

Challenges With Managing Roadside Vegetation

preventing weed spread and reducing fuels

for Cal IPC Symposium

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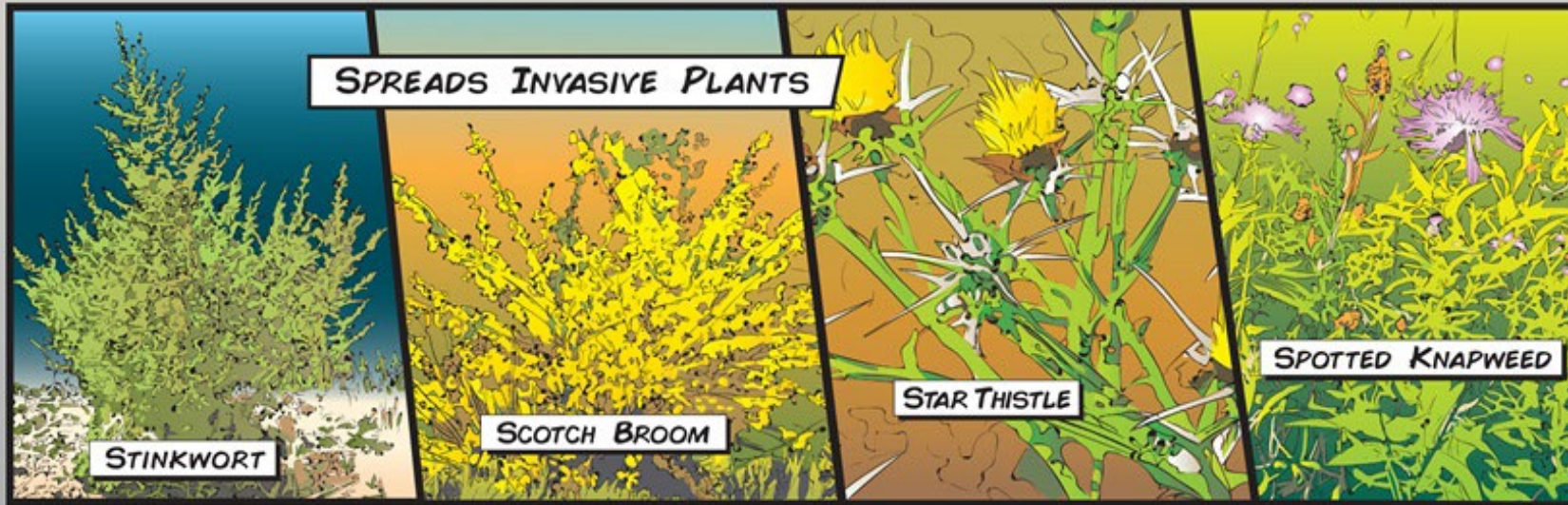
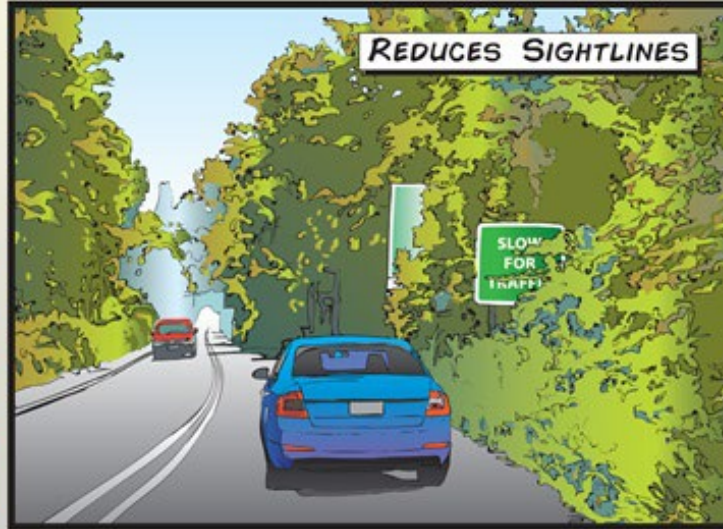
OCTOBER 2023



Overview

- Caltrans Vegetation Management Program & Vegetation Management Plan
- Pesticide Use Program
- Caltrans P-TAC
- DPR vision in 2023 California Roadmap to Sustainable Pest Management
- Pesticide Use Graphs
- AML = public transparency
- How does weed management support the statewide wildfire adaptation effort?
- Caltrans credited with **123,323 acres treated** in the California “Million Acre Strategy”
- Next Steps

PROBLEMS ASSOCIATED WITH UNMANAGED VEGETATION



What's the Problem?

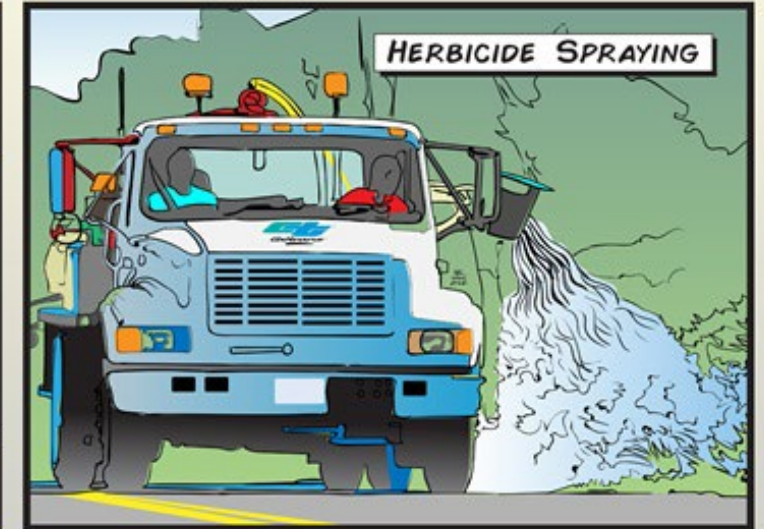
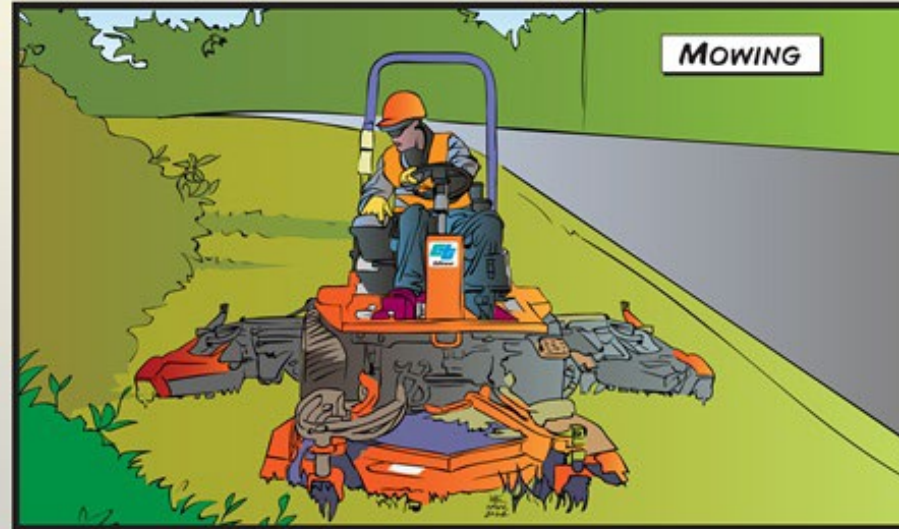
- Spreading Invasive Plants
- Fire Danger
- Safety Issues
- Visibility/Sightline Issues

What's the Plan?

