

# **SAMPLING FOR PESTICIDE RESIDUES IN CALIFORNIA WELL WATER 2020 Update**



*Agricultural well pumping to standpipe. Photo credit: DPR.*

**35<sup>th</sup> Annual Well Sampling Report  
Pursuant to the  
Pesticide Contamination Prevention Act**

**California Environmental Protection Agency  
Department of Pesticide Regulation  
Environmental Monitoring Branch  
Groundwater Protection Program**

**April 2021**



## SUMMARY

As required under Food and Agricultural Code (FAC) section 13152(e), this report summarizes the results of groundwater sampling in California for pesticide residues by the Department of Pesticide Regulation (DPR) and other agencies that reported their results to DPR. This 2020 annual report includes well sampling data from DPR for the sampling period of June 2018 through December 2019, the State Water Resources Control Board (SWRCB) for the sampling period of January through December 2019, and the United States Geological Survey (USGS) for the sampling period of January through December 2018. DPR data include wells sampled in 2018 but not included in the 2019 annual report because the data were still preliminary at that time. DPR delays collecting USGS data to ensure a more complete and updated dataset. Even with the year delay, some USGS data included in this report were still listed as preliminary by USGS.

Table 1 consists of the well sampling data from all three agencies. Actions taken by DPR to prevent migration of pesticides to groundwater from nonpoint agricultural sources are identified in Table 2. Wells with detections are identified by county in Appendix D.<sup>1</sup>

A total of 4,891 wells were sampled for one or more of 327 agricultural use pesticides and pesticide degradates (Table i).<sup>2</sup> Thirty pesticides or degradates were detected; seven of the detected pesticides are no longer registered for use in California (Table 2).

**Table i.** Summary of well sampling results from DPR, SWRCB, and USGS for the 2020 annual report. <sup>a</sup>

Well Sampling Summary	DPR	SWRCB	USGS	Total <sup>b</sup>	Percent Detections
<b>Pesticides/Degradates Sampled <sup>c</sup></b>	79	109	254	327	9.2
<b>Pesticides/Degradates Detected</b>	15	9	18	30	
<b>Wells Sampled <sup>d</sup></b>	189	4,557	161	4,891	8.1
<b>Wells with Detections</b>	95	281	22	398	
<b>Counties Sampled</b>	13	57	24	57	40.4
<b>Counties with Detections</b>	10	17	10	23	

- a. Actual sample date ranges for the 2020 annual report are: DPR – June 2018 to November 2019. SWRCB – January to December 2019. USGS – January to December 2018.
- b. “Total” reflects total *unique* values, not a summation of values. For example, of the 58 California counties, some counties are sampled by more than one agency, but some are not sampled at all. (For the 2020 data, Sierra County was not sampled.)
- c. “Pesticides Sampled” and “Pesticides Detected” represents the total number of pesticides sampled for or detected in groundwater regardless of the number of sampling events or detections that occurred during the reporting period.
- d. “Wells Sampled” and “Wells with Detections” represent the total number of wells sampled or found to contain pesticide residues regardless of the number of sampling events or detections that occurred during the reporting period.

<sup>1</sup> Although DPR is required to provide locations of sampled wells, information in this report is summarized by county to protect well owner privacy. DPR can provide additional location information—including township, range, and section—upon request or at: [https://www.cdpr.ca.gov/docs/emon/grndwtr/well\\_inventory\\_database/index.htm](https://www.cdpr.ca.gov/docs/emon/grndwtr/well_inventory_database/index.htm).

<sup>2</sup> Some exceptions to the “agricultural use” status of sampled pesticides apply; some industrial use pesticides and pesticides that are no longer—or never were—registered for use in California are included due to the varying monitoring goals of reporting agencies.

## **PREFACE**

This report fulfills the requirements of the Pesticide Contamination Prevention Act of 1985 (PCPA), Assembly Bill (AB) 2701 of 2004, and Senate Bill 1117 of 2014. The PCPA originally required DPR to submit groundwater sampling results for pesticide residues in an annual written report; AB 2701 amended the PCPA to require DPR to post the information on the DPR website.

## **ACKNOWLEDGEMENTS**

The authors wish to thank the reviewers whose unique perspectives and experiences helped ensure this report's accuracy and readability. We gratefully acknowledge DPR staff and cooperating federal, state, local, and private agencies for contributing to the database.

## **DISCLAIMER**

As required by the PCPA, this report describes the active ingredients of registered pesticide products that have been detected in groundwater. DPR provides this information to satisfy legal mandates and provide information to the public. Any discussion of commercially available pesticide products does not constitute an actual or implied endorsement of the products by DPR.

## ABBREVIATIONS

CAC	County Agricultural Commissioner
CALVUL	California Vulnerability Model
3CCR	Title 3, California Code of Regulations
CDPH	California Department of Public Health
DDW	Division of Drinking Water
DPR	Department of Pesticide Regulation
FAC	Food and Agriculture Code
GAMA	Groundwater Ambient Monitoring and Assessment Program
GWPA	Ground Water Protection Area
GWPL	Groundwater Protection List
LLNL	Lawrence Livermore National Laboratory
LEACHM	Leaching Estimation and Chemistry Model
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
OEHHA	Office of Environmental Health Hazard Assessment
PCPA	Pesticide Contamination Prevention Act
PHG	Public Health Goal
PMZ	Pesticide Management Zone
ppb	Parts per billion
RMPP	Restricted Materials Permit Program
SNV	Specific Numerical Value
SWRCB	State Water Resources Control Board
U.S. EPA	United States Environmental Protection Agency
USGS	United States Geological Survey

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## BACKGROUND

### PROTECTING GROUNDWATER FROM PESTICIDE CONTAMINATION — THE PCPA

The Department of Pesticide Regulation (DPR) began addressing pesticide contamination of groundwater in the early 1980s after the discovery of 1,2-dibromo-3-chloropropane (DBCP) in well water. Subsequent reports of pesticides in groundwater led to the passage of the Pesticide Contamination Prevention Act (PCPA) of 1985,<sup>3</sup> an act designed to prevent pesticide pollution<sup>4</sup> of groundwater by agricultural use<sup>5</sup> pesticides, with emphasis on the protection of public drinking water supplies.

The PCPA of 1985 added Article 15 (sections 13141–13152) to the Food and Agricultural Code (FAC). FAC section 13150 allows the continued sale and use of detected pesticides that were determined to pollute or threaten to pollute groundwater provided certain conditions for use have been met. DPR authorizes use modifications of detected pesticides under the [Restricted Materials Permit Program](#) (Title 3, California Code of Regulations [3CCR] section 6400 et seq.), implemented by California's County Agricultural Commissioners (CACs). DPR continues to monitor for pesticides and degradates that were determined not to pollute at the levels detected.

The PCPA authorized the establishment of a program that identifies pesticides that have the potential to pollute groundwater.<sup>6</sup> Under this program, DPR is required to conduct groundwater sampling, maintain a database of wells sampled for pesticides, and conduct a formal review to determine if use of detected pesticides can be modified to protect groundwater.

To implement the PCPA, DPR:

- Obtains physical/chemical/environmental fate data from pesticide registrants to support the registration of agricultural use pesticides; maintains the data in DPR's [Pesticide Chemistry Database](#) (see Pesticide Data Index).

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<sup>3</sup> The PCPA added sections 13141-13152 to the FAC. 3CCR sections 6416-6487.5 and 6800-6804 implement these FAC sections.

<sup>4</sup> FAC section 13142 defines "*pollution*" as "the consequence of polluting," and "*pollute*" as "...to introduce a product into the groundwaters of the state resulting in an active ingredient, other specified ingredient, or a degradation product of a pesticide above a level that does not cause adverse health effects, accounting for an adequate margin of safety."

<sup>5</sup> California's definition of "agricultural use" is broad and includes not only pesticides used in production agriculture, but also those used on turf (e.g., golf courses, cemeteries) and along rights-of-way.

<sup>6</sup> See DPR's [Groundwater Protection Program](#).

- Uses data in the Pesticide Chemistry Database to establish persistence and mobility threshold values called [specific numerical values](#) (SNVs)<sup>7</sup> and evaluates the groundwater pollution potential of agricultural use pesticides based (in part) on these values. **NOTE:** Senate Bill (SB) 1117 modified the process for determining pollution potential by requiring DPR to develop a peer-reviewed method<sup>8</sup> (in consultation with a subcommittee of the Director’s Pesticide Registration and Evaluation Committee) to determine the potential of a pesticide to pollute groundwater using SNVs. This revised procedure is currently under internal review.
- Compiles the [Groundwater Protection List](#) (GWPL)<sup>9</sup> that includes agricultural use pesticide active ingredients, other specified ingredients, and degradation products that have the potential to pollute groundwater. Also added are pesticides whose use has been modified following their detection in groundwater.<sup>10</sup>
- Utilizes contaminant transport modeling tools to:
  - Evaluate the contamination potential of pesticides prior to their California registration;
  - Prioritize pesticides for monitoring; and
  - Define [Ground Water Protection Areas](#) (GWPA)s.<sup>11</sup>
- Monitors for agricultural use pesticides on the GWPL and their degradates to determine if they have migrated to groundwater.
- Evaluates reported pesticide and degradate detections in groundwater, including those reported by other agencies.<sup>12</sup>
- Determines whether the detection of a pesticide in groundwater is the result of legal agricultural use<sup>13</sup> and, if so, conducts a [formal review process](#) to determine if the pesticide’s use can be modified to prevent pollution.

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<sup>7</sup> SNV threshold values for all parameters are listed in 3CCR section 6804.

<sup>8</sup> Peer review is conducted using the process described in section 57004 of the Health and Safety Code.

<sup>9</sup> The Groundwater Protection List (3CCR section 6800) is divided into two parts. Section 6800(a) includes seven chemicals that have been detected in groundwater and are regulated as groundwater contaminants with the potential to pollute: atrazine, bentazon, bromacil, diuron, norflurazon, prometon, and simazine. Section 6800(b) includes 98 chemicals that have the potential to become groundwater contaminants based on their mobility, persistence, and legal uses. SB 1117 requires DPR to “...include on the GWPL each active ingredient, other specified ingredient, and degradation product of a pesticide that, when applied, has the potential to pollute groundwater.”

<sup>10</sup> Previously detected pesticides on the GWPL (3CCR section 6800[a]) with required use modifications include atrazine, bentazon, bromacil, diuron, norflurazon, prometon, and simazine.

<sup>11</sup> See Appendix A for more information on GWPA)s.

<sup>12</sup> See Appendix B for a list of reporting agencies and a discussion of their role in the PCPA process.

<sup>13</sup> Legal agricultural uses include pesticide applications made in accordance with the registered pesticide label.

- Conducts ongoing groundwater monitoring of pesticides whose continued use has been modified to prevent pollution.
- Continuously reviews new science and data that could impact the validity of a finding that a pesticide has not polluted and does not threaten to pollute groundwater<sup>14</sup>.
- Resubmits a pesticide to the formal review process or mitigates the threat if new information indicates that continued use of a previously reviewed pesticide threatens to pollute groundwater.

In addition, DPR:

- Maintains a database of pesticide detections in groundwater reported to DPR by local, county, and state agencies.<sup>15</sup>
- Prepares an annual Well Sampling Report that summarizes monitoring results and specifies actions taken by DPR in response to detections from nonpoint agricultural sources. Annual Well Sampling Reports are available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/wellinv/wirmain.htm>.

#### **IDENTIFYING POTENTIAL GROUNDWATER CONTAMINANTS UNDER THE PCPA**

DPR developed several evaluation procedures to estimate a pesticide's potential to pollute groundwater. These procedures are described below.

