
1,575	1,590

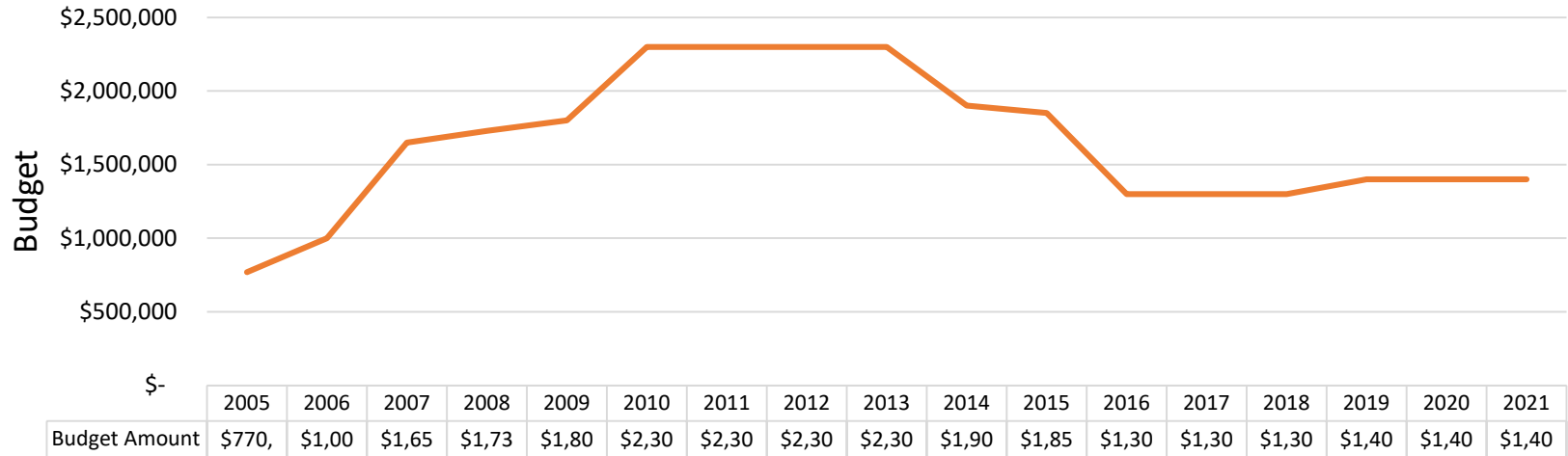
Actual EAB Ash Trees Cut

— Total EAB Ash Costs
\$236,500



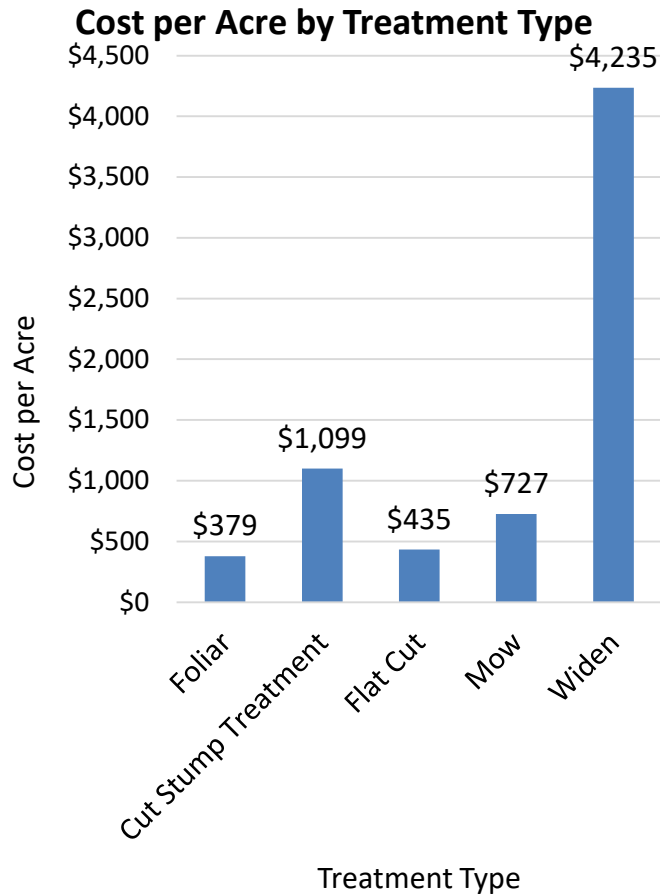
Budget History

Vegetation Management Budget History



- **The vegetation management budget was significantly increased from 2006 – 2013 and reduced from 2013 through 2016 as the rights of way were reclaimed through implementation of the IVM program.**
- **The budget was level funded from 2016 through 2018, and increased \$100,000 in 2019. (EAB Response Plan)**
- **This slight increase was due to the increase in DTs, which was driven by EAB ash trees.**