Treatment Methods

- Manual
- Mechanical
- Chemical
- Other

CALTRANS INTEGRATED VEGETATION PLAN



California's Diverse Landscapes

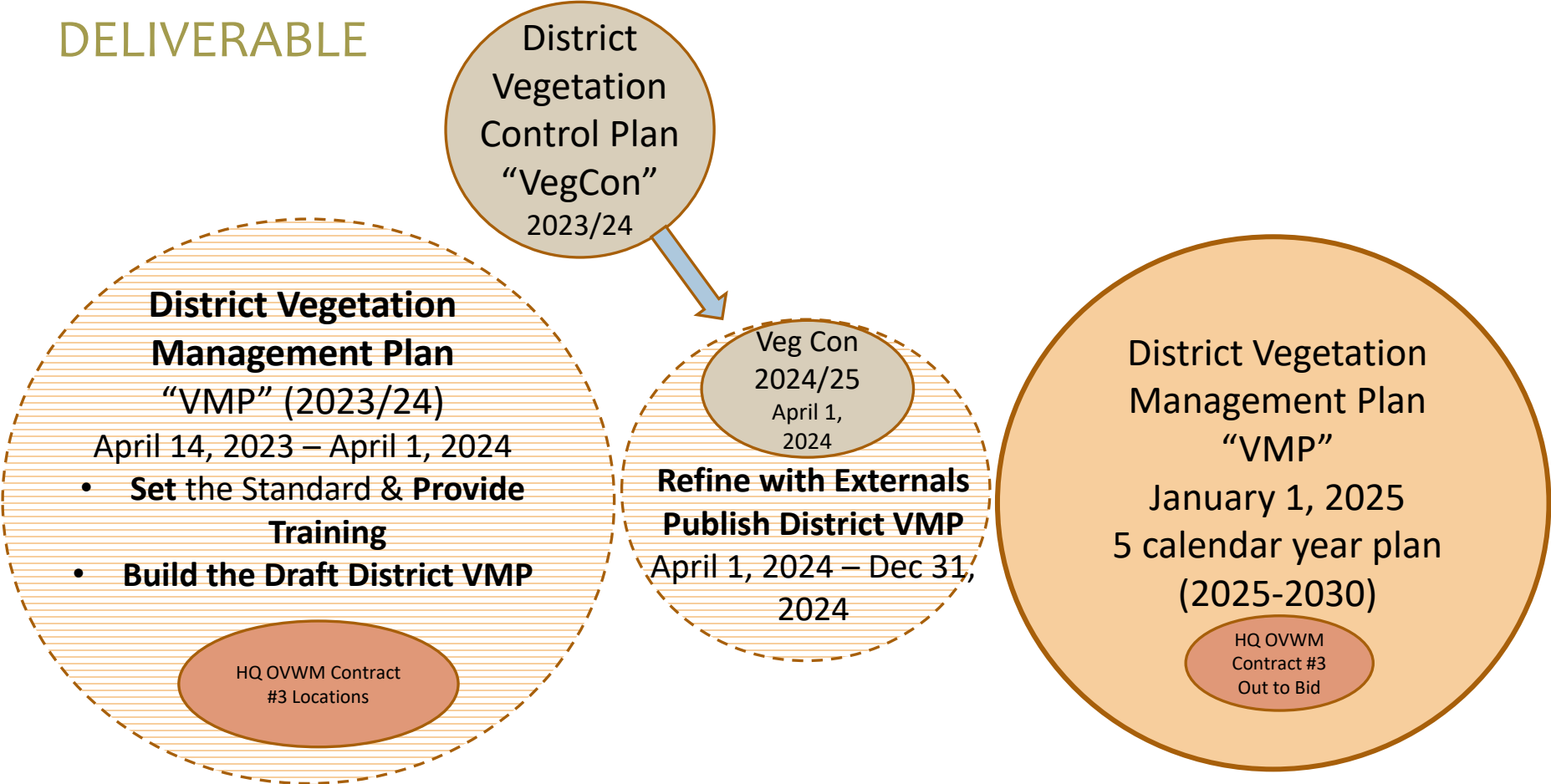
- **Coastal Regions**: Along California's extensive coastline, the influence of maritime climates creates ideal conditions for a wide range of plant species. Coastal chaparral, with its drought-resistant shrubs and unique biodiversity, is a prime example. Coastal fog and mild temperatures encourage the growth of redwoods and other conifers.
- **Mediterranean Climate Zones**: Central and southern California experience a Mediterranean climate, characterized by mild, wet winters and hot, dry summers. This has given rise to the iconic California oak woodlands and grasslands, as well as Mediterranean-type scrublands known as "chaparral."
- **Sierra Nevada Mountains**: The Sierra Nevada mountain range, with its elevational gradient, features a diverse mosaic of ecosystems, from alpine meadows to dense coniferous forests. These mountains host unique plant species adapted to varying elevations and soil types.
- **Desert Regions**: The southeastern part of the state is dominated by deserts, including the Mojave and Sonoran. Here, native plant species like Joshua trees and various cacti have evolved to thrive in extreme arid conditions.

Caltrans Vegetation Management Program

- 350,000 acres of land owned by State Department of Transportation;
- 168,000 acres of “naturally-occurring vegetation”
- 33,000 ac landscape & irrigation (as-builts)
- Transitioning to a Vegetation Management Plan process
 - High level document
 - Corridor level analysis
 - Working with external partners (State & Local agencies)
- Updating Chemical Risk Assessment Methodology
 - Caltrans uses DPR-regulated chemicals (pesticides) and reports use
 - Authorized Materials List (AML) for pesticides