##### Using Environmental Fate Data to Predict Pesticide Behavior in the Environment

The PCPA required DPR to establish threshold SNVs for six physical/chemical parameters presumed to be correlated to a pesticide's potential to leach to groundwater: water solubility, soil organic carbon coefficient (Koc), hydrolysis half-life, aerobic soil metabolism half-life, anaerobic soil metabolism half-life, and field dissipation half-life. Water solubility and Koc are indicators of mobility within the soil, while hydrolysis half-life, aerobic and anaerobic soil metabolism, and field dissipation are indicators of the persistence of the pesticide in soil.<sup>16</sup> A pesticide is predicted to have the potential to leach to groundwater if it is both mobile and persistent.

DPR developed threshold SNVs by evaluating nationwide groundwater studies and performing a statistical comparison of the physical/chemical attributes of pesticides detected in groundwater as a result of legal agricultural use (called leachers), and pesticides not detected (nonleachers). Analysis showed data for water solubility, hydrolysis half-life, Koc, and anaerobic soil metabolism

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<sup>14</sup> Chlorthal-dimethyl (DCPA), hexazinone, and metolachlor/S-metolachlor and their degradates were determined not to have polluted or threatened to pollute groundwater in the state, but continued monitoring of each was recommended.

<sup>15</sup> See Appendix C for more information on the Well Inventory Database.

<sup>16</sup> Although DPR has not established an SNV for field dissipation data, these data are used in modeling procedures to assess the leaching potential of new products proposed for registration.



half-life were significantly different for leachers and nonleachers (Johnson, 1991).<sup>17</sup> However, leacher and nonleacher aerobic soil metabolism data were not significantly different.<sup>18</sup>

After establishing threshold SNVs, DPR scientists used the data to characterize a pesticide's behavior in the environment. Pesticides that exceed at least one mobility SNV, one persistence SNV, and are applied under specific conditions are placed on the GWPL and monitored to determine if they have migrated to groundwater as a result of their legal agricultural use.

SB 1117 modified the process for estimating pollution potential by requiring DPR to develop a peer-reviewed SNV-based method in consultation with a subcommittee of the Director's Pesticide Registration and Evaluation Committee. This revised procedure is currently under internal review.

### Using Computer Modeling Tools to Predict Pesticide Contamination Potential

In addition to evaluating the contamination potential of agricultural use pesticides by comparing SNV values, DPR scientists use two models to predict pesticide behavior.<sup>19</sup>

- **LEACHM**, the *leaching estimation and chemistry model* (Hutson, 2003), is a pesticide fate and transport modeling tool used to evaluate leaching potential. The model enables DPR scientists to predict a pesticide's movement through the root zone of a leaching-vulnerable soil (Spurlock, 2000) and predict the occurrence and magnitude of well water concentrations based upon mobility and persistence data, label information, climate data, and label-recommended irrigation practices (Troiano and Clayton, 2009). If the pesticide is determined to be a potential groundwater contaminant following the evaluation, the registrant is required to take steps (e.g., amending the product label or committing to a stewardship program) to mitigate the potential threat to groundwater before DPR approves the pesticide for use in California. If mitigation is not possible, California registration is denied.
- **CALVUL**, the *California vulnerability model* is used to evaluate areas of California that are vulnerable to pesticide contamination based on soil type and depth-to-groundwater. If pesticide use on a given section of land is deemed likely to result in groundwater contamination, the section is designated a GWPA.<sup>20</sup> Currently, only pesticides listed under 3CCR section 6800(a) are regulated within GWPAs.

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<sup>17</sup> An evaluation of SNVs for these properties resulted in the identification of 90 percent of the chemicals detected in groundwater due to legal agricultural use.

<sup>18</sup> The PCPA requires DPR to establish an SNV for each physical/chemical parameter, but because soil metabolism half-life appears to be an ineffective predictor of a pesticide's groundwater contamination potential, the SNV for aerobic soil metabolism half-life is set at a value that minimizes its impact in the discrimination procedure.

<sup>19</sup> The data used in these models are maintained in DPR's Pesticide Chemistry Database. The database includes pesticide mobility and persistence data submitted by pesticide registrants.

<sup>20</sup> To use a pesticide regulated as a groundwater contaminant in a GWPA, users must obtain a Restricted Materials permit from their County Agricultural Commissioner. These permits specify the enforceable management practices required for use in each type of GWPA. For more information on GWPAs, see Appendix A.

## **MONITORING FOR PESTICIDES — PRIORITIZING THE CANDIDATES**

DPR ranks pesticides predicted to have the potential to contaminate groundwater to prioritize groundwater monitoring.<sup>21</sup> This ranking enables DPR to focus limited resources on pesticides that present the greatest contamination risk. DPR assigns the highest priority to California registered agricultural use pesticides that are:

- On the GWPL;<sup>22</sup>
- Reported as detections in groundwater by public agencies (see Appendix B for a list of reporting agencies);
- Believed to have a higher likelihood of contaminating groundwater based on computer simulated transport modeling or based on a review of new science and data that indicate the pesticide could potentially pollute groundwater;
- Used intensively, or whose use is increasing; or
- Injected into the soil by ground-based application equipment, applied by chemigation, or followed within 72 hours by flood or furrow irrigation.

DPR also assigns a higher priority to pesticides that:

- Have been detected previously in California (or nationwide); and
- Have no monitoring history in California.

## **RESPONDING TO PESTICIDE DETECTIONS IN GROUNDWATER**

DPR conducts sampling to confirm detections of agricultural use pesticides, but does not conduct additional sampling if the detected pesticide is:

- No longer registered for use as a pesticide in California (e.g., detections from legacy pesticide use or from non-pesticidal use);
- Reported in error or is an invalid detection due to unacceptable analytical quality;
- Not detected in follow-up samples taken by the reporting agency;

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<sup>21</sup> For more information on pesticide monitoring ranking, see Clayton, M. 2011, *Selection of Pesticide Active Ingredients for Future Analytical Method Development and Ground Water Monitoring*.

<sup>22</sup> DPR samples groundwater for pesticides on the GWPL to: 1) determine if pesticides identified as potential contaminants have migrated to groundwater as a result of their legal agricultural use; 2) expand GWPAs if regulated pesticides are detected in new sections; and 3) assess the effectiveness of mitigation measures used in GWPAs.

- Detected at a concentration below DPR’s analytical screening level (less than 80 percent of DPR’s analytical reporting limit; current screening level is 0.04 ppb)<sup>23</sup>;
- Regulated as a groundwater contaminant under 3CCR section 6800(a) and detected in a GWPA (where use of the pesticide is regulated);
- Registered for use as a pesticide but also occurs naturally (such as copper); or
- Detected in a private well that DPR does not have permission to sample.

DPR will defer sampling and place a pesticide on a “watch list” if the pesticide was detected at a concentration below DPR’s analytical screening level (less than 80 percent of DPR’s analytical reporting limit), or if DPR cannot develop an analytical method that meets the requirements necessary to validate the detection.

If groundwater detections of an active ingredient or its degradates are determined to be from a pesticide’s legal agricultural use, the findings are subject to a formal review process to determine if the pesticide’s use can continue as currently allowed, with modified use restrictions, or if all uses should be prohibited.<sup>24</sup> If DPR determines that use can be modified to the extent that there is a high probability it will not pollute, DPR adds the pesticide to section 6800(a) of the GWPL and requires applicators to adopt mitigation measures when applying the pesticide in GWPAs. Detections of agricultural use pesticides (or their degradates or other specified ingredients) that do not trigger the formal review process or are determined not to pollute are placed on a “watch list” and tracked by DPR for changes in detection concentration or frequency.

If a detected pesticide is added to the GWPL and regulated as a groundwater contaminant under 3CCR section 6800(a)—and the well is located in a GWPA—regulation of use under the Restricted Materials permit program is believed to constitute an adequate response to detections unless concentrations are high enough to indicate existing mitigation measures are insufficient to prevent pollution. If the well is not located in a GWPA, DPR may establish a GWPA that includes the well site if: 1) the well is in a section of land that is adjacent to an existing GWPA, or 2) the pesticide is detected in two or more wells within a four-section area that is not adjacent to an existing GWPA. (For more information on GWPAs, see Appendix A.)

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<sup>23</sup> DPR responds only to detections of pesticides over the 0.04 ppb screening level unless the drinking water quality standard (health advisory goal/standard) is lower. DPR’s detection response policy is available upon request.

<sup>24</sup> Pesticides that have been subject to the [formal review process](#) include aldicarb (1988); atrazine (1986); bentazon (1989); bromacil (1986); chlorthal-dimethyl (2019); diuron (1986); hexazinone (2010); metolachlor/S-metolachlor (2016); norflurazon (1998); prometon (1986); and simazine (1986). Except for aldicarb, chlorthal-dimethyl, hexazinone, and metolachlor/S-metolachlor, it was determined agricultural use of these pesticides could be modified so there would be a high probability their continued use would not pollute groundwater. In 1988, statewide use restrictions were adopted for aldicarb. Chlorthal-dimethyl (2019), hexazinone (2010), and metolachlor/S-metolachlor (2016) were determined not to have polluted or threatened to pollute groundwater in the state, but continued monitoring of each was recommended. Another pesticide recently placed in the formal review process was alachlor (2016). The formal review of alachlor was suspended due to the imminent federal cancellation of all alachlor products which was published by U.S. EPA in the Federal Register on 6/30/2016. As of 12/31/2016, all products containing alachlor previously registered for use in California were inactive.

### Areas of Non-Authorization

State law does not authorize DPR to regulate pesticide use when detections in groundwater result from manufacturing processes, accidental spills/releases, or illegal disposal; DPR refers these detections to SWRCB for further investigation.

### **ASSESSING THE EFFECTIVENESS OF MITIGATION MEASURES**

In 1999, DPR established a well monitoring network to evaluate baseline pesticide concentrations in an effort to measure the effectiveness of groundwater protection regulations. Currently, DPR's well monitoring network includes about 60 shallow, domestic wells located in runoff and/or leaching GWPA's in Fresno and Tulare counties. Previous analysis suggests that DPR's regulatory action has resulted in measurable decreases in both detection frequencies and well water concentrations for many regulated pesticides (Garretson, 1999; Troiano et al., 2013).

## **SAMPLING RESULTS**

### **DETECTIONS OF PESTICIDES AND RELATED DEGRADATES**

This 2020 annual report includes well sampling data from DPR for the sampling period of June 2018 through December 2019, SWRCB for the sampling period of January through December 2019, and USGS for the sampling period of January through December 2018. DPR data include wells sampled in 2018 but not included in the 2019 annual report because the data were still preliminary at that time. DPR delays collecting USGS data to ensure a more complete and updated dataset. Despite the delay, some USGS data included in this report are still listed as preliminary by USGS. Table 1 consists of the well sampling data from all three agencies.

The three agencies sampled a total of 4,891 wells for one or more of 327 agricultural use pesticides or pesticide degradates. Of the wells sampled, 398 wells tested positive for one or more pesticides or degradates. Sampling efforts yielded detections of 30 pesticides or degradates, 7 of which are not registered for use in California.

Sampling data were collected from wells in 57 counties; Sierra County was not sampled by any agency during the period covered by the 2020 annual report. Twenty-three counties had wells with detections. (See Appendix D for county sampling results.)

**Table 1.** Summary of the 2020 annual report well sampling results for DPR, SWRCB, and USGS.

Note: Some detection values listed in this table are below the reporting limit. Each reporting agency determines the value they will report regardless of “accepted” reporting limits. For instance, USGS may report *estimated values*, which can be below reporting limits:

- **Zero (0) reporting limit** indicates no value was reported for at least some of the analyses.
- **Dashes (-)** indicate no residues were detected.
- **REG** indicates the parent pesticide is registered for use in California.
- **nr** indicates it is currently not registered.