Budget – 2021 Treatment Costs

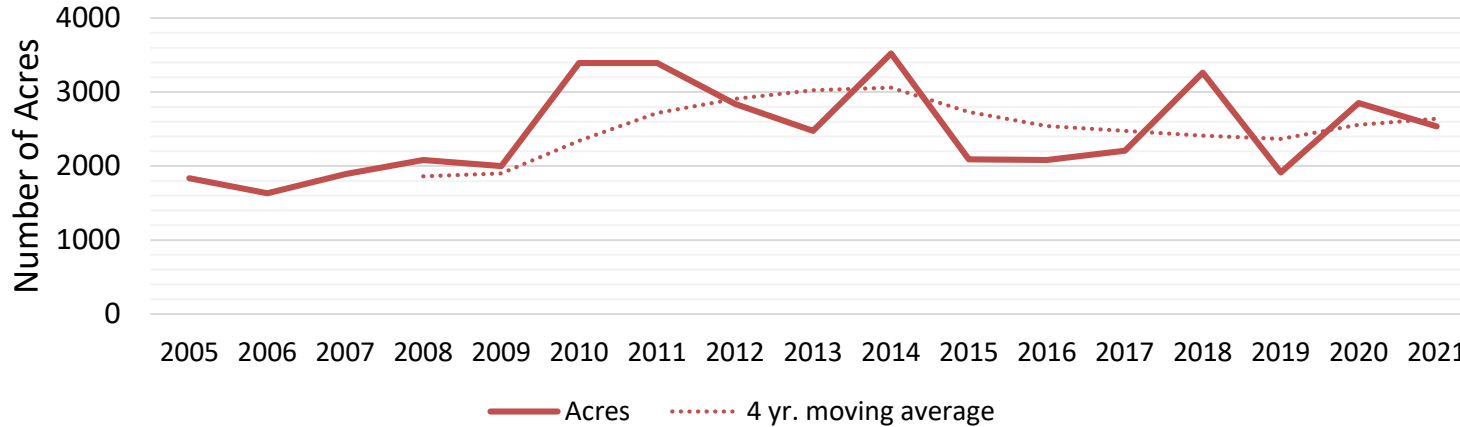


Vegetation Management Costs Per Unit

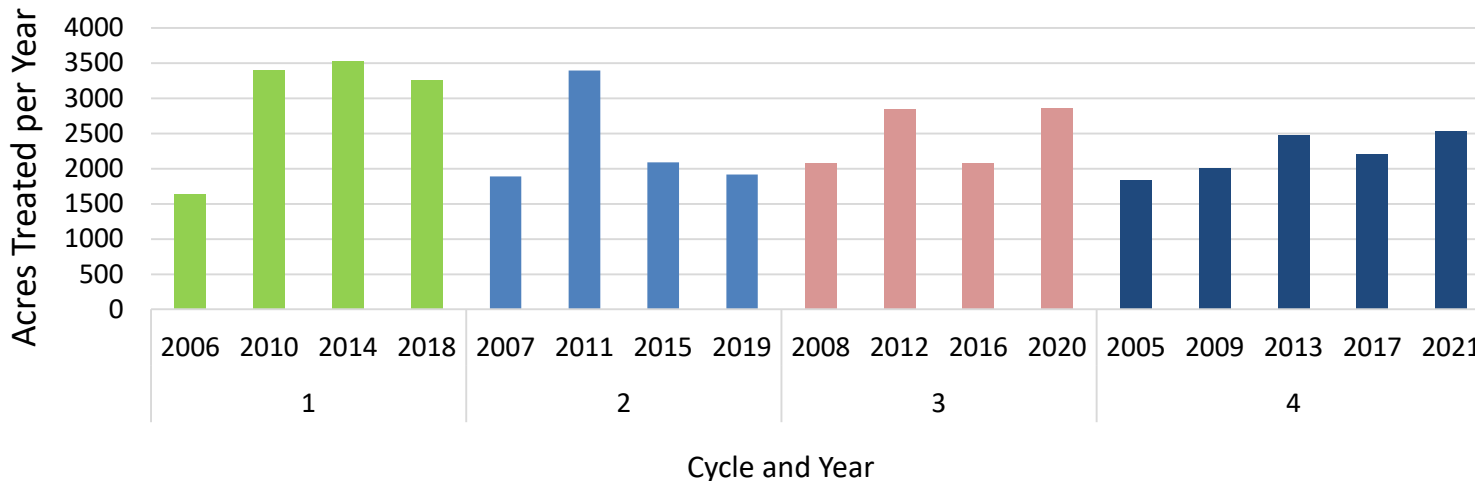
Year	FOLIAR	BASAL	CST	CUT	MOW	WIDEN	DANGER TREES
1996	\$110			\$566			
1997	\$174			\$596			
1998	\$148			\$711			
1999	\$115			\$546			
2000	\$126			\$507			
2001							
2002	\$121			\$606			
2003							
2004	\$160			\$724			
2005	\$190	\$207	\$658	\$714	\$715	\$2,103	\$142
2006	\$247	NONE	\$806	\$698	\$720		\$183
2007	\$463	NONE	NONE	\$724	\$762		\$106
2008	\$278	NONE	NONE	\$567	\$713	\$7,867	\$180
2009	\$306	\$236	NONE	\$710	\$703	\$7,710	\$191
2010	\$146	NONE	NONE	\$360	\$642	\$4,174	\$105
2011	\$204	\$211	NONE	\$421	\$361	\$6,550	\$127
2012	\$303	NONE	\$750	\$515	\$692	\$5,243	\$120
2013	\$352	\$293	\$481	\$760	\$714	\$4,320	\$119
2014	\$203	NONE	\$1,135	\$377	\$1,023	\$4,469	\$151
2015	\$305	NONE	\$848	\$676	\$851	\$4,483	\$216
2016	\$350	NONE	\$1,565	\$507	\$870	\$4,474	\$236
2017	\$418	NONE	\$2,734	\$463	\$768	\$4,977	\$118
2018	\$346	NONE	\$1,609	\$556	\$583	\$5,808	\$130
2019	\$297	NONE	\$1,095	\$485	\$783	\$9,110	\$172
2020	\$308	NONE	\$655	\$387	\$637	\$6,510	\$128
2021	\$379	NONE	\$1,099	\$435	\$727	\$4,235	\$126
10 Year Average	\$326	\$293	\$1,197	\$516	\$765	\$5,363	\$152