FY 23/24 Vegetation Management Plan

DELIVERABLE



Vegetation Management Activities Totals



- 1
- 2
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Production Quantity

548,312.01

Average of Cost/Acre

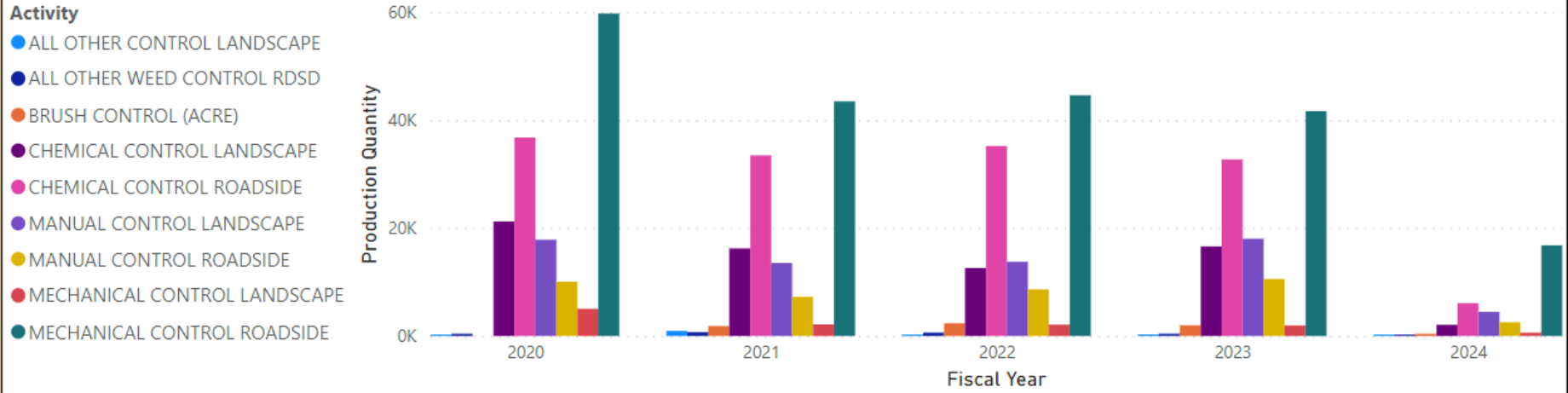
\$8,099.26

Total Cost

\$450,155,125.1608

Activity Totals - FY 2020 to 2024 Year Over Year

- 2020
- 2021
- 2022
- 2023
- 2024



Fiscal Year	Production Quantity	Average of Cost/Acre	Total Cost
2020	151,287.00	\$6,665.77	\$98,029,781.2568
2021	119,640.85	\$6,775.86	\$93,691,044.5103
2022	120,025.28	\$8,721.49	\$97,977,636.4293
2023	124,258.27	\$10,270.08	\$108,318,980.8382
2024	33,100.62	\$9,364.49	\$52,137,682.1262
Total	548,312.01	\$8,099.26	\$450,155,125.1608



Transitioning the Pesticide Use Program - CHADS

CHADS

Caltrans Herbicide Application Data Sheet

What are you applying?

Product ingredient chemical information

Gather relevant site and application (aka scenario info)

Where?

Why?

When?

How?

Transitioning the Pesticide Use Program - CHADS

The new Risk Assessment Methodology allows Caltrans to:

- Continue practicing sustainable IPM
- Evaluate herbicide use scenarios based on risk assessment concepts
- Assess new chemistries and scenarios
- Feel more confident when recommending pesticides for use

P-TAC

- 2022 Formed Caltrans Pesticide Technical Advisory Committee (P-TAC)

<u>Pesticide Technical Advisory Committee (P-TAC)</u>		
	Sergio Aceves	P-TAC Co-Sponsor - Chief, Division of Maintenance
	Tony Dang	P-TAC Co-Sponsor - Deputy Director Sustainability
	Prakash Sah	P-TAC Caltrans Sustainable Pest Management (SPM) Working Group Representative
	Lisa Worthington	P-TAC Caltrans Sustainable Pest Management (SPM) Working Group Representative; Pesticide Use Policy & Reporting
	Derek Longacre	P-TAC Sustainability Program Manager - Pesticide Use in Facility & Buildings Policy and Contracting
	Kristen Stubblefield	P-TAC Environmental Compliance Lead for Pesticide Program
	Adrian Shum	P-TAC Faciliator & Monthly Meeting Host
	<u>Nominee name</u>	<u>Agency/Division/Specialty</u>
1	Leslie Talpasanu	Department of Pesticide Regulation (DPR) - Sustainable Pest Management (SPM) Roadmap
2	Saran Wong	Caltrans/Facilities and Office Buildings
3	John Hackett	Caltrans/California Invasive Species Council (CAISC) Representative
4	Devin Bell	Caltrans/NoCal Representative
5	Jay Karl	Caltrans/Coastal Representative
6	Kenny Gonzalez	Caltrans/SoCal Representative
7	Angelo Gross	Caltrans/Maintenance Vegetation Management
8	Stan Roldan	Caltrans/Maintenance Field Support
9	Donelle Lazott	Caltrans/Transportation Related Facilities
10	Mikey Sanders	Caltrans/Stormwater Compliance Maintenance - NPDES permit
11	Mike Ferrara	Caltrans/Construction Standards & Specifications
12	Sandra Rosas	Caltrans/Division of Environmental Analysis - Liaison to MTCE
13	Cesar Alvarado	Caltrans/Environmental Scientist with a Chemistry background
14	Tricia Peller	California Resource Conservation District (CARCD)
15	Jonna Engel	California Coastal Commission (CCC)
16	Dr. Krista Hoff	California Department of Fish and Wildlife (CDFW)
17	Jennifer Moore	Caltrans/METS Product Evaluation Program (PEP)
18	Chris McDonald	University of California Agriculture and Natural Resources (UCANR)

DPR Coordination

- Monthly data reporting directly submitted to DPR from Caltrans IMMS
- 2022 Caltrans joined a DPR Working Group
- 2022 Caltrans formed the Caltrans Pesticide Technical Advisory Committee (P-TAC) with members of DPR.
- 2023 DPR published the California Roadmap to Sustainable Pest Management

Caltrans Pesticide Program

- 1992 EIR target – 80% reduction from a 1993 baseline
- Reporting
- Inventory
- Chemical Usage Charts & Dashboards (various)
- Authorized Materials Lists (AML)
- County COOP Agreements (Siskiyou, Plumas, Shasta, Tehama, Lassen, Modoc, Placer, Nevada, Los Angeles, San Bernardino)
- Wildfire Adaptation
- AB 99

1992 EIR – 25 Pesticides (Herbicides)

Approved for Use

Table B-1.1. Herbicide Technical Characteristics

Common Name (a)	Trade Name (b)	Signal Word (c)	Registrant	EPA Registration Number	Type of Formulation	Ingredients		
						Type	Name	Composition
Ammonium sulfate	Ammonium Sulfate	None	J. R. Simplot Company	Not required	Soluble crystals	Active	Nitrogen	21.0%
						Active	Sulfur	24.0%
						Inert		55.0%
Bromacil & diuron	Krovax 1 DF	Caution	E. I. du Pont de Nemours & Co., Inc.	352-00505	Dispersible granules	Active	Bromacil	40.0%
						Active	Diuron	40.0%
						Inert		20.0%
Cacodylic acid	Moestar	Caution	Monterey Chemical Company	9663-00041	Liquid	Active	Sodium cacodylate	23.4%
						Active	Dimethylarsinic acid	4.0%
						Inert		72.6%
Chlorsulfuron	Telar	Caution	E. I. du Pont de Nemours & Co., Inc.	352-00404	Dispersible granules	Active	Chlorsulfuron	75.0%
						Inert		25.0%
Dicamba	Banvel 4 W-S	Warning	Sandoz Crop Protection Corporation	876-00025	Liquid	Active	Dicamba	50.0%
						Inert		50.0%
Dichlobenil	Casoron 4G	Caution	Uniroyal Chemical Company, Inc.	148-00614	Granules	Active	Dichlobenil	4.0%
						Inert		96.0%
						Active	Dichlobenil	10.0%
Diquat dibromide	Diquat	Warning	Valent USA Corporation	239-1663	Liquid	Active	Diquat dibromide	35.3%
						Inert		64.7%
						Active	Diquat dibromide	35.3%
Diuron	Karmex 80W	Caution	E. I. du Pont de Nemours & Co., Inc.	352-00247	Wettable powder	Active	Diuron	80.0%
						Inert		20.0%
						Active	Diuron	80.0%
Flusazifop-butyl	Fusilade 4E	Warning	ICI Americas Inc.	10182-00067	Emulsifiable Concentrate	Active	Flusazifop-butyl	46.5%
						Inert		53.5%
						Active	Flusazifop-P-butyl	13.0%
Glyphosate	Roundup	Warning	Monsanto Agricultural Company	524-00308	Liquid	Active	Isopropylamine salt of glyphosate	41.0%
						Inert		59.0%
						Active	Isopropylamine salt of glyphosate	53.8%
Isoxaben (not yet registered in California)	Gallery	Caution	Elnaco Products Company	1471-00159	Dry flowable	Active	Isoxaben	75.0%
						Inert		25.0%
						Active	Magnesium chloride hexahydrate	98.0%
Magnesium chloride	Magnesium Chloride	Caution	Western Magnesium Corporation	38754-50001	Soluble flakes	Active	Magnesium chloride hexahydrate	2.0%
						Inert		
						Active	Mellfluidide	28.0%
Mellfluidide	Emberk 2S	Caution	3M Agricultural Products	7182-00007	Liquid	Active	Mellfluidide	72.0%
						Inert		
						Active	Monosodium methanesulfonate (MSMA)	48.3%
Monosodium methanesulfonate (MSMA)	Daconate	Caution	Fermenta ASC Corporation	50534-00005	Wettable powder	Active	Monosodium methanesulfonate	51.7%
						Inert		