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
1,2,4-Triazole	1 / 0	1 / 0	1 / 0	25	-	USGS	nr
1,2-D + 1,3-D + C-3 pesticides	4,533 / 0	2,372 / 0	51 / 0	0 - 0.5	-	SWRCB	nr
<b>1,2-Dicloropropane (1,2-D)</b>	<b>6,996 / 69</b>	<b>3,543 / 16</b>	<b>57 / 10</b>	<b>0 - 10</b>	<b>0.001 - 2.9</b>	<b>SWRCB USGS</b>	<b>nr</b>
1,3-D (telone)	4,376 / 0	2,288 / 0	46 / 0	0 - 0.5	-	SWRCB USGS	REG
1,4-Dichlorobenzene (P-DCB)	175 / 0	160 / 0	24 / 0	0 - 10	-	USGS	REG
1-Naphthol (degradate of carbaryl)	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
2,4,5-T	167 / 0	149 / 0	22 / 0	0 - 2	-	SWRCB	nr
2,4,5-Trichlorophenol	7 / 0	7 / 0	2 / 0	4.7 - 5.6	-	USGS	nr
2,4,6-Trichlorophenol	11 / 0	11 / 0	3 / 0	3.7 - 5	-	SWRCB USGS	nr
2,4-D	1,235 / 0	947 / 0	44 / 0	0 - 10	-	DPR SWRCB USGS	REG
2,4-DB	133 / 0	117 / 0	18 / 0	0 - 10	-	SWRCB	REG
2,4-Dichlorophenol (degradate of 2,4-D)	7 / 0	7 / 0	2 / 0	4.7 - 5.6	-	USGS	REG
2,4-Xylenol	7 / 0	7 / 0	2 / 0	4.7 - 5.6	-	USGS	REG
2,6-Diethylaniline (degradate of alachlor)	92 / 0	92 / 0	24 / 0	0	-	USGS	nr
2-(1-Hydroxyethyl)-6-methylaniline (degradate of acetochlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
2-Aminobenzimidazole (degradate of bentazon)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
2-Ethyl-6-methylaniline (degradate of diuron)	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
2-Hydroxy alachlor (degradate of alachlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
<b>2-Isopropyl-6-methyl-4-pyrimidinol (degradate of diazinon)</b>	<b>1 / 1</b>	<b>1 / 1</b>	<b>1 / 1</b>	<b>0</b>	<b>0.006</b>	<b>USGS</b>	<b>REG</b>
3,4-Dichloroaniline (degradate of diuron)	276 / 0	92 / 0	24 / 0	0	-	USGS	REG
3,5-Dichloro aniline (degradate of dichloran)	184 / 0	92 / 0	24 / 0	0	-	USGS	REG
3-PBA (degradate of cypermethrin)	3 / 0	1 / 0	1 / 0	0.25	-	USGS	REG
4-Chloro-ortho-cresol (degradate of MCPA)	184 / 0	92 / 0	24 / 0	0	-	USGS	REG
4-Chlorobenzylmethyl sulfoxide (degradate of thiobencarb)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
4-Hydroxy chlorothalonil (degradate of chlorothalonil)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
4-Hydroxy molinate (degradate of molinate)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Abamectin	55 / 0	55 / 0	4 / 0	0.02	-	DPR	REG
Acephate	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
<b>ACET (degradate of simazine)</b>	<b>152 / 58</b>	<b>151 / 58</b>	<b>11 / 6</b>	<b>0 - 0.05</b>	<b>0.051 - 0.802</b>	<b>DPR USGS</b>	<b>REG</b>
Acetochlor	225 / 0	131 / 0	29 / 0	0 - 0.1	-	SWRCB USGS	nr
Acetochlor ESA (degradate of acetochlor)	1 / 0	1 / 0	1 / 0	0.4	-	USGS	nr
Acetochlor OA (degradate of acetochlor)	2 / 0	1 / 0	1 / 0	0	-	USGS	nr

<b>Pesticide or Degradate</b>	<b>Samples Taken/ Positive Samples</b>	<b>Wells Sampled/ Positive Wells</b>	<b>Counties Sampled/ Positive Counties</b>	<b>Reporting Limit Range (ppb)</b>	<b>Detected Concentration Range (ppb)</b>	<b>Sampling Agencies</b>	<b>Parent Compound Registered?</b>
Acetochlor sulfinylacetic acid (degradate of acetochlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Acifluorfen	77 / 0	57 / 0	9 / 0	0 - 0.5	-	SWRCB	nr
Acrylonitrile	10 / 0	10 / 0	4 / 0	0	-	USGS	nr
Alachlor	2,335 / 0	1,766 / 0	46 / 0	0 - 1	-	DPR SWRCB USGS	nr
Alachlor 2nd amide (degradate of aldicarb)	93 / 0	93 / 0	24 / 0	0	-	USGS	nr
Alachlor OXA (degradate of aldicarb)	2 / 0	1 / 0	1 / 0	0	-	USGS	nr
Alachlor sulfinylacetic acid (degradate of aldicarb)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Aldicarb	666 / 0	531 / 0	33 / 0	0 - 3	-	SWRCB USGS	nr
Aldicarb sulfone (degradate of aldicarb)	689 / 0	554 / 0	33 / 0	0 - 4	-	SWRCB USGS	nr
Aldicarb sulfoxide (degradate of aldicarb)	667 / 0	532 / 0	33 / 0	0 - 3	-	SWRCB USGS	nr
Aldrin	723 / 0	477 / 0	32 / 0	0 - 0.075	-	SWRCB	nr
Allyl alcohol	141 / 0	140 / 0	24 / 0	0	-	USGS	nr
Alpha-terpineol	141 / 0	140 / 0	24 / 0	0	-	USGS	nr
Ametryne	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Anthranilic acid isopropylamide (degradate of bentazon)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Asulam	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Atraton	32 / 0	26 / 0	9 / 0	0.5	-	SWRCB	nr
<b>Atrazine</b>	<b>2,773 / 8</b>	<b>2,051 / 5</b>	<b>47 / 3</b>	<b>0 - 0.5</b>	<b>0.008 - 0.17</b>	<b>DPR SWRCB USGS</b>	<b>REG</b>
Azinphos-methyl (guthion)	224 / 0	222 / 0	29 / 0	0 - 0.05	-	DPR USGS	nr



Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Azinphos-methyl-OA (degradate of azinphos-methyl)	82 / 0	82 / 0	22 / 0	0 - 0.06	-	USGS	nr
<b>Azoxystrobin</b>	<b>192 / 1</b>	<b>190 / 1</b>	<b>13 / 1</b>	<b>0 - 0.05</b>	<b>0.528</b>	<b>DPR USGS</b>	<b>REG</b>
Barban	5 / 0	5 / 0	3 / 0	5	-	SWRCB	nr
Benefin (benfluralin)	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
Bensulide (bentasan)	191 / 0	189 / 0	13 / 0	0.05	-	DPR	REG
<b>Bentazon</b>	<b>1,138 / 1</b>	<b>852 / 1</b>	<b>38 / 1</b>	<b>0 - 2</b>	<b>5.3</b>	<b>SWRCB USGS</b>	<b>REG</b>
BHC (other than gamma isomer)	130 / 0	59 / 0	10 / 0	0 - 0.05	-	SWRCB	nr
Bifenthrin	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
<b>Bromacil</b>	<b>1,284 / 31</b>	<b>832 / 18</b>	<b>39 / 3</b>	<b>0 - 10</b>	<b>0.051 - 2.48</b>	<b>DPR SWRCB USGS</b>	<b>REG</b>
Bromoxynil octanoate	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Butachlor	849 / 0	562 / 0	37 / 0	0 - 0.38	-	SWRCB	nr
Butralin	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Butylate	1 / 0	1 / 0	1 / 0	0.025	-	USGS	nr
Camphor	6 / 0	6 / 0	1 / 0	0.08	-	USGS	REG
Captan	72 / 0	60 / 0	8 / 0	0.1	-	SWRCB	REG
Carbaryl	976 / 0	839 / 0	42 / 0	0 - 5	-	DPR SWRCB USGS	REG
Carbofuran	1,208 / 0	1,020 / 0	45 / 0	0 - 5	-	DPR SWRCB USGS	nr
<b>Carbon disulfide</b>	<b>1,512 / 4</b>	<b>609 / 4</b>	<b>33 / 3</b>	<b>0 - 0.5</b>	<b>0.4 - 409</b>	<b>SWRCB USGS</b>	<b>nr</b>
Carbophenothion	72 / 0	60 / 0	8 / 0	0	-	SWRCB	nr
Carboxy molinate (degradate of molinate)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Chlorantraniliprole	55 / 0	55 / 0	4 / 0	0.02	-	DPR	REG
Chlordane	888 / 0	625 / 0	30 / 0	0 - 0.1	-	SWRCB	nr
Chlorobenzilate	11 / 0	11 / 0	1 / 0	0	-	SWRCB	nr
Chloroneb	11 / 0	11 / 0	1 / 0	0	-	SWRCB	nr
<b>Chloropicrin</b>	<b>151 / 2</b>	<b>145 / 2</b>	<b>25 / 2</b>	<b>0 - 0.09</b>	<b>0.125 - 0.249</b>	<b>SWRCB USGS</b>	<b>REG</b>
Chlorosulfonamide acid (degradate of halosulfuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Chlorothalonil	81 / 0	67 / 0	13 / 0	0 - 5	-	SWRCB	REG
Chlorpropham	77 / 0	65 / 0	11 / 0	0 - 1	-	SWRCB	REG
Chlorpyrifos	165 / 0	163 / 0	26 / 0	0 - 0.12	-	DPR SWRCB USGS	REG
Chlorpyrifos oxon (degradate of chlorpyrifos)	84 / 0	84 / 0	23 / 0	0	-	USGS	REG
Chlorsulfuron	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Chlorthal-dimethyl (DCPA)	158 / 0	158 / 0	25 / 0	0 - 0.05	-	DPR SWRCB USGS	REG
<b>Chlorthal-dimethyl (DCPA) degradates (nonspecific)</b>	<b>490 / 24</b>	<b>296 / 15</b>	<b>26 / 4</b>	<b>0 - 0.1</b>	<b>0.11 - 11</b>	<b>SWRCB</b>	<b>REG</b>
Chorimuron ethyl	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Clomazone	191 / 0	189 / 0	13 / 0	0.05	-	DPR	REG
Cyanazine	165 / 0	153 / 0	25 / 0	0	-	SWRCB USGS	nr
Cyfluthrin	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
Cyhalothric acid (degradate of bifenthrin)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Cypermethrin	92 / 0	92 / 0	24 / 0	0.01	-	USGS	REG
Cyprodinil	55 / 0	55 / 0	4 / 0	0.02	-	DPR	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
<b>DACT (degradate of simazine)</b>	<b>152 / 68</b>	<b>151 / 68</b>	<b>11 / 7</b>	<b>0 - 0.05</b>	<b>0.05 - 4.83</b>	<b>DPR USGS</b>	<b>REG</b>
Dalapon	1,099 / 0	828 / 0	36 / 0	0 - 10	-	SWRCB	nr
<b>DBCP</b>	<b>3,803 / 954</b>	<b>2,007 / 250</b>	<b>50 / 12</b>	<b>0 - 0.5</b>	<b>0.01 - 1.1</b>	<b>SWRCB USGS</b>	<b>nr</b>
DDD (degradate of DDT)	75 / 0	59 / 0	10 / 0	0 - 0.02	-	SWRCB	nr
DDE (degradate of DDT)	75 / 0	59 / 0	10 / 0	0 - 0.01	-	SWRCB	nr
DDT	75 / 0	59 / 0	10 / 0	0 - 0.02	-	SWRCB	nr
DDVP (dichlorvos)	99 / 0	99 / 0	24 / 0	0 - 0.08	-	USGS	REG
<b>DEA (degradate of atrazine)</b>	<b>240 / 7</b>	<b>239 / 7</b>	<b>29 / 4</b>	<b>0 - 0.05</b>	<b>0.006 - 0.156</b>	<b>DPR USGS</b>	<b>REG</b>
Dechlorofipronil (degradate of fipronil)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Dechlorometolachlor (degradate of metolachlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Decyclohexyl-4-hydroxy hexazinone (degradate of hexazinone)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
DEET	6 / 0	6 / 0	1 / 0	0.04	-	USGS	REG
Deiodo flubendiamide (degradate of flubendiamide)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Deisopropyl prometryn (degradate of prometryn)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Demethyl fluometuron (degradate of fluometuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Desisopropyl desethyl atrazine (degradate of atrazine)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Desulfinyl fipronil (degradate of fipronil)	148 / 0	148 / 0	24 / 0	0 - 0.01	-	DPR USGS	REG
Desulfinyl fipronil amide (degradate of fipronil)	148 / 0	148 / 0	24 / 0	0 - 0.01	-	DPR USGS	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Diazinon	1125 / 0	827 / 0	42 / 0	0 - 5	-	DPR SWRCB USGS	REG
Diazoxon (degradate of diazinon)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Dicamba	848 / 0	604 / 0	35 / 0	0 - 1.5	-	SWRCB USGS	REG
Dichloran	191 / 0	189 / 0	13 / 0	0.05	-	DPR	REG
Dichlobenil	191 / 0	189 / 0	13 / 0	0.05	-	DPR	REG
Dichlorprop	81 / 0	66 / 0	13 / 0	0 - 0.5	-	SWRCB	REG
Dicrotophos	88 / 0	88 / 0	24 / 0	0	-	USGS	nr
Didemethyl tebuthiuron (degradate of tebuthiuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Dieldrin	777 / 0	543 / 0	40 / 0	0 - 0.02	-	SWRCB USGS	nr
Diflubenzuron	56 / 0	56 / 0	4 / 0	0 - 0.02	-	DPR USGS	REG
Diflufenzopyr	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Dimethenamid	192 / 0	190 / 0	13 / 0	0 - 0.05	-	DPR USGS	REG
Dimethenamid ESA (degradate of dimethenamid)	2 / 0	1 / 0	1 / 0	0	-	USGS	REG
Dimethenamid OA (degradate of dimethenamid)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Dimethoate	1219 / 0	918 / 0	42 / 0	0 - 20	-	DPR SWRCB USGS	REG
Dinoseb	1115 / 0	834 / 0	38 / 0	0 - 2	-	SWRCB	nr
Diphenamid	72 / 0	60 / 0	8 / 0	100	-	SWRCB	nr
Diquat dibromide	1020 / 0	843 / 0	38 / 0	0 - 4	-	SWRCB	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Disulfoton	296 / 0	282 / 0	30 / 0	0 - 0.05	-	DPR SWRCB USGS	nr
Disulfoton oxon sulfone (degradate of disulfoton)	2 / 0	1 / 0	1 / 0	0	-	USGS	nr
Disulfoton oxon sulfoxide (degradate of disulfoton)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Disulfoton sulfone (degradate of disulfoton)	93 / 0	93 / 0	24 / 0	0 - 0.01	-	USGS	nr
<b>Diuron</b>	<b>363 / 3</b>	<b>210 / 2</b>	<b>17 / 1</b>	<b>0 - 1</b>	<b>0.079 - 0.124</b>	<b>DPR SWRCB USGS</b>	<b>REG</b>
Diuron-desdimethyl (degradate of diuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
<b>Diuron-desmethyl (DCPU) (degradate of diuron)</b>	<b>1 / 1</b>	<b>1 / 1</b>	<b>1 / 1</b>	<b>0</b>	<b>0.008</b>	<b>USGS</b>	<b>REG</b>
DNOC	7 / 0	7 / 0	2 / 0	9.3 - 11	-	USGS	nr
<b>DSMN (degradate of norflurazon)</b>	<b>152 / 30</b>	<b>151 / 30</b>	<b>11 / 5</b>	<b>0 - 0.05</b>	<b>0.011 - 0.807</b>	<b>DPR USGS</b>	<b>REG</b>
Endosulfan	75 / 0	59 / 0	10 / 0	0 - 0.01	-	SWRCB	nr
Endosulfan I	92 / 0	92 / 0	24 / 0	0	-	USGS	nr
Endosulfan sulfate (degradate of endosulfan)	167 / 0	151 / 0	27 / 0	0 - 0.05	-	SWRCB USGS	nr
Endothall	898 / 0	726 / 0	39 / 0	0 - 45	-	SWRCB	REG
Endrin	905 / 0	638 / 0	31 / 0	0 - 0.1	-	SWRCB	nr
Endrin aldehyde (degradate of endrin)	75 / 0	59 / 0	10 / 0	0 - 0.05	-	SWRCB	nr
EPTC	228 / 0	169 / 0	27 / 0	0 - 0.1	-	SWRCB USGS	REG
EPTC degradate R248722 (degradate of EPTC)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Ethion	106 / 0	106 / 0	25 / 0	0	-	SWRCB USGS	nr
Ethion monooxon (degradate of ethion)	33 / 0	33 / 0	6 / 0	0	-	USGS	nr
Ethofumesate	191 / 0	189 / 0	13 / 0	0.05	-	DPR	REG
Ethoprop (prophos)	339 / 0	282 / 0	29 / 0	0 - 0.05	-	DPR USGS	REG
Ethyl alcohol	1 / 0	1 / 0	1 / 0	0	-	SWRCB	REG
Ethyl-methylphenyl-aminopropanol (degradate of metolachlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
<b>Ethylene dibromide</b>	<b>3,175 / 14</b>	<b>1,881 / 3</b>	<b>46 / 3</b>	<b>0 - 0.02</b>	<b>0.025 - 0.053</b>	<b>SWRCB USGS</b>	<b>nr</b>
<b>Ethylene dichloride</b>	<b>175 / 2</b>	<b>160 / 2</b>	<b>24 / 2</b>	<b>0 - 20</b>	<b>0.07 - 0.55</b>	<b>USGS</b>	<b>nr</b>
Etofenprox	55 / 0	55 / 0	4 / 0	0.02	-	DPR	REG
Etoazole	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Fenamiphos	224 / 0	222 / 0	29 / 0	0 - 0.05	-	DPR USGS	nr
Fenamiphos sulfone (degradate of fenamiphos)	93 / 0	93 / 0	24 / 0	0	-	USGS	nr
Fenamiphos sulfoxide (degradate of fenamiphos)	54 / 0	54 / 0	21 / 0	0	-	USGS	nr
Fenbutatin-oxide (vendex)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Fentin hydroxide	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Fenuron	5 / 0	5 / 0	3 / 0	1	-	SWRCB	nr
Fipronil	148 / 0	148 / 0	24 / 0	0 - 0.01	-	DPR USGS	REG
Fipronil sulfide (degradate of fipronil)	148 / 0	148 / 0	24 / 0	0 - 0.01	-	DPR USGS	REG
Fipronil sulfonate (degradate of fipronil)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Fipronil sulfone (degradate of fipronil)	148 / 0	148 / 0	24 / 0	0 - 0.01	-	DPR USGS	REG
Fipronil-carboxamide (degradate of fipronil)	56 / 0	56 / 0	4 / 0	0 - 0.01	-	DPR USGS	REG
Flubendiamide	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
<b>Fludioxonil</b>	<b>191 / 1</b>	<b>189 / 1</b>	<b>13 / 1</b>	<b>0.05</b>	<b>0.38</b>	<b>DPR</b>	<b>REG</b>
Flumetsulam	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Fluometuron	6 / 0	6 / 0	4 / 0	0 - 1	-	SWRCB USGS	nr
Fonofos (dyfonate)	224 / 0	222 / 0	29 / 0	0 - 0.05	-	DPR USGS	nr
<b>Formaldehyde</b>	<b>35 / 2</b>	<b>6 / 2</b>	<b>4 / 1</b>	<b>0</b>	<b>0.002 - 0.006</b>	<b>SWRCB</b>	<b>REG</b>
Glyphosate	777 / 0	610 / 0	36 / 0	0 - 25	-	SWRCB	REG
Halosulfuron-methyl	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Heptachlor	900 / 0	635 / 0	31 / 0	0 - 0.01	-	SWRCB	nr
Heptachlor epoxide (degradate of heptachlor)	901 / 0	636 / 0	31 / 0	0 - 0.01	-	SWRCB	nr
Hexachlorobenzene	970 / 0	689 / 0	36 / 0	0 - 5.6	-	SWRCB USGS	nr
<b>Hexazinone</b>	<b>299 / 5</b>	<b>282 / 2</b>	<b>29 / 1</b>	<b>0 - 0.05</b>	<b>0.021 - 0.078</b>	<b>DPR USGS</b>	<b>REG</b>
Hydroxy didemethyl fluometuron (degradate of fluometuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Hydroxy monodemethyl fluometuron (degradate of fluometuron)	1 / 0	1 / 0	1 / 0	0.025	-	USGS	nr
Hydroxyacetochlor (degradate of acetochlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Hydroxycarbofuran (degradate of carbofuran)	687 / 0	552 / 0	32 / 0	0 - 3	-	SWRCB USGS	nr
Hydroxydiazinon (degradate diazinon)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Hydroxyfluometuron (degradate of fluometuron)	1 / 0	1 / 0	1 / 0	0.01	-	USGS	nr
Hydroxymetolachlor (degradate metolachlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Hydroxytebuthiuron (degradate of tebuthiuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Imazamox	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Imazaquin	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Imazethapyr	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
<b>Imidacloprid</b>	<b>192 / 2</b>	<b>190 / 2</b>	<b>13 / 1</b>	<b>0 - 0.05</b>	<b>0.085 - 0.47</b>	<b>DPR USGS</b>	<b>REG</b>
Indoxacarb	56 / 0	56 / 0	4 / 0	0 - 0.02	-	DPR USGS	REG
Iprodione	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
Isofenphos	92 / 0	92 / 0	24 / 0	0	-	USGS	nr
Isoxaben	55 / 0	55 / 0	4 / 0	0.02	-	DPR	REG
Isoxaflutole	1 / 0	1 / 0	1 / 0	0.025	-	USGS	nr
Kresoxim-methyl	56 / 0	56 / 0	4 / 0	0 - 0.02	-	DPR USGS	REG
Lactofen	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Lambda-cyhalothrin	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
Lindane (gamma-BHC)	965 / 0	670 / 0	36 / 0	0 - 0.2	-	SWRCB	nr
<b>Linuron</b>	<b>197 / 2</b>	<b>195 / 1</b>	<b>16 / 1</b>	<b>0 - 0.5</b>	<b>11 - 12.1</b>	<b>DPR SWRCB USGS</b>	<b>REG</b>
Malaoxon (degradate of malathion)	93 / 0	93 / 0	24 / 0	0 - 0.025	-	USGS	REG
Malathion	430 / 0	355 / 0	30 / 0	0 - 0.05	-	DPR SWRCB USGS	REG



Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
MCPA	10 / 0	8 / 0	6 / 0	0.1 - 10	-	SWRCB USGS	REG
MCPP	9 / 0	7 / 0	5 / 0	10	-	SWRCB	REG
<b>Metalaxyl</b>	<b>280 / 1</b>	<b>278 / 1</b>	<b>29 / 1</b>	<b>0 - 0.16</b>	<b>0.035</b>	<b>DPR USGS</b>	<b>REG</b>
Metconazole	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Methamidophos	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Methidathion	148 / 0	148 / 0	24 / 0	0 - 0.02	-	DPR USGS	nr
Methiocarb	576 / 0	475 / 0	30 / 0	0 - 5	-	DPR SWRCB	REG
Methomyl	742 / 0	607 / 0	32 / 0	0 - 2	-	DPR SWRCB USGS	REG
Methomyl oxime (degradate methomyl)	1 / 0	1 / 0	1 / 0	2	-	USGS	REG
Methoxychlor	963 / 0	669 / 0	35 / 0	0 - 10	-	SWRCB	nr
Methoxyfenozide	56 / 0	56 / 0	4 / 0	0 - 0.02	-	DPR USGS	REG
Methyl bromide	4,491 / 0	2,407 / 0	51 / 0	0 - 0.5	-	SWRCB USGS	REG
Methyl iodide	10 / 0	10 / 0	4 / 0	0	-	USGS	nr
Methyl paraoxon (degradate of methyl parathion)	93 / 0	93 / 0	24 / 0	0	-	USGS	nr
Methyl parathion	355 / 0	280 / 0	30 / 0	0 - 0.05	-	DPR SWRCB USGS	nr
Metolachlor	1,280 / 0	924 / 0	42 / 0	0 - 20	-	DPR SWRCB USGS	REG
Metolachlor ESA (degradate of metolachlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Metolachlor OXA (degradate of metolachlor)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Metolachlor hydroxy morpholinone (degradate of metolachlor)	1 / 0	1 / 0	1 / 0	0.025	-	USGS	REG
Metribuzin	1,218 / 0	917 / 0	42 / 0	0 - 2	-	DPR SWRCB USGS	REG
Metribuzin DA (degradate of metribuzin)	2 / 0	1 / 0	1 / 0	0	-	USGS	REG
Metribuzin-DK (degradate of metribuzin)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Molinate	1,615 / 0	1,208 / 0	47 / 0	0 - 2	-	SWRCB USGS	nr
Monomethyl hexazinone (degradate of hexazinone)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Monuron	5 / 0	5 / 0	3 / 0	0.5	-	SWRCB	nr
MTP (degradate of chlorthal-dimethyl)	56 / 0	56 / 0	4 / 0	0 - 0.05	-	DPR USGS	REG
Myclobutanil	93 / 0	93 / 0	24 / 0	0	-	USGS	REG
Naled	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Napropamide	191 / 0	189 / 0	13 / 0	0.05	-	DPR	REG
Neburon	5 / 0	5 / 0	3 / 0	0.3	-	SWRCB	nr
Nicosulfuron	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
<b>Norflurazon</b>	<b>343 / 21</b>	<b>190 / 11</b>	<b>13 / 3</b>	<b>0 - 0.05</b>	<b>0.056 - 0.356</b>	<b>DPR USGS</b>	<b>REG</b>
Novaluron	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
O-Cresol	7 / 0	7 / 0	2 / 0	4.7 - 5.6	-	USGS	nr
O-Ethyl O-methyl S-propyl phosphorothioate (degradate of ethoprop)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
O-Ethyl S-methyl S-propyl phosphorodithioate (degradate of ethoprop)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
O-Ethyl S-propyl phosphorothioate (degradate of ethoprop)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
OIET (degradate of atrazine)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Omethoate (degradate dimethoate)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Ortho-dichlorobenzene	6,803 / 0	3,391 / 0	57 / 0	0 - 0.5	-	SWRCB	nr
Orthosulfamuron	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Oryzalin	192 / 0	190 / 0	13 / 0	0 - 0.05	-	DPR USGS	REG
Oxadiazon	55 / 0	55 / 0	4 / 0	0.02	-	DPR	REG
Oxamyl	957 / 0	783 / 0	34 / 0	0 - 20	-	SWRCB USGS	REG
Oxamyl oxime (degradate of oxamyl)	1 / 0	1 / 0	1 / 0	10	-	USGS	nr
Oxydisulfoton (degradate of disulfoton)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Oxyfluorfen	93 / 0	93 / 0	24 / 0	0	-	USGS	REG
<b>P-Cresol</b>	<b>13 / 1</b>	<b>13 / 1</b>	<b>2 / 1</b>	<b>0.08 - 11</b>	<b>0.05</b>	<b>USGS</b>	<b>nr</b>
P-Nitrophenol (degradate of ethyl parathion)	7 / 0	7 / 0	2 / 0	23 - 28	-	USGS	nr
Para-chloro-meta-cresol	7 / 0	7 / 0	2 / 0	4.7 - 5.6	-	USGS	REG
Paraoxon (degradate of parathion)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Paraquat dichloride	10 / 0	9 / 0	6 / 0	0 - 20	-	SWRCB	REG
Parathion or ethyl parathion	263 / 0	188 / 0	12 / 0	0 - 0.05	-	DPR SWRCB	nr
PCNB	14 / 0	14 / 0	2 / 0	0.1	-	SWRCB	REG

<b>Pesticide or Degradate</b>	<b>Samples Taken/ Positive Samples</b>	<b>Wells Sampled/ Positive Wells</b>	<b>Counties Sampled/ Positive Counties</b>	<b>Reporting Limit Range (ppb)</b>	<b>Detected Concentration Range (ppb)</b>	<b>Sampling Agencies</b>	<b>Parent Compound Registered?</b>
Pendimethalin	93 / 0	93 / 0	24 / 0	0	-	USGS	REG
Pendimethalin metabolite (degradate of pendimethalin)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Pentachlorophenol (PCP)	13 / 0	13 / 0	2 / 0	1.6 - 5.6	-	USGS	nr
Permethrin	104 / 0	104 / 0	25 / 0	0	-	SWRCB USGS	REG
Permethrin, other related compounds	12 / 0	12 / 0	2 / 0	0 - 0.01	-	SWRCB USGS	REG
Phorate	284 / 0	282 / 0	29 / 0	0 - 0.05	-	DPR USGS	REG
Phorate sulfone (degradate of phorate)	1 / 0	1 / 0	1 / 0	25	-	USGS	REG
Phorate sulfoxide (degradate of phorate)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Phorate oxon sulfone (degradate of phorate)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Phorate oxon sulfoxide (degradate of phorate)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Phoratoxon (degradate of phorate)	93 / 0	93 / 0	24 / 0	0	-	USGS	REG
Phosmet (imidan)	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
Phosmet oxon (degradate of phosmet)	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
Phostebupirim	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Picloram	1,098 / 0	826 / 0	36 / 0	0 - 1	-	SWRCB	nr
Piperonyl butoxide	132 / 0	130 / 0	13 / 0	0 - 0.05	-	DPR USGS	REG
Profenofos	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Prometon	535 / 0	364 / 0	32 / 0	0 - 0.5	-	DPR SWRCB USGS	REG

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Prometryn	644 / 0	538 / 0	37 / 0	0 - 2	-	DPR SWRCB USGS	REG
Propachlor	939 / 0	624 / 0	33 / 0	0 - 0.5	-	SWRCB	nr
Propanil	298 / 0	282 / 0	29 / 0	0 - 0.05	-	DPR USGS	REG
Propargite	148 / 0	148 / 0	24 / 0	0 - 0.02	-	DPR USGS	REG
Propazine	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Propham	5 / 0	5 / 0	3 / 0	3	-	SWRCB	nr
Propiconazole (cis or total)	148 / 0	148 / 0	24 / 0	0 - 0.02	-	DPR USGS	REG
Propiconazole (trans)	92 / 0	92 / 0	24 / 0	0	-	USGS	REG
Propionic acid	5 / 0	5 / 0	2 / 0	0.3 - 300	-	USGS	REG
Propoxur	392 / 0	293 / 0	27 / 0	0 - 20	-	SWRCB USGS	REG
Propyzamide	93 / 0	93 / 0	24 / 0	0	-	USGS	REG
Prosulfuron	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Pyraclostrobin	56 / 0	56 / 0	4 / 0	0 - 0.02	-	DPR USGS	REG
Pyridaben	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Pyriproxyfen	56 / 0	56 / 0	4 / 0	0 - 0.015	-	DPR USGS	REG
Quinoxifen	55 / 0	55 / 0	4 / 0	0.02	-	DPR	REG
Secbumeton	32 / 0	26 / 0	9 / 0	0.5	-	SWRCB	nr
Siduron	6 / 0	6 / 0	4 / 0	0 - 1	-	SWRCB USGS	REG
Silvex	1,088 / 0	825 / 0	36 / 0	0 - 1	-	SWRCB	nr
<b>Simazine</b>	<b>2,794 / 55</b>	<b>2,073 / 35</b>	<b>47 / 6</b>	<b>0 - 1</b>	<b>0.005 - 0.101</b>	<b>DPR SWRCB USGS</b>	<b>REG</b>

Pesticide or Degradate	Samples Taken/ Positive Samples	Wells Sampled/ Positive Wells	Counties Sampled/ Positive Counties	Reporting Limit Range (ppb)	Detected Concentration Range (ppb)	Sampling Agencies	Parent Compound Registered?
Sulfentrazone	1 / 0	1 / 0	1 / 0	0.05	-	USGS	REG
Sulfometuron methyl	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Sulfosulfuron	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Sulfosulfuron ethyl sulfone (degradate of sulfosulfuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Tebuconazole	1 / 0	1 / 0	1 / 0	0.01	-	USGS	REG
Tebufenozide	56 / 0	56 / 0	4 / 0	0 - 0.02	-	DPR USGS	REG
Tebupirimfos oxon (degradate of tebupirimfos)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Tebuthiuron	301 / 0	282 / 0	29 / 0	0 - 0.05	-	DPR USGS	REG
Tebuthiuron TP 109 (OH) (degradate of tebuthiuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Tebuthiuron degradate 108 (degradate of tebuthiuron)	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
<b>Tefluthrin</b>	<b>91 / 2</b>	<b>91 / 2</b>	<b>24 / 2</b>	<b>0</b>	<b>0.005</b>	<b>USGS</b>	<b>nr</b>
Terbacil	188 / 0	117 / 0	20 / 0	0 - 0.1	-	SWRCB USGS	nr
Terbufos	107 / 0	106 / 0	25 / 0	0	-	SWRCB USGS	nr
Terbufos oxon (degradate of terbufos)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Terbufos oxon sulfone (degradate of terbufos)	94 / 0	93 / 0	24 / 0	0	-	USGS	nr
Terbufos oxon sulfoxide (degradate of terbufos)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Terbufos sulfoxide (degradate of terbufos)	1 / 0	1 / 0	1 / 0	0	-	USGS	nr
Terbutylazine	93 / 0	93 / 0	24 / 0	0	-	USGS	REG
Terbutryn	32 / 0	26 / 0	9 / 0	0.5	-	SWRCB	REG