2005 – 2021 Vegetation Management Workload

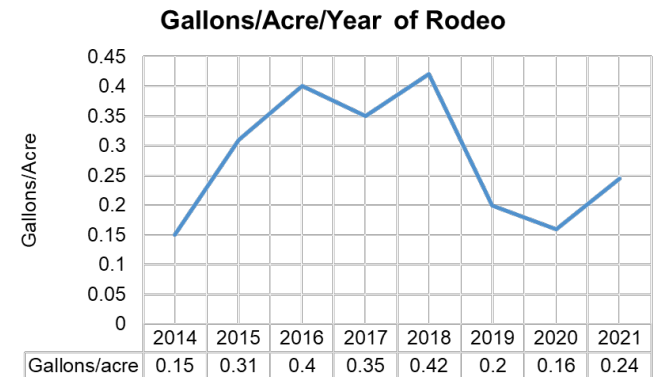
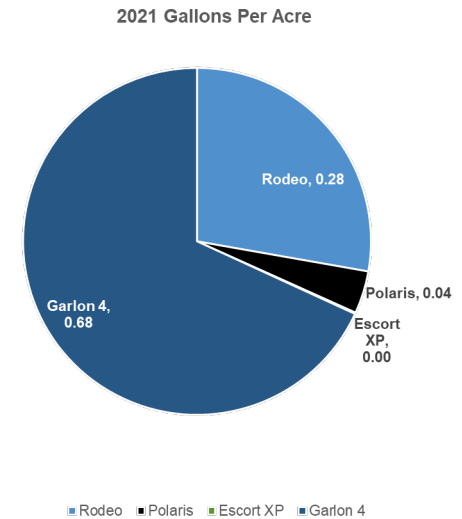
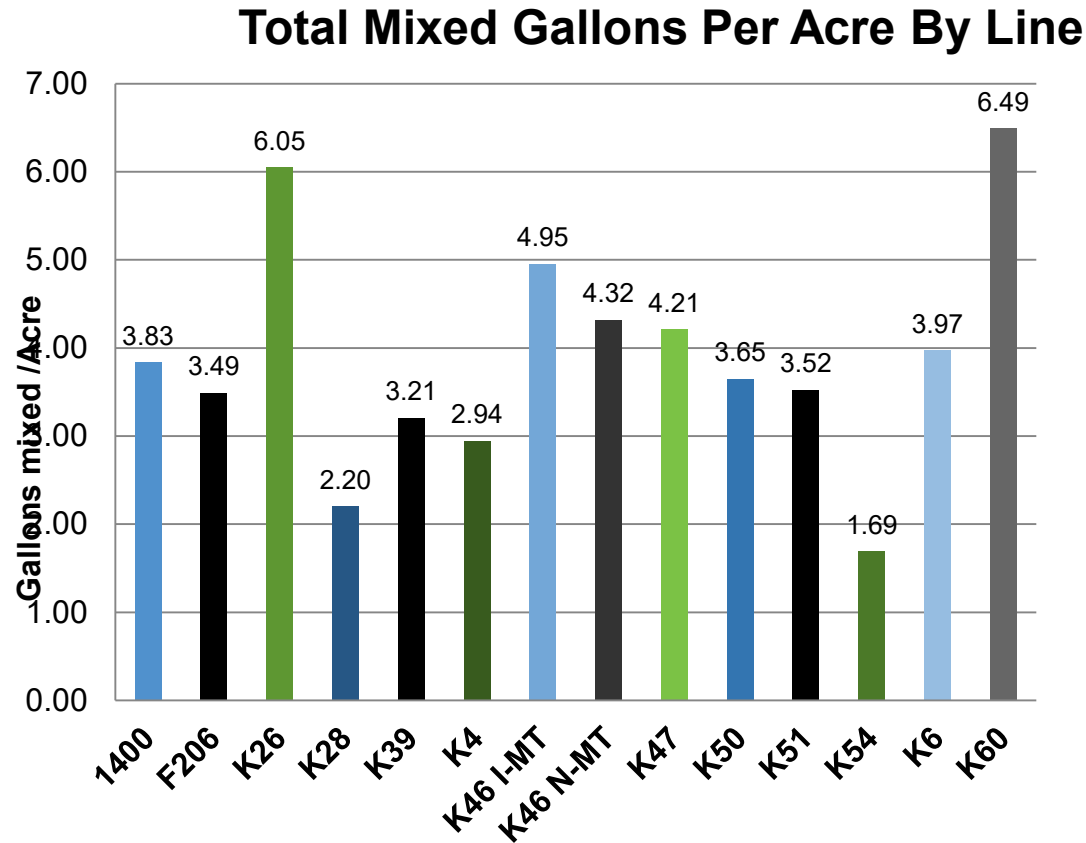
Acres Treated per Year