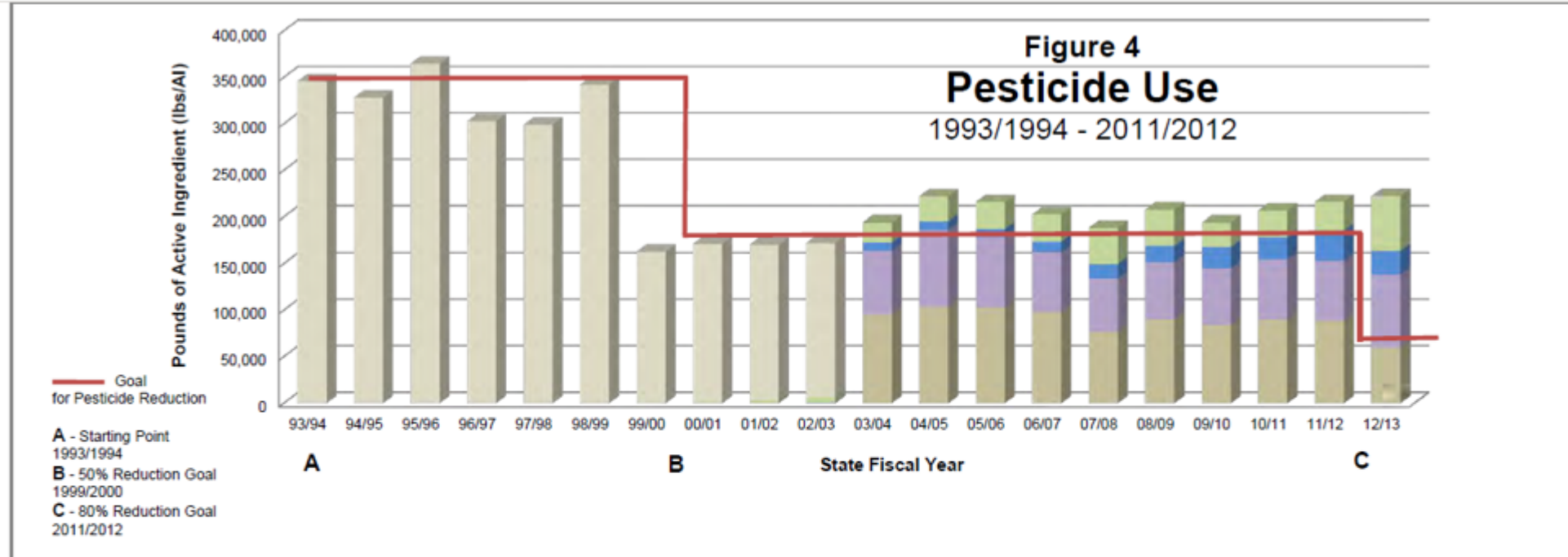
Table B-1.1. Continued

Common Name (a)	Trade Name (b)	Signal Words	Registrant	EPA Registration Number	Type of Formulation	Ingredients		
						Type	Name	Composition
Napropamide	Devrinol 50WP	Caution	ICI Americas Inc.	476-02108	Wettable powder	Active	Napropamide	50.0%
						Inert		50.0%
Oryzalin	Surflan AS	Caution	Elnaco Products Company	1471-00113	Liquid	Active	Oryzalin	40.4%
						Inert		59.6%
Oxadiazon	Ronstar 50WP	Warning	Rhône-Poulenc Agricultural Company	359-00714	Wettable powder	Active	Oxadiazon	50.0%
						Inert		50.0%
Oxyfluorfen	Goal 1.6E	Warning	Rohm and Haas Company	707-00174	Emulsifiable Concentrate	Active	Oxyfluorfen	19.4%
						Inert		80.6%
Pronamide	Kerb 50W	Caution	Rohm and Haas Company	707-00159	Wettable powder	Active	Pronamide	50.0%
						Inert		50.0%
Sethoxydim	Poast	Warning	BASF Corporation	7969-00058	Liquid	Active	Sethoxydim	18.0%
						Inert		82.0%
Simazine	Princep Cal 90	Caution	Ciba-Geigy Ltd.	100-00603	Dispersible granules	Active	Simazine	90.0%
						Inert		10.0%
	Princep 80W	Caution	Ciba-Geigy Ltd.	100-00437	Wettable powder	Active	Simazine	80.0%
						Inert		20.0%
Simazine 80W	Caution	Aceto Agricultural Chemical Corporation	2749-00163	Wettable powder	Active	Simazine	80.0%	
					Inert		20.0%	
Sulfometuron methyl	Oust	Caution	E. I. du Pont de Nemours & Co., Inc.	352-00401	Dispersible granules	Active	Sulfometuron methyl	4.0%
						Inert		96.0%
Tebuthiuron	Spike 80W	Caution	Elnaco Products Company	1471-00097	Wettable powder	Active	Tebuthiuron	75.0%
						Inert		25.0%
Triclopyr	Garlon 4	Caution	Dow Chemical Company	464-00554	Liquid	Active	Triclopyr	61.6%
						Inert		38.4%
Trifluralin	Treflan	Caution	Elnaco Products Company	11214-00019	Emulsifiable concentrate	Active	Trifluralin	41.2%
						Inert		58.8%

- (a) Common names of active ingredients examined in EIR
 (b) Trade names of commercial formulations considered for use by Caltrans.
 (c) For an explanation of signal words, see Appendix D.

Source: Labels of products registered by EPA.