<b>Pesticide or Degradate</b>	<b>Samples Taken/ Positive Samples</b>	<b>Wells Sampled/ Positive Wells</b>	<b>Counties Sampled/ Positive Counties</b>	<b>Reporting Limit Range (ppb)</b>	<b>Detected Concentration Range (ppb)</b>	<b>Sampling Agencies</b>	<b>Parent Compound Registered?</b>
Tetrachloroethane	6,803 / 0	3,391 / 0	57 / 0	0 - 0.5	-	SWRCB	nr
Tetraconazole	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Thiamethoxam	191 / 0	189 / 0	13 / 0	0.05	-	DPR	REG
<b>Thiobencarb</b>	<b>2,028 / 1</b>	<b>1,566 / 1</b>	<b>47 / 1</b>	<b>0 - 1</b>	<b>0.097</b>	<b>DPR SWRCB USGS</b>	<b>REG</b>
Toxaphene	912 / 0	644 / 0	33 / 0	0 - 1	-	SWRCB	nr
<b>TPA (degradate of chlorthal-dimethyl)</b>	<b>55 / 22</b>	<b>55 / 22</b>	<b>4 / 4</b>	<b>0.05</b>	<b>0.072 - 27.6</b>	<b>DPR</b>	<b>REG</b>
Triallate	192 / 0	190 / 0	13 / 0	0 - 0.05	-	DPR USGS	REG
Tribufos	93 / 0	93 / 0	24 / 0	0	-	USGS	REG
Triclopyr	1 / 0	1 / 0	1 / 0	0	-	USGS	REG
Trifloxystrobin	56 / 0	56 / 0	4 / 0	0 - 0.02	-	DPR USGS	REG
Trifluralin	161 / 0	151 / 0	28 / 0	0	-	SWRCB USGS	REG
Uniconazole	131 / 0	129 / 0	13 / 0	0.05	-	DPR	REG
Vernolate	6 / 0	6 / 0	1 / 0	1	-	SWRCB	nr

ppb – parts per billion

DPR – California Department of Pesticide Regulation

SWRCB – California State Water Resources Control Board, Drinking Water Program

USGS – United States Geological Survey

nr – Not registered: the parent pesticide is not currently registered for use in California

REG – Registered: the parent pesticide is currently registered for use in California

Zero (0) reporting limit – no value was reported for at least some of the analyses

Dashes (-) – no residues were detected

## DPR RESPONSES TO PESTICIDE DETECTIONS

As required under the PCPA (FAC section 13152[e][4]), this section of the annual report describes actions taken by DPR to mitigate the detection of agricultural use pesticides in groundwater (Table 2).

Table 2 summarizes detections of nonpoint agricultural source pesticides in groundwater by DPR in June 2018 thru December 2019, SWRCB in 2019, and USGS in 2018 and DPR's responses to those detections. Of the 30 agricultural use pesticide or degradate detections reported:

- Ten are pesticides (or degradates of a parent compound) listed under 3CCR section 6800(a) and already regulated as groundwater contaminants within GWPAs. Five of the 10 compounds were also detected outside of GWPAs. Three of those five compounds were reported at levels far below DPRs screening level (0.04 ppb). Two simazine degradates (ACET and DACT) were detected outside of GWPAs in multiple wells at levels over DPRs screening level. DPR is investigating these detections.
- One is a bentazon detection, which is listed under 3CCR section 6800(a) and already regulated as a groundwater contaminant within rice growing areas. This detection was reported outside rice areas and DPR is investigating.
- Nine are pesticides (or degradates of a parent compound) listed under 3CCR section 6800(b) as potential groundwater contaminants. Seven of those were detected above DPRs screening level: azoxystrobin, chloropicrin, fludioxonil, hexazinone, imidacloprid, linuron, and thiobencarb. Hexazinone was found not to pollute at the levels detected. DPR has investigated the azoxystrobin and linuron detections and no residues were detected in follow-up sampling. DPR is investigating the remaining detections.
- Three are registered pesticides (or degradates of a parent compound) not listed under 3CCR sections 6800(a) or (b): two are degradates of chlorthal-dimethyl that were found not to pollute at the levels detected, and the other, formaldehyde, is reported at levels far below DPRs screening level (0.04 ppb).
- Seven are not registered for use as a pesticide in California (e.g., detections from legacy pesticide use or non-pesticidal use).



**Table 2.** Numbers of wells with specific pesticides or degradates reported detected in groundwater in the 2020 annual report from DPR, SWRCB, and USGS. Detection concentration ranges and drinking water quality standards are reported in parts per billion (ppb). The last column includes the compound’s registration status and DPR’s initial evaluation and response to agricultural use pesticide detections.

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
1,2-Dicloropropane (1,2-D)	16	12	0.001 - 2.9	5	0.5	5	0	B2	Not registered for use in California since 1990.
2-Isopropyl-6-methyl-4-pyrimidinol (degradate of diazinon)	1	0	0.006	-	-	-	-	-	Parent pesticide is on the GWPL, 3CCR section 6800(b). -- No wells with detections exceeded the DPR screening level.
ACET (deethyl-simazine) (degradate of atrazine or simazine)	58	58	0.051 - 0.802	-	-	-	-	-	Parent pesticides are on the GWPL, 3CCR section 6800(a). -- Fifty-eight (58) wells with detections exceeded the DPR screening level. Fifty (50) wells are located in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required. Eight (8) wells are not in GWPAs. DPR is currently reviewing these results and is conducting further investigation.

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
<b>Atrazine</b>	5	4	0.008 - 0.17	1	0.15	3	3	N	This pesticide is on the GWPL, 3CCR section 6800(a). -- Four (4) wells with detections exceeded the DPR screening level and are in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required.
<b>Azoxystrobin</b>	1	1	0.528	-	-	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(b). -- One (1) well had a detection that exceeded the DPR screening level. DPR conducted an investigation for this detection and determined that the detection was due to an improper chemigation set-up. The problem has been corrected and no residues were detected in follow-up sampling.
<b>Bentazon</b>	1	1	5.3	18	200	-	-	E	This pesticide is on the GWPL, 3CCR section 6800(a), and listed in 3CCR section 6457. -- One (1) well had a detection that exceeded the DPR screening level. DPR is currently reviewing these results and is conducting further investigation.

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
<b>Bromacil</b>	18	18	0.051 - 2.48	-	-	-	-	<b>C</b>	This pesticide is on the GWPL, 3CCR section 6800(a). -- Eighteen (18) wells with detections exceeded the DPR screening level and are in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required.
<b>Carbon disulfide</b>	4	4	0.4 - 409	-	-	-	-	-	<b>Not registered for use in California since 1987.</b>
<b>Chloropicrin</b>	2	2	0.125 - 0.249	-	-	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(b). -- Two (2) wells with detections exceeded the DPR screening level. DPR is currently reviewing these results and is conducting further investigation. No other pesticides were detected in either well since 2008.
<b>Chlorthal-dimethyl (DCPA) degradates</b>	15	15	0.11 - 11	-	-	-	-	-	This pesticide is not on the GWPL. -- Fifteen (15) wells with detections exceeded the DPR screening level. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
<b>DACT (degradate of simazine)</b>	68	68	0.05 - 4.83	-	-	-	-	-	Parent pesticide is on the GWPL, 3CCR section 6800(a). -- Sixty-eight (68) wells with detections exceeded the DPR screening level. Fifty-five (55) wells are in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required. Thirteen (13) wells are not in GWPAs. DPR is currently reviewing these results and is conducting further investigation.
<b>DBCP (1,2-dibromo-3-chloropropane)</b>	250	168	0.01 - 1.1	<b>0.2</b>	<b>0.0017</b>	<b>0.2</b>	<b>0</b>	<b>B2</b>	<b>Not registered for use in California since 1979.</b>
<b>DCPU (diuron-desmethyl) (degradate of diuron)</b>	1	0	0.008	-	-	-	-	-	Parent pesticide is on the GWPL, 3CCR section 6800(a). -- No wells with detections exceeded the DPR screening level.
<b>DEA (deethyl-atrazine) (degradate of atrazine)</b>	7	3	0.006 - 0.156	-	-	-	-	-	Parent pesticide is on the GWPL, 3CCR section 6800(a). -- Three (3) wells with detections exceeded the DPR screening level and are in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required.

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
<b>Diuron</b>	2	2	0.079 - 0.124	-	-	-	-	L	This pesticide is on the GWPL, 3CCR section 6800(a). -- Two (2) wells with detections exceeded the DPR screening level and are in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required.
<b>DSMN (desmethylnorflurazon) (degradate of norflurazon)</b>	30	29	0.011 - 0.807	-	-	-	-	-	Parent pesticide is on the GWPL, 3CCR section 6800(a). -- Twenty-nine (29) wells with detections exceeded the DPR screening level and are located in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required.
<b>Ethylene dibromide</b>	3	3	0.025 - 0.053	<b>0.05</b>	<b>0.01</b>	<b>0.05</b>	<b>0</b>	L	<b>Not registered for use in California since 1987.</b>
<b>Ethylene dichloride</b>	2	2	0.07 - 0.55	<b>0.5</b>	<b>0.4</b>	<b>5</b>	<b>0</b>	-	<b>Not registered for use in California since 1987.</b>

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
<b>Fludioxonil</b>	1	1	0.38	-	-	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(b). -- One (1) well with a detection exceeded the DPR screening level. Fludioxonil has been detected by DPR in this well previously (Garretson, 2020). DPR is currently reviewing these results and is conducting further investigation (Kocis, 2020).
<b>Formaldehyde</b>	2	0	0.002 - 0.006	-	-	-	-	<b>B1</b>	This pesticide is not on the GWPL. Registered uses are non-agricultural. -- No wells with detections exceeded the DPR screening level.
<b>Hexazinone</b>	4	2	0.021 - 0.078	-	-	-	-	<b>D</b>	This pesticide is on the GWPL, 3CCR section 6800(b). -- Two (2) wells with detections exceeded the DPR screening level. DPR completed the formal review process for hexazinone in 2010. These detections were found not to pollute at the levels detected.

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
<b>Imidacloprid</b>	2	2	0.085 - 0.47	-	-	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(b). -- Two (2) wells with detections exceeded the DPR screening level. Imidacloprid has been detected by DPR in both wells previously (Garretson, 2020). DPR is currently reviewing these results and is conducting further investigation (Aggarwal, 2017; 2019).
<b>Linuron</b>	1	1	11 - 12.1	-	-	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(b). -- One (1) well with a detection exceeded the DPR screening level. DPR conducted an investigation for this detection and determined that the detection was due to an improper chemigation set-up. The problem has been corrected and no residues were detected in follow-up sampling.
<b>Metalaxyl</b>	1	0	0.035	-	-	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(b). -- No wells with detections exceeded the DPR screening level.

Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
Norflurazon	11	11	0.056 - 0.356	-	-	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(a). -- Eleven (11) wells with detections exceeded the DPR screening level and are in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required.
P-Cresol	1	1	0.05	-	-	-	-	-	<b>Not registered for use in California since 1991.</b>
Simazine	35	29	0.005 - 0.101	4	4	4	4	N	This pesticide is on the GWPL, 3CCR section 6800(a). -- Twenty-nine (29) wells with detections exceeded the DPR screening level and are in GWPAs. Applications of this pesticide in GWPAs are regulated under the RMPP. No further investigation is required.
Tefluthrin	2	0	0.005	-	-	-	-	-	<b>Never registered for use in California.</b>
Thiobencarb	1	1	0.097	70	42	-	-	-	This pesticide is on the GWPL, 3CCR section 6800(b). -- One (1) well had a detection that exceeded the DPR screening level. DPR is currently reviewing these results and is conducting further investigation.



Pesticide or Pesticide Degradate	Wells with Detections	Wells with Detections over 0.04 ppb	Concentration Range (ppb)	† CA MCL	† OEHHA PHG	† U.S. EPA MCL	† U.S. EPA MCLG	†† Cancer Group	* Groundwater Protection List (GWPL) Status: 3CCR section 6800(a) or (b)
									‡ DPR Response to Detections (0.04 ppb screening level)
TPA (degradate of chlordathal-dimethyl)	22	22	0.072 - 27.6	-	-	-	-	-	Parent pesticide is not on the GWPL. -- Twenty-two (22) wells with detections exceeded the DPR screening level. DPR completed the formal review process for DCPA degradates in 2019. These degradates were found not to pollute at the levels detected.