Acres Treated per Year, by Cycle



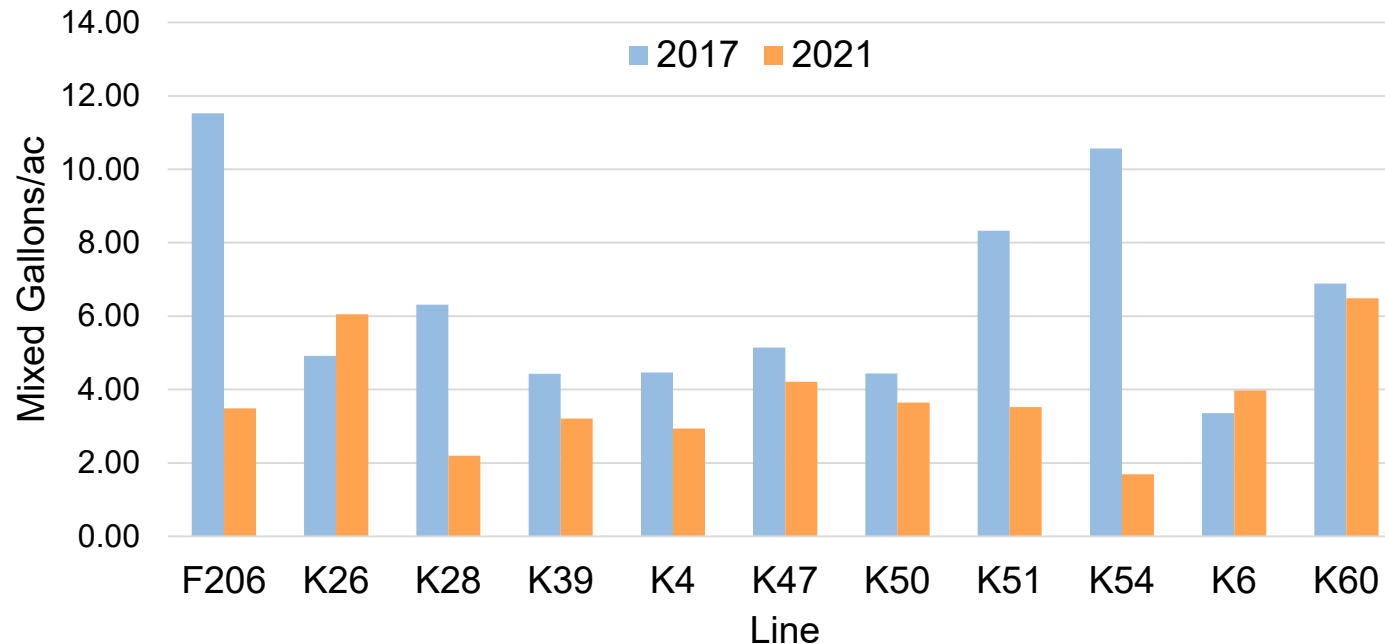
2021 Herbicide Usage by Line



- Average gallons per acre driven by stem densities
- As stem densities are reduced, herbicide use decreases