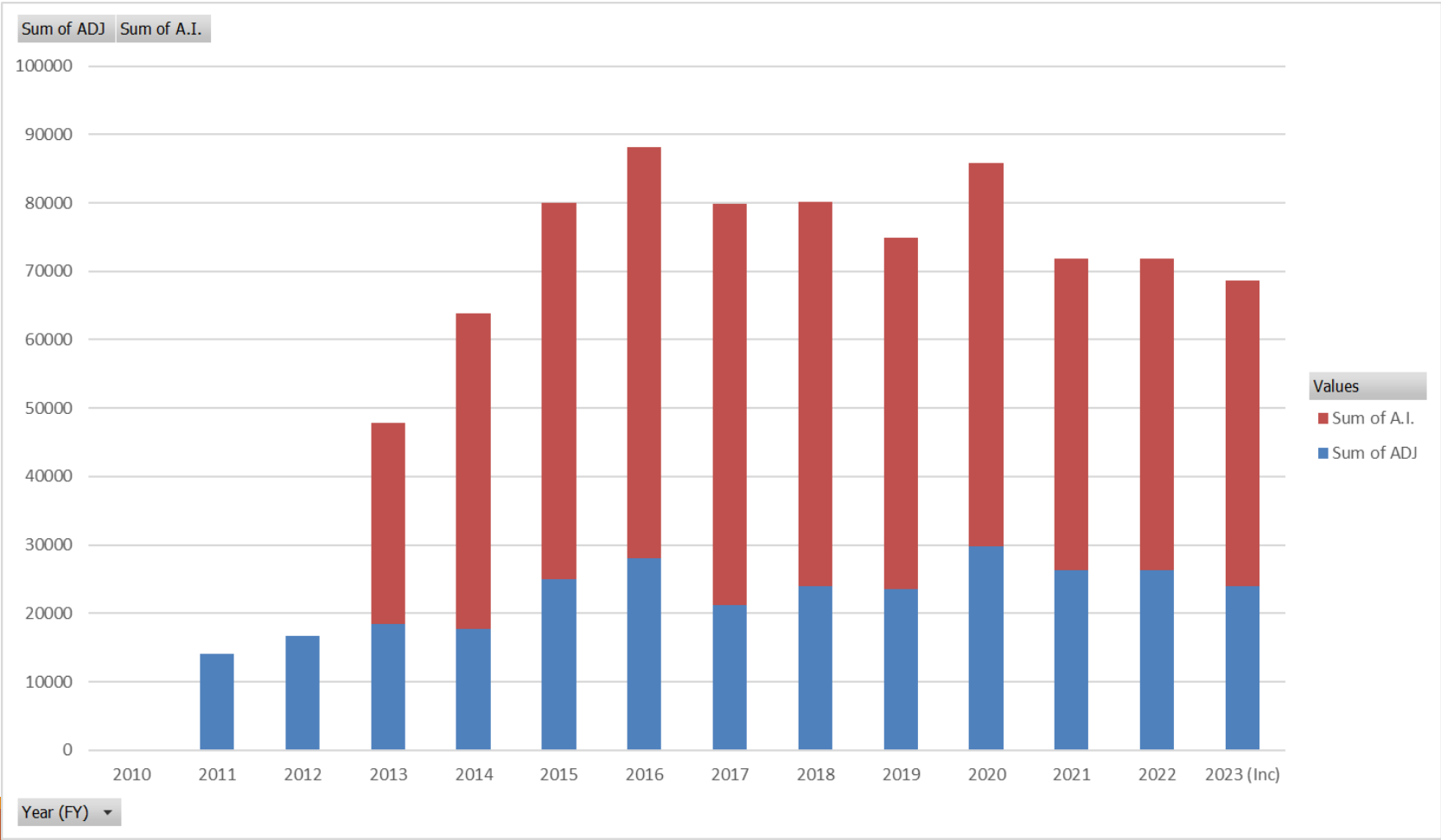
Pesticide Use – first 20 years (1992-2012)



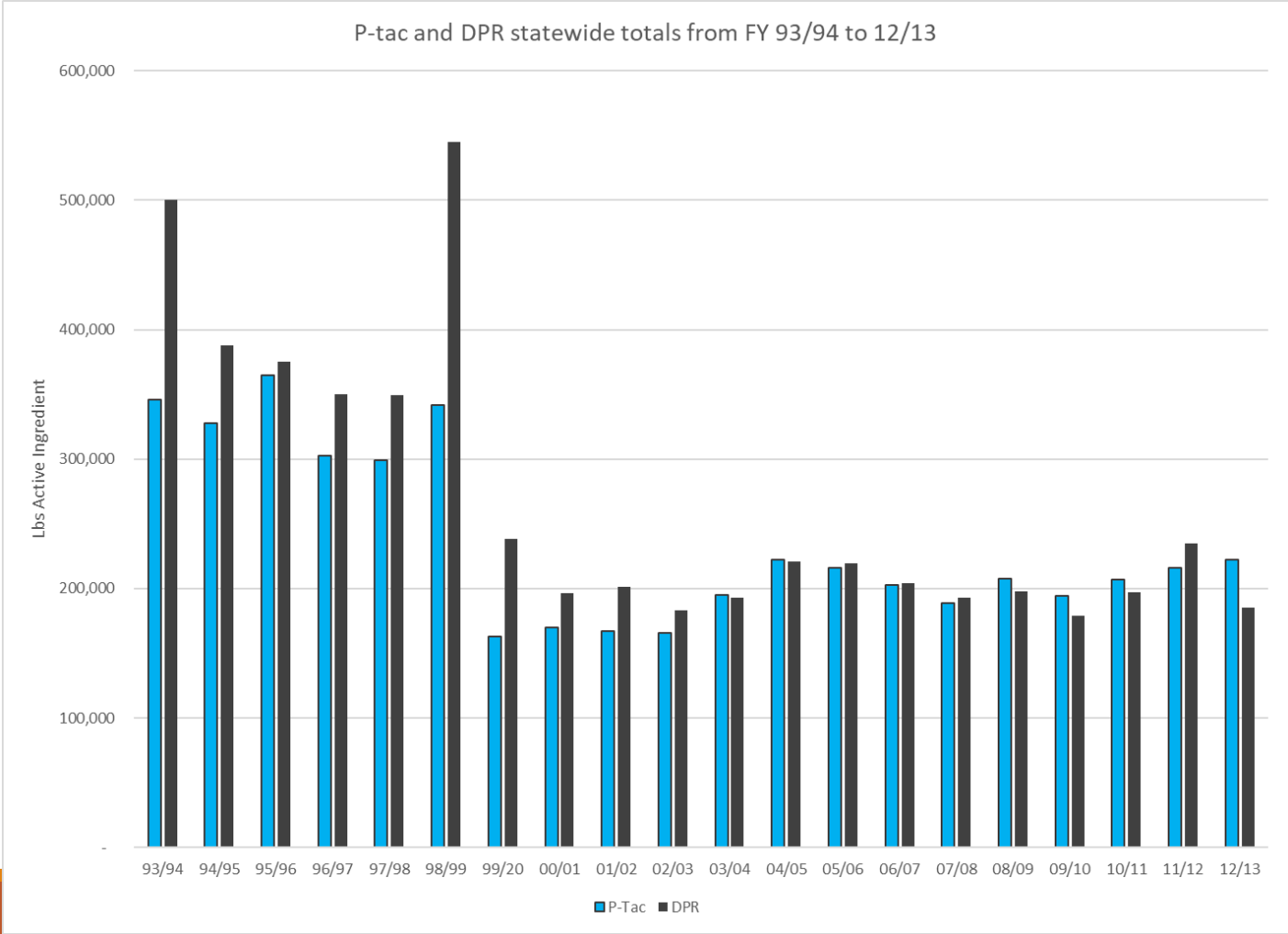
State Fiscal Year	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13
Statewide Total Used	345,696	328,046	364,559	302,628	298,929	341,877	162,886	170,180	167,208	165,574	194,921	221,971	215,910	202,687	188,474	207,717	194,052	206,905	216,124	*222,200
Noxious/Invasive Weeds								1,147	3,147	6,075	21,522	26,618	28,796	29,137	38,841	38,515	26,289	28,407	30,991	*58,764
Adjuvants									18	497	8,927	9,075	8,292	11,084	15,551	17,698	23,214	24,074	32,123	*24,984
Other Areas											68,402	82,782	75,878	64,430	57,246	61,258	60,597	64,306	64,380	*78,598
Non-Landscape Roadside Areas											95,338	103,496	102,944	98,036	76,836	90,246	83,952	90,118	88,630	*59,854