† Drinking water quality standards: MCL—maximum contaminant level; MCLG—maximum contaminant level goal; PHG—public health goal. Other acronyms used include: OEHHA—California Office of Environmental Health Hazard Assessment; U.S. EPA—United States Environmental Protection Agency.

- California (State Water Resources Control Board) MCL values are available at: [http://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/Documents/DWdocuments/MCLsEPAsDWP\\_2018\\_10\\_02.pdf](http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Documents/DWdocuments/MCLsEPAsDWP_2018_10_02.pdf).
- Office of Environmental Health Hazard Assessment public health goals available at: <https://oehha.ca.gov/water/public-health-goals-phgs>.
- U.S. EPA MCL, MCLG, and cancer risk (descriptor) designations derived from the publication *2018 Edition of the Drinking Water Standards and Health Advisories Tables* available at: <https://www.epa.gov/dwstandardsregulations/2018-drinking-water-standards-and-advisory-tables>.
- All health standards not found at sources listed above were derived from *SWRCB water quality goal search app* available at: [https://www.waterboards.ca.gov/water\\_issues/programs/water\\_quality\\_goals/search.html](https://www.waterboards.ca.gov/water_issues/programs/water_quality_goals/search.html).

†† Cancer Group (descriptor) acronyms (U.S. EPA): (A) human carcinogen; (B1) probable human carcinogen—indicates limited human evidence; (B2) probable human carcinogen—sufficient evidence in animals and inadequate or no evidence in humans; (C) possible human carcinogen; (D) not classifiable as to human carcinogenicity; (E) evidence of noncarcinogenicity for humans; (L) likely to be carcinogenic to humans; (N) not likely to be carcinogenic in humans; (S) suggestive evidence of carcinogenic potential.

\*Pesticides on the Groundwater Protection List (GWPL) 3CCR section 6800(a) or (b) are those labeled for agricultural, outdoor institutional, or outdoor industrial use that have the potential to pollute groundwater. Section 6800(a) includes seven agricultural herbicides that are regulated as groundwater contaminants: atrazine, bentazon, bromacil, diuron, norflurazon, prometon, and simazine. Section 6800(b) includes 98 pesticides that have the potential to become groundwater contaminants based on their mobility, persistence, and legal uses. The GWPL is available at: <http://www.cdpr.ca.gov/docs/legbills/calcode/040101.htm>.

If the detected pesticide is regulated as a groundwater contaminant under 3CCR section 6800(a)—and the well is located in a GWPA where use of the pesticide is regulated—current regulation of use is believed to constitute an adequate response to new detections *unless* concentrations are high enough to indicate existing mitigation measures are not adequate to prevent *pollution*. (“Pollution” is defined in FAC section 13142 as “...the consequence of polluting,” and “pollute” means “to introduce a pesticide product into the groundwaters of the state resulting in an active ingredient, other specified ingredient, or a degradation product of a pesticide above a level that does not cause adverse health effects, accounting for an adequate margin of safety.”)

‡ DPR responds only to detections of pesticides over the 0.04 ppb screening level unless the drinking water quality standard (health advisory goal/standard) is low. DPR’s policy relative to its response to reported detections is available upon request.

\*\* DPR does not investigate detections within GWPAs for pesticides (or their degradates) that are on the 6800(a) list of known groundwater contaminants (Schuette, 2004). Applications of these pesticides in GWPAs are managed by County Agricultural Commissioners via the **Restricted Materials** permit program. This program requires applicators to modify their pesticide use practices based on soil properties of the GWPA.

\*\* The Public Health Goal (PHG) for ethylene dibromide (EDB) is listed in the SWRCB (not OEHHA) data table under “More about MCLS and PHGs” at the following web address:

[http://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/MCLsandPHGs.shtml](http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.shtml). This is a March 20, 2019 update document.

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## APPENDIX A: GROUND WATER PROTECTION AREAS (GWPA)s

Ground Water Protection Areas (GWPA)s are defined as one-square-mile sections of land that have been determined by DPR to be sensitive to the movement of pesticides to groundwater. GWPA)s are established based on either detections in groundwater of pesticides (or their degradates) listed in 3CCR section 6800(a)<sup>25</sup>, or by using the CALVUL computer model. The use of pesticides listed in 3CCR section 6800(a) are regulated as groundwater contaminants in GWPA)s and specific management practices must be implemented. Currently, there are 3,840 GWPA)s in California encompassing over 2.45 million acres.

### HISTORY OF GWPA DEVELOPMENT

Early research conducted by DPR scientists enabled DPR to identify two important soil conditions that contribute to groundwater contamination: 1) coarse-textured soils where *leaching* is the predominant contamination pathway (Troiano et al., 1993); and 2) hardpan soil layers where *runoff* from the application site into dry wells or areas with high infiltration rates is the predominant contamination pathway (Braun and Hawkins, 1991). Depth-to-groundwater was identified as another factor contributing to contamination when it was discovered that pesticide detections were more frequent in areas of shallow groundwater (Troiano et al., 1999).

In 2004, regulations were implemented that replaced Pesticide Management Zones (PMZs) with GWPA)s<sup>26</sup>. PMZs were one-square mile sections of land that required mitigation only after specific pesticides were detected in groundwater. In contrast, GWPA)s identify areas vulnerable to pesticide contamination and require specific management practices of pesticides listed in 3CCR section 6800(a) regardless of whether or not they were detected in the groundwater. The empirical model CALVUL was used to identify the vulnerable areas by analyzing soil type and depth-to-groundwater data. DPR based designations of GWPA)s primarily on this CALVUL modeling effort and then also included all of the former (and draft) PMZs from 1989 to 1999 in the designations. DPR's use of the CALVUL model increased the area under regulation from 313,000 acres (the acreage identified as PMZs) to about 2.4 million acres (PMZs plus GWPA)s). The science and regulatory aspects are explained in more detail in the following sections.

### INITIAL BASIS FOR GWPA DESIGNATION

In 2004, DPR implemented regulations that established GWPA)s for *leaching* or *runoff* pathways based on the following factors (Troiano et al., 2000; Marade and Troiano, 2000):

- If a section of land had an estimated depth-to-groundwater of 70 feet or less and the predominant soil type was characterized as coarse-textured, it was identified as a *leaching* GWPA). If the section had an estimated depth-to-groundwater of 70 feet or less and the soil contained a hardpan layer, it was identified as a *runoff* GWPA).

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<sup>25</sup> Pesticides listed in 3CCR section 6800(a): atrazine, bentazon, bromacil, norflurazon, prometon, simazine, and diuron (except for diuron products with less than 7% diuron that are applied to foliage).

<sup>26</sup> GWPA)s are classified in regulation as sections of land characterized by either coarse-textured or hardpan soils with a ten-year spring-averaged annual estimated depth-to-groundwater of 70 feet or less.

- If a section had both leaching and runoff characteristics (coarse-textured soil with a hardpan layer), it was identified as a leaching GWPA if the mean hardpan depth was greater than 48 inches, or as a runoff GWPA if the mean hardpan depth was less than 48 inches.
- If a section did not meet the above criteria but was previously identified as a PMZ, it was classified as a leaching or runoff GWPA as follows:
  - If the predominant soil in the section was coarse-textured, it was classified as a leaching GWPA; otherwise, the section was classified as a runoff GWPA.
  - If the PMZ lacked soil survey data, it was assigned a GWPA pathway based on soil condition information provided by local agencies. DPR also assessed agronomic practices in the section to determine whether leaching or runoff was the apparent pathway for recharge of water to groundwater.

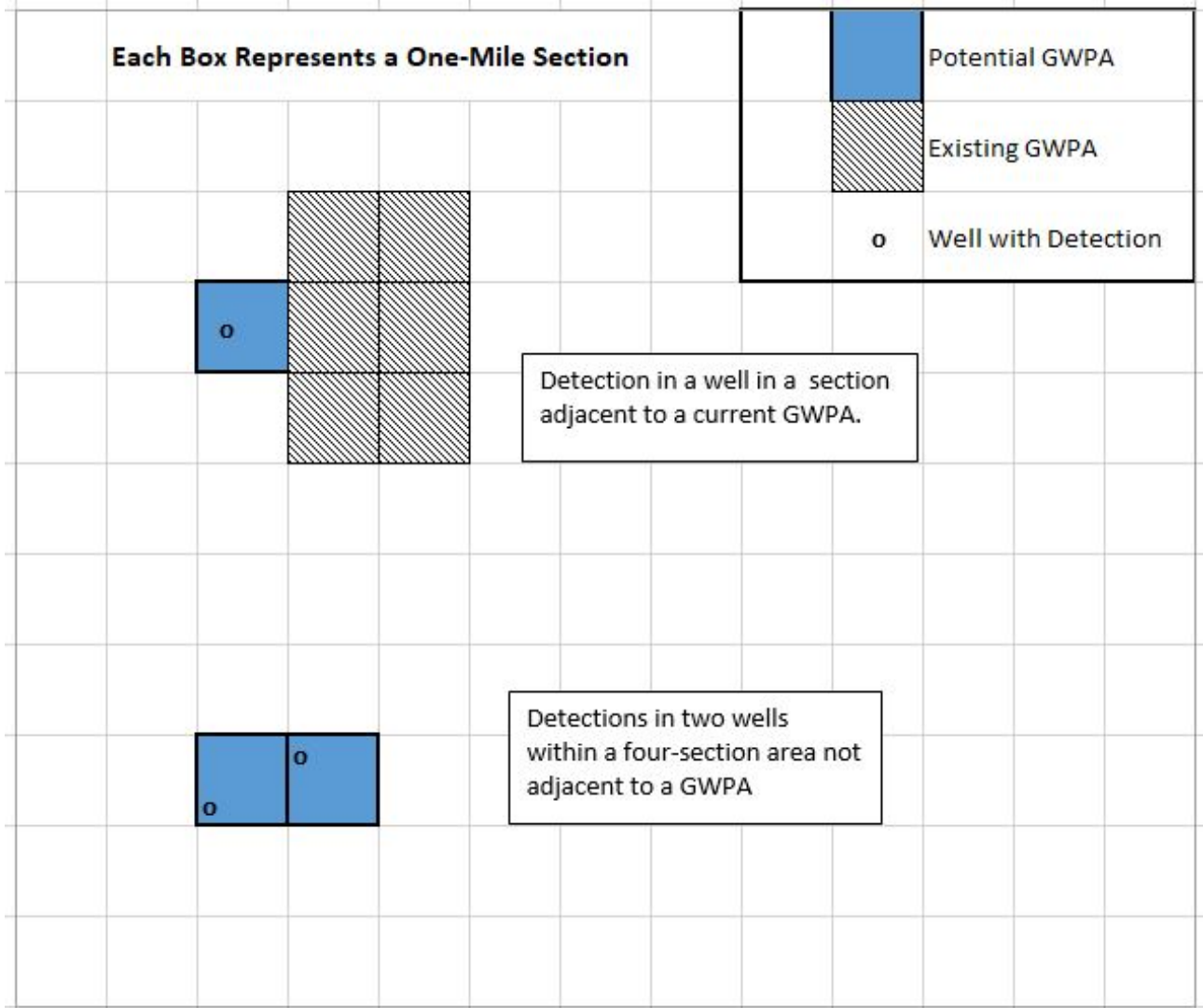
#### **NEW GWPA DESIGNATIONS**

DPR establishes new GWPAs based on the following factors:

- CALVUL modeling identifies the area as vulnerable; or
- Active ingredients listed in 3CCR section 6800(a), or their degradation products, are detected in:
  - One well in a section that is adjacent to a GWPA; or
  - Two or more wells within a four-section area that is not adjacent to an existing GWPA. (See **Figure A-1** to understand how new GWPAs are added based on detections.)