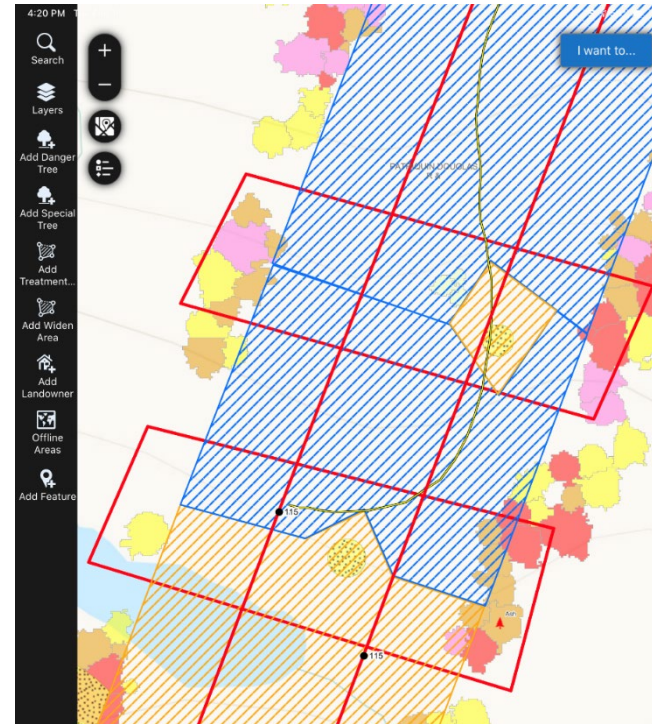
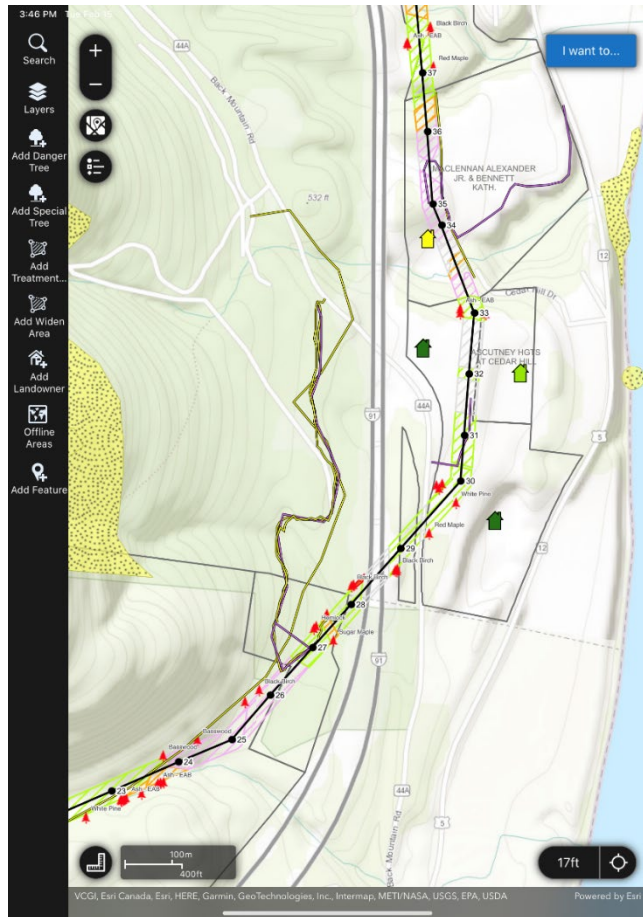
Herbicide Use

2017 and 2021 Cycle Comparison



Trends show lower rates of herbicide use in 2021 in comparison to the same lines in 2017