Notes: Pesticide Use on this chart is shown by different colored groups, which correlates to the Division of Maintenance IMMS database alphabetic (family) codes. Pesticides used to meet the federal executive order for Noxious /Invasive Weeds are tracked in IMMS by special code "Mweed." Adjuvants, which enhance the effectiveness of pesticides, are tracked in IMMS as "Adjuvant." Other Areas are landscaped areas on the roadside, and landscaped areas in public facilities, (such as safety roadside rest areas and vista points) and are tracked in IMMS by family codes "E, F, G, H, J, K, M, S," of which E family has the highest use. Non-Landscape Roadside Areas are areas not landscaped, such as slopes, and tracked by family code "C." *Planned Use For 12/13 FY

Pesticide Use



Pesticide Use



Inventory (IMMS) - \$11 M



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9,760,846.01
OZ in Stock

610,052.88
LB in Stock

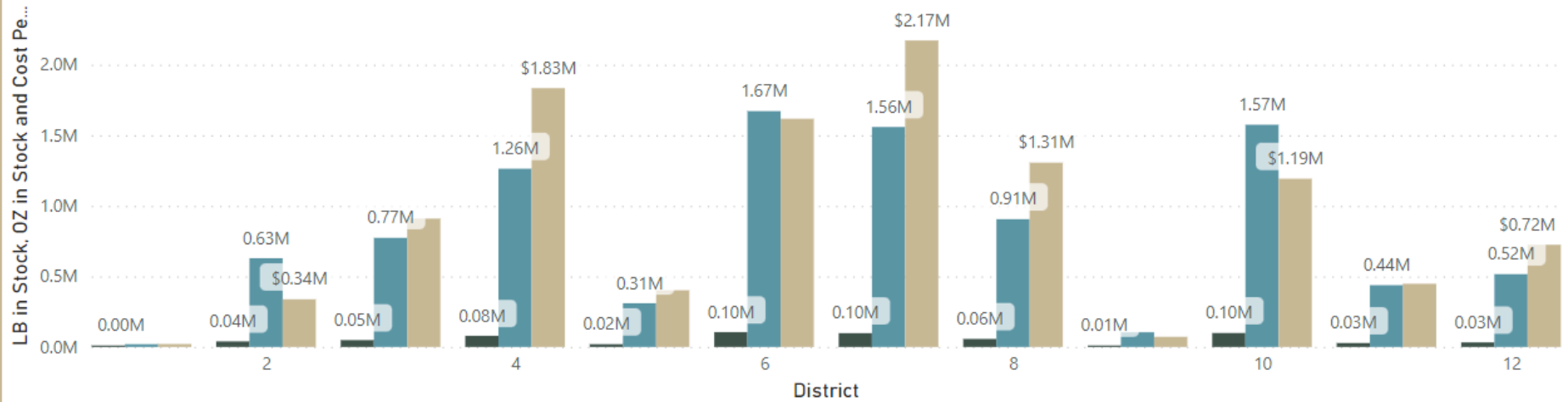
\$11,035,081.59
Cost of Stock

OBI Data Pull:
05/09/2023



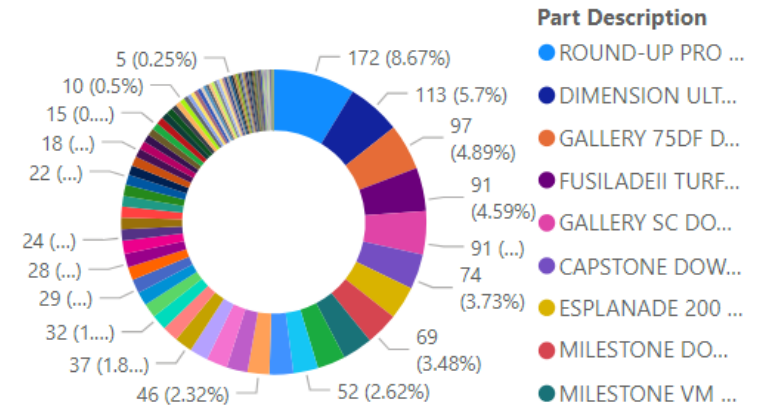
Chemical Inventory Report

● LB in Stock ● OZ in Stock ● Cost Per Qty



Part Description	LB in Stock	OZ in Stock	Cost Per Qty
ROUND-UP PRO CONCENTRATE MONSANTO EPA #00524-00529-AA	265,490.87	4,247,853.88	\$1,346,959.24
CAPSTONE DOW AGROSCIENCES LLC 0062719-00572-ZB-000000	47,311.75	756,988.00	\$380,189.87
GALLERY SC DOW AGROSCIENCES CO. 0062719-00658-AA-000000	24,408.88	390,542.00	\$2,160,420.99
GROUND W HELENA CHEMICAL CO. 0005905-50105-AA-000000	20,000.41	320,006.60	\$42,711.68
BLAZON BLUE LIQUID FROM MILLIKEN CHEM MFR	19,197.33	307,157.34	\$94,396.67
ACCORD XRT II DOW AGROSCIENCES LLC 0062719-00556-AA-000000	17,614.56	281,833.00	\$50,285.35
FUSILADEII TURF&ORNA MENTAL HERB SYNGENTA	17,614.09	281,825.50	\$442,196.90
Total	610,052.88	9,760,846.01	\$11,035,081.59

Product Use



- Part Description**
- ROUND-UP PRO ...
 - DIMENSION ULT...
 - GALLERY 75DF D...
 - FUSILADEII TURF...
 - GALLERY SC DO...
 - CAPSTONE DOW...
 - ESPLANADE 200 ...
 - MILESTONE DO...
 - MILESTONE VM ...