Tech Upgrades: Geo Cortex Forester App



Work Management System

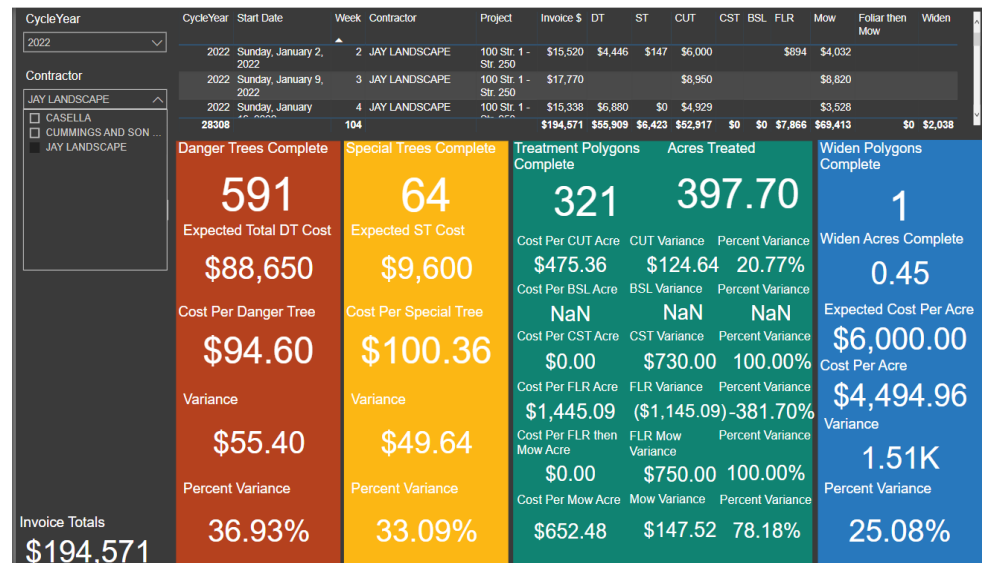
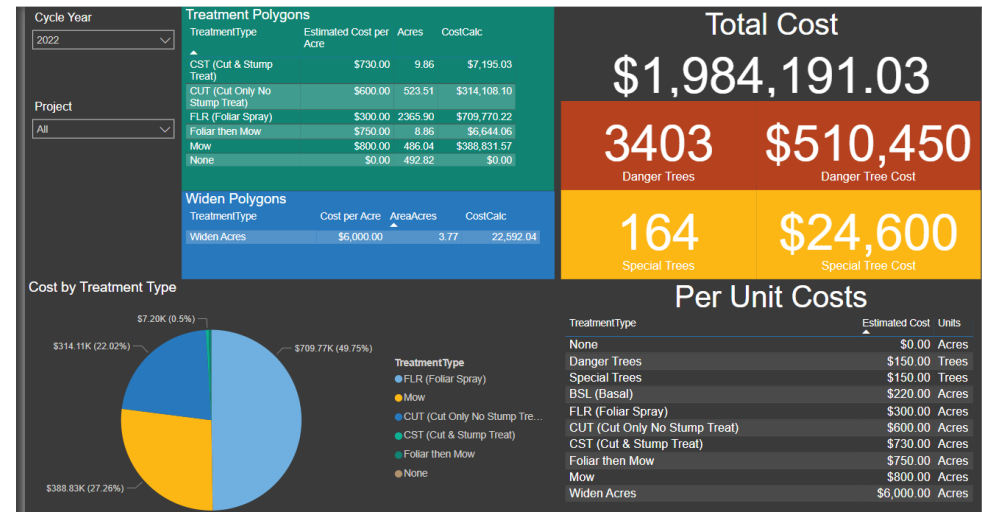
- Work Scoping Tool
- Works on Mobile Devices
 - Laptop, Tablet, & Cellular
- Contractor Reporting
- Forester Quality Control

Tech Upgrades: Power BI Vegetation Management Dashboard



Provides Improved Tools For:

- Budget Development
- Project Estimating
- Contractor Completion Status
- Forester Quality Control Status
- Contractor Cost Performance
- Budget Forecasting
- Historical Cost Analysis



Monarch Butterfly CCAA



CCAA =

Candidate Conservation Agreement with Assurances

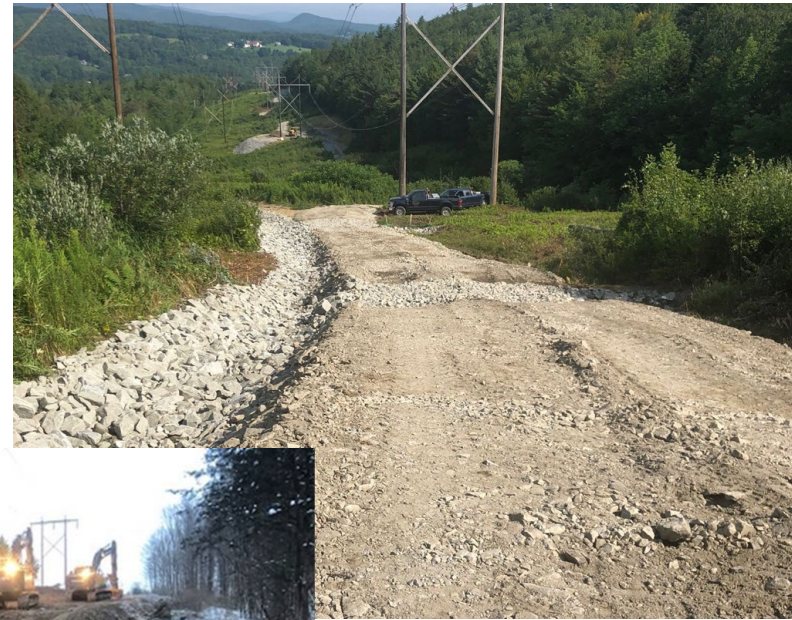
Ensures that VELCO will be able to continue ROW vegetation management

- Without additional “takings” permits or penalties
- IF the monarch is listed under the Endangered Species Act
- 30 plots monitored 2021
- Milkweed stem counts
- Nectar resources
- Implementation Plan completed January 2022



Access Construction

- There were over 30 miles traversed down Right-of-Way in 2021 to replace 256 structures including:
- 83% of the replacement structures in 2021 required earth work.
 - 10.3 Miles of new Stone Road
 - 5.9 Miles of Cut & Fill Road
 - 33 New Culverts installed
 - 37 New Gates
 - 213 Crane Pads
 - 557 Pole Hole Cans
 - 119 Log Anchors set



Matting

- Over 6 miles of matted roads were installed in 2021
 - 14,815 Mats installed
 - 18,447 Mats hauled
 - 10 Mat bridges installed
 - 43 Matted Crane Pads installed



Erosion Controls

- 27,443 bales of hay used
- 2,645 feet of erosion sock
- 180 feet of silt fence



Drilling

- 36% of embedment was found to be ledge in 2021
- Rock Drilling - 1380 feet
 - 30" Coring totals - 885 feet
 - 36" Coring totals - 328 feet
 - 48" Coring totals - 99 feet
- Rock Anchors installed = 17
- Auguring totals = 1130 feet



Products and Services

- Matting

- GMP B20 - \$875,526
- GMP Fairfax - \$13,532
- GMP Silver Lake- \$4,658
- GMP Goshen Dam - \$52,807
- GMP West Proctor - \$1,870
- GMP Barre - \$2,040
- Portland Pipeline - \$93,332

- Aerial Patrols

- Littleton Water and Light - \$5078

Total \$1,501,063



Opportunities and Risks

- Opportunities

- New Team members with new skills
 - Enhance technology utilization
 - Allows for succession planning and team growth
- Develop Access management platform based on lessons learned from Forester App/ Power BI Dashboard
- Enhanced LiDAR data for Vegetation Management
- Products and Services engagements

- Risks

- Emerald Ash Borer (continued)
- Glyphosate issues (continued)

Significant Accomplishments

- Added new team members
- Implemented a new Vegetation Management Work Management system
- Completed year 3 of Emerald Ash Borer Response Plan
- ROW Steward Re-Accreditation
- CCAA – fully enrolled and engaged with partners
- Generated \$1.5M in revenue in Products and Services