Chemical Usage Report = 242,615 lbs. AI

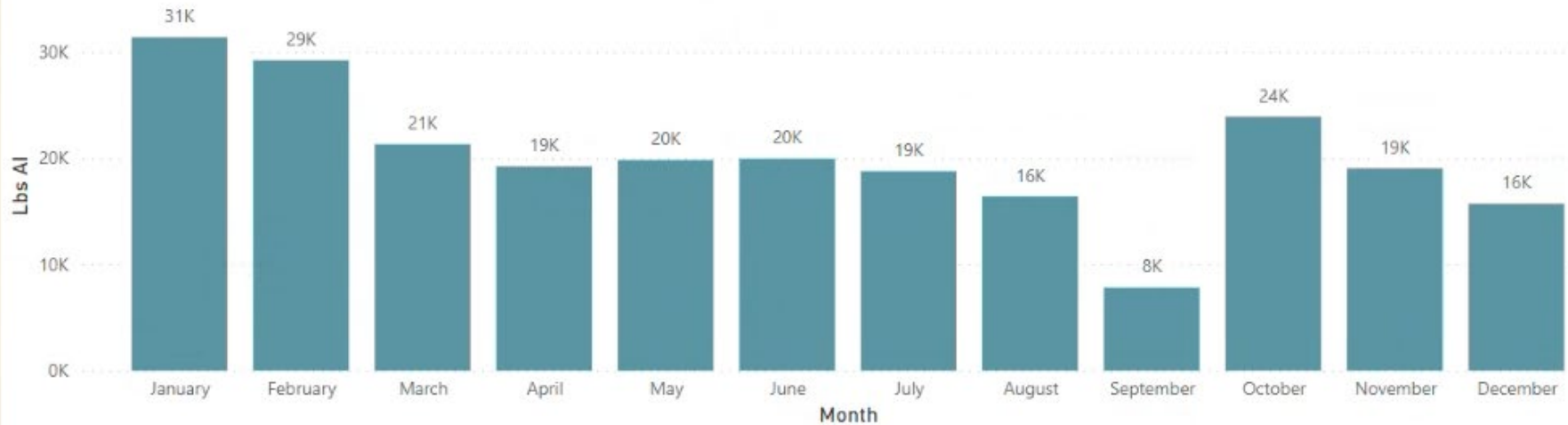


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242,615.06
Total Lbs AI

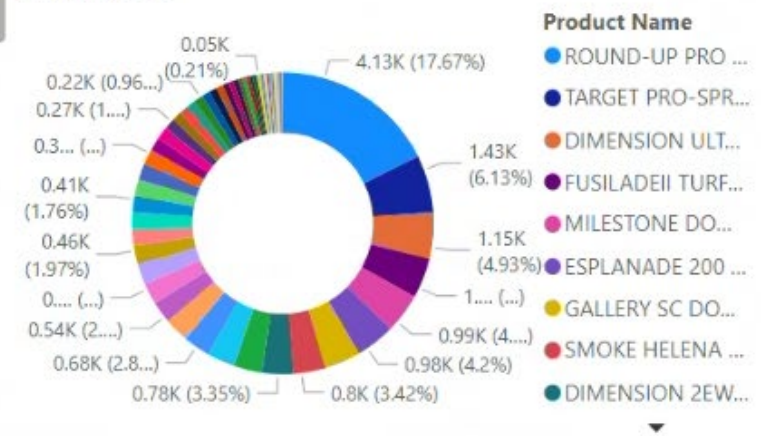
Chemical Usage Report - Pounds Applied

Lbs AI/Month - 2022 Calendar Year



Product Name	Lbs AI
ROUND-UP PRO CONCENTRATE MONSANTO EPA #00524-00529-AA	103,863.96
ROUNDUP PROMAX MONSANTO COMPANY 0000524-00579-AA-0000000	18,874.81
CLEANTRAXX DOW AGROSCIENCES EPA #62719-702	13,214.58
TARGET PRO-SPREADER CREATIVE MKTG.EPA# 1050775-50022-AA	11,753.72
ACCORD XRT II DOW AGROSCIENCES LLC 0062719-00556-AA-0000000	11,209.53
VASTLAN HERBICIDE EPA REG #62719-687	7,253.40
GROUNDWATER W HELENA CHEMICAL CO. 0005905-50105-AA-0000000	5,657.80
EP BASE OIL PLUS ECO-PAC, LLC 0073427-50001-AA-0000000	5,591.74
ACTIVATOR 90 LOVELAND PRODUCTS INC. EPA# 34704-50034-AA	4,862.60
PENDULUM AQUACAP BASF CORP EPA #000024100416AA	4,021.08
ATTACH LOVELAND PRODUCTS 0034704-50026-AA-0000000	3,684.45
ROUNDUP PRO MONSANTO EPA #00524-475-AA	3,574.27
Total	242,615.06

Product Use



Date range between
01/01/2022 and 12/31/2022

OBI Data Pull:
03/09/2023



County – LA highest

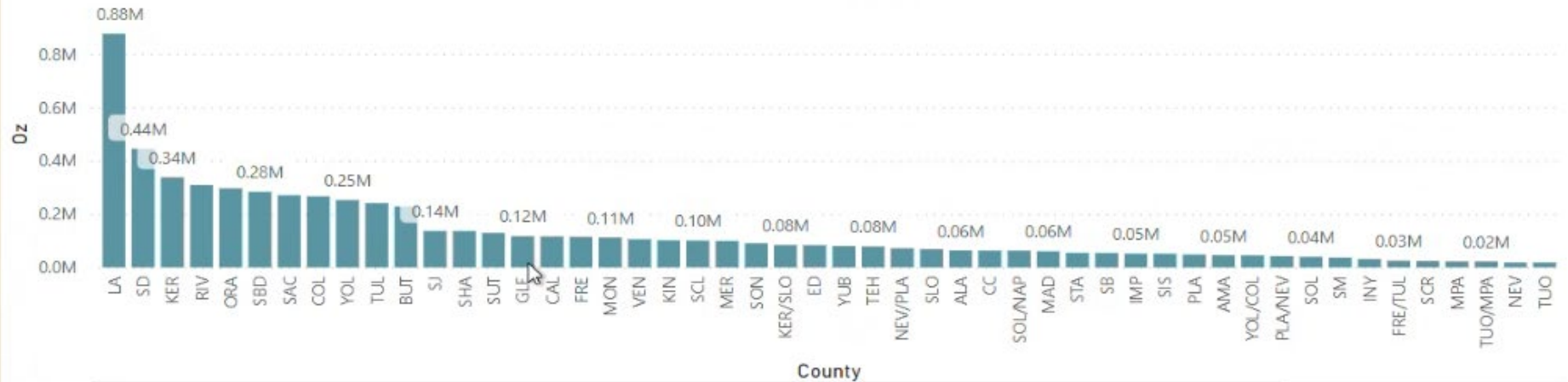


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6,620,008.73
Total OZ

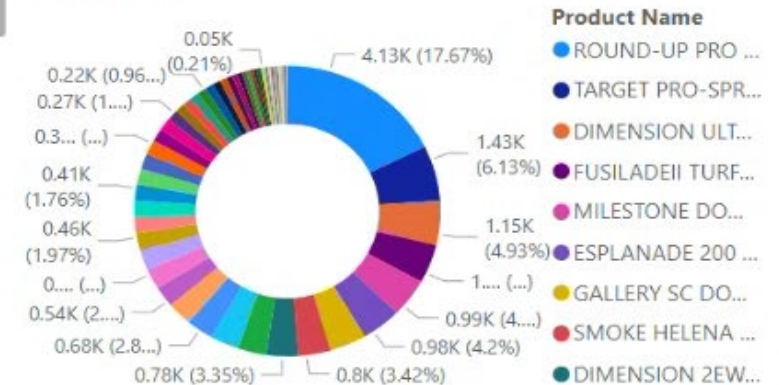
Chemical Usage Report - Ounces Applied

Oz/County - 2022 Calendar Year



Product Name	Oz
ROUND-UP PRO CONCENTRATE MONSANTO EPA #00524-00529-AA	2,649,590.71
ROUNDUP PROMAX MONSANTO COMPANY 0000524-00579-AA-0000000	437,930.57
CLEANTRAXX DOW AGROSCIENCES EPA #62719-702	424,906.00
ACCORD XRT II DOW AGROSCIENCES LLC 0062719-00556-AA-0000000	281,646.60
VASTLAN HERBICIDE EPA REG #62719-687	231,738.00
TARGET PRO-SPREADER CREATIVE MKTG.EPA# 1050775-50022-AA	208,399.26
CAPSTONE DOW AGROSCIENCES LLC 0062719-00572-ZB-000000	182,623.00
SMOKE HELENA CHEMICAL CO. 0005905-50104-AA-000000	179,923.90
PENDULUM AQUACAP BASF CORP EPA #000024100416AA	135,847.20
ROUNDUP PRO MONSANTO EPA #00524-475-AA	114,560.00
GALLERY SC DOW AGROSCIENCES CO. 0062719-00658-AA-000000	106,324.62
FUSILADEII TURF&ORNA MENTAL HERB SYNGENTA EPA000010001084AA0000000	101,151.00
Total	6,620,008.73

Product Use



Date range between
01/01/2022 and 12/31/2022

OBI Data Pull:
03/09/2023



2022 AML — 66 Pesticides; 22 Adjuvants

Authorized Materials Lists (AML)

Authorized Material Lists are specified in Caltrans specifications and are primarily a proactive measure used in conjunction with other acceptance activities as outlined in Department standards and guidance documents. The materials included on these lists are authorized for use on Caltrans construction projects. Use of AMLs alone without other corresponding measures may not assure compliance to state and federal regulations. Actual performance of the material will be the responsibility of the vendor and the user.

For products that meet established AML authorization criteria, please submit your request using the [Authorized Material List Submittal Form TL 9502](#).

For AMLs with authorization criteria that are under development, please submit your request for addition to the respective AML using the [New Product Evaluation Submittal Form TL 9501](#).

Vegetation Management	
<ul style="list-style-type: none">AdjuvantsPesticides	<ul style="list-style-type: none">Authorization Criteria for AdjuvantsAuthorization Criteria for Pesticides

What changed?

- 2022 AML public-facing for transparency
- 2023 Program Review funded & implemented

Result?

- Toxicology Training April 2023 (60 staff goal)
- Caltrans has minimized liability
- Practitioner resistance due to less autonomy and fewer choices

Now?

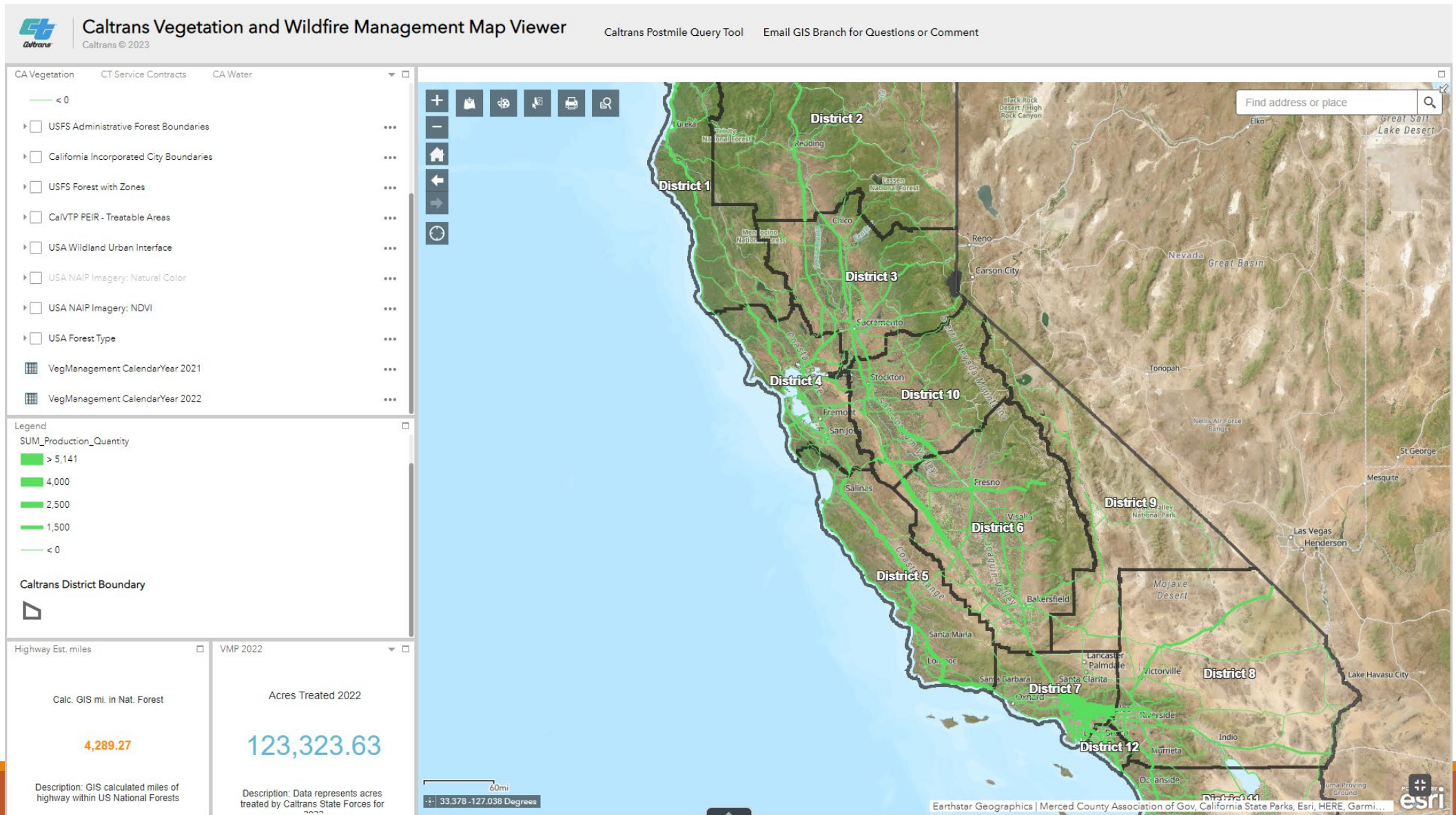
- Practitioners must calculate human health and ecological risk and sign documentation
- Supports “safe and less toxic option selected” prior to field application

Align **pesticide use** as a maintenance treatment within Wildfire Preparedness Activities

- Local wildfire intelligence informs Caltrans where fuel reduction activities can reduce wildfire ignition probability (by vehicles)
- [Caltrans Vegetation and Wildfire Management Map Viewer](#) is public facing and greatly assists with communication during planning
- Pesticide use acreage counts toward **Million Acre Strategy**

Vegetation Management Treatment Totals

Caltrans Vegetation & Wildfire Management Map Viewer



CAL FIRE Weed Abatement Alternative on State Highways

Prescribed Fire

CALFIRE + Kern County Fire

SR 223

99 acres

7 miles

Caltrans EP



Next Steps

FY 23-24 & Beyond

- Caltrans Districts to develop new VMPs
- Implement changes to the Pesticide Program
 - Build CHADS Library
 - Train 40 more practitioners in Pesticide Risk Assessment Methodology
- Monitor AB 99 – 24 hr advanced Public Notification requirement
- P-TAC to develop Caltrans Pesticide Use Charter in alignment with SPM
- Prepare an update of the 1992 EIR