In 2020, DPR designated 122 additional sections (approximately 78,000 acres) in 15 counties as GWPAs based on the detections of active ingredients listed in 3CCR section 6800(a) or their degradation products. The document previously incorporated by reference in the definitions of 3CCR section 6000 was amended to include the new GWPAs and was retitled “*Ground Water Protection Areas 2018 (Rev. 10/18)*.” The document identifies each GWPA as either a leaching or runoff GWPA. Currently, there are 3,840 GWPAs in California (**Figure A-2**).

**Figure A-1.** Determination of detection-based GWPA.







## PESTICIDE USE IN GWPAS

Individuals using 3CCR section 6800(a) pesticides registered for agricultural, outdoor industrial, and outdoor institutional use in GWPAs are required to modify their use practices. Users must obtain a [Restricted Materials](#) permit from their CACs. The permit or Notice of Intent identifies the management practices required for each type of GWPA.<sup>27</sup> At least one of the following management practices (or an alternative management practice approved by the DPR Director) must be met for the following type of GWPA:

- **6487.3 Engineered Rights-of-Way** within a GWPA:
  - 1) Runoff is directed to a vegetated area or a fallow field;
  - 2) Compliance with a permit issued pursuant to the storm water provisions of the federal
  - 3) The property owner complies with the requirements of 6487.4 (see below).
  
- **6487.4 Runoff GWPAs:**
  - 1) Application timing is limited to the period April 1 – July 31;
  - 2) The soil is disturbed prior to pesticide application;
  - 3) The pesticide is incorporated into the soil;
  - 4) The pesticide is applied as a band treatment; or
  - 5) Runoff is retained on- or off-site, or directed to a fallow field.
  
- **6487.5 Leaching GWPAs:**
  - 1) The permittee shall not apply any irrigation water for six months following application
  - 2) The pesticide shall be applied to the planting bed or the berm above the level of irrigation
  - 3) Irrigation shall be managed according to a specified formula.

The permittee must notify the CAC within 24 to 48 hours prior to application to give the CAC an opportunity to inspect the site. Pre-application site inspections allow CACs to determine whether the use modifications are protective and, if they are not, to revise the permit accordingly.

<sup>27</sup> More information on how DPR and CACs regulate the use of groundwater contaminants in vulnerable areas is available at: [http://www.cdpr.ca.gov/docs/emon/grndwtr/gwp\\_id\\_gwpa.htm](http://www.cdpr.ca.gov/docs/emon/grndwtr/gwp_id_gwpa.htm).

## APPENDIX B: PRINCIPAL SAMPLING AGENCIES

The principal agencies contributing groundwater monitoring data for this annual Well Sampling Report are DPR, SWRCB, and USGS. Each agency's unique regulatory responsibilities define the pesticides selected for monitoring, type and sensitivity of laboratory analyses, well types sampled, sampling locations, and sampling frequency. For instance, DPR primarily samples shallow, domestic wells in areas where agricultural pesticides are used, while SWRCB assesses the overall quality of groundwater used for consumption (regardless of the frequency or intensity of pesticide use near sampled wells).

### DEPARTMENT OF PESTICIDE REGULATION

DPR's Groundwater Protection Program samples groundwater as a function of its responsibilities under the PCPA. (See the **Background** section of this report for a detailed description.)

### STATE WATER RESOURCES CONTROL BOARD

SWRCB is responsible for enforcement of the federal and California Safe Drinking Water Acts. To meet the goal of ensuring delivery of safe drinking water, SWRCB's Division of Drinking Water (DDW) oversees approximately 7,500 [public water systems](#) and establishes health-protective drinking water standards. These standards, known as [maximum contaminant levels](#) (MCLs), are developed by evaluating the health risks presented by a chemical, and by assessing the technical and economic factors related to its use (such as treatment efficacy and cost). SWRCB establishes a contaminant's MCL at a level as close to the [public health goal](#)<sup>28</sup> (PHG) set by the Office of Environmental Health Hazard Assessment (OEHHA) as is technically and economically feasible, placing primary emphasis on the protection of public health (see [the MCL process](#)).

- The [Division of Drinking Water](#) (DDW) regulates public water systems to ensure the delivery of safe drinking water; oversees water recycling projects; issues permits for water treatment devices; supports and promotes water system security; and performs many other functions. DDW consists of two field operations branches and a Program Management Branch. The Northern and Southern California field operations branches are responsible for the enforcement of the federal and California Safe Drinking Water Acts and for regulatory oversight of public water systems. The Program Management Branch includes the Data/Toxicology Office, which compiles, evaluates, and reports public water system drinking water quality data.
- DDW performs a role that was previously performed by the California Department of Public Health (CDPH); this role includes reporting pesticide detections in drinking water wells to DPR.

<sup>28</sup> Public Health Goals are concentrations of drinking water contaminants that pose no significant health risk if consumed for a lifetime, based on current risk assessment principles, practices, and methods.

SWRCB also monitors groundwater as a function of its Groundwater Ambient Monitoring and Assessment Program (GAMA).<sup>29</sup> This program is designed to improve groundwater quality and increase public availability of information about groundwater quality. SWRCB expanded the GAMA Program following implementation of the [Groundwater Quality Monitoring Act of 2001](#) (Part 2.76 [commencing with section 10780], Division 6 of the Water Code). This law resulted in a [publicly accepted plan](#) to monitor and assess “priority basins”— basins that account for over 90 percent of the groundwater used in California. The GAMA Program includes four projects:

- The [GAMA Priority Basin Project](#) monitors dozens of chemicals at very low detection limits. Monitoring and assessment of priority basins is completed every ten years; trend monitoring is performed every three years. SWRCB is collaborating with USGS and Lawrence Livermore National Laboratory (LLNL) to implement the GAMA Priority Basin Project.
- The [GAMA Domestic Well Project](#) samples multiple areas in coordination with county environmental health departments. It also provides water quality information to domestic well users.
- The [GAMA Special Studies Project](#) partners with LLNL to conduct groundwater studies that evaluate nitrate, wastewater, and groundwater recharge. LLNL scientists use tools that include Tritium-Helium age dating and computer modeling. The University of California, Davis, also contributes to the GAMA Special Studies Project.
- The [GeoTracker GAMA](#) information management system enables users (scientists, regulators, water managers, educators, and the public) to access millions of data records from SWRCB and Regional Water Quality Control Boards, Department of Water Resources, DPR, and USGS. GeoTracker GAMA provides access to a Google map-based database that provides the results of groundwater quality testing, groundwater level evaluations, environmental monitoring well logs, and links to published reports.

#### **UNITED STATES GEOLOGICAL SURVEY**

USGS compiles surface water, groundwater, and water quality data from local databases to develop a national information system. USGS groundwater database contains records compiled from about 850,000 wells studied over the past 100 years. This well information is available via the Internet through NWISWeb, the National Water Information System Web Interface.

- The USGS [Office of Groundwater](#) maintains the **Groundwater Watch** program. This program compiles data from active well networks.

#### **CALIFORNIA DEPARTMENT OF PUBLIC HEALTH**

CDPH no longer provides DPR with well sampling information for drinking water wells; this role has been assumed by SWRCB’s DDW (see program description above).

<sup>29</sup> For more information about SWRCB’s GAMA Program, go to <http://www.waterboards.ca.gov/gama/>

## **OTHER SAMPLING AGENCIES**

Other agencies that sample for pesticides in the environment and may contribute groundwater data include the U.S. Environmental Protection Agency and state agencies such as the California Department of Fish and Wildlife.

## APPENDIX C: THE WELL INVENTORY DATABASE

In the early 1980s, DPR established the Well Inventory Database under the authority granted in FAC section 13152(c) and began collecting groundwater sampling data from public agencies. The database currently contains over 2.6 million records, including monitoring data from over 29,000 public and private wells sampled for over 470 different pesticides and pesticide degradates (**Figure C-1**). Although approximately 45 agencies submitted data for inclusion in the database in the past, the majority of the data now added comes from DPR, SWRCB, and USGS.

The Well Inventory Database includes the following information:

- Well location by county
- Well type (domestic, agricultural, industrial, large water system)
- Well sampling agency and study number(s)
- Sample date, analysis date, analyzing laboratory
- Chemical analyzed, concentration detected, method detection limit or reporting limit
- Unusual or important notes about the detection or the analytical method
- Legal agricultural use determination/point or nonpoint source determination
- Year of the well sampling report the detection was reported or published

The Well Inventory Database is available for download at:

[https://www.cdpr.ca.gov/docs/emon/grndwtr/well\\_inventory\\_database/index.htm](https://www.cdpr.ca.gov/docs/emon/grndwtr/well_inventory_database/index.htm).

Due to privacy concerns, DPR does not release well owner information. See DPR's policy on the release of well sampling data at:

[http://www.cdpr.ca.gov/docs/emon/grndwtr/wellinv/data\\_policy.htm](http://www.cdpr.ca.gov/docs/emon/grndwtr/wellinv/data_policy.htm).



## APPENDIX D: WELL SAMPLING RESULTS SUMMARIZED BY COUNTY

Appendix D, Table 1, summarizes the number of wells and unique pesticides or degradates tested, the number of wells with detections, and the number of unique pesticides or degradates detected in each county for this year's report. To understand the data, note that wells tested more than once during the year were only counted as a single well. Furthermore, a well may be tested for a chemical multiple times and have multiple chemicals reported as detected, or a single chemical can be detected in multiple wells, but each of these is counted only once in the appropriate column.

Appendix D, Table 2, provides details on the detections listed in Table 1. The table only shows the counties with detections and the respective pesticides or degradates detected.

- 'Wells Tested' shows the number of wells in the county tested for the detected chemical
- 'Wells With Detections' shows the number of wells that had detections
- 'Concentration Range' is the concentration levels of the chemical reported in parts-per-billion (ppb) from the lowest to the highest detection
- 'DPR Evaluation' lists whether the detected pesticide or degradate is currently registered for use in California, and if the detection(s) require follow-up investigation. Detections of pesticides at levels below DPR's screening level, pesticides previously determined not to pollute at the levels detected, and pesticides on the 6800(a) list detected in GWPAs will not require additional follow-up. Detections of unregistered pesticides may be from historical use (i.e., DBCP), and DPR will generally not conduct follow-up investigation unless illegal use is suspected.

A list of all pesticides and degradates monitored in each county, whether detected or not, is available on request from DPR's [Groundwater Protection Program](#).

Full Well Inventory Database downloads are available at [https://www.cdpr.ca.gov/docs/emon/grndwtr/well\\_inventory\\_database/index.htm](https://www.cdpr.ca.gov/docs/emon/grndwtr/well_inventory_database/index.htm).

**Table D1:** Total number of wells sampled, pesticides and degradates tested, wells with detections, and the number of unique pesticides and degradates detected for each California County in the 2020 report.

<b>County</b>	<b>Wells Tested</b>	<b>Pesticides and Degradates Tested</b>	<b>Wells With Detections</b>	<b>Unique Chemicals Detected</b>
Alameda	36	144	-	-
Alpine	3	3	-	-
Amador	12	12	-	-
Butte	72	143	1	2
Calaveras	4	3	-	-
Colusa	10	20	-	-
Contra Costa	15	52	-	-
Del Norte	1	4	-	-
El Dorado	22	104	-	-
Fresno	296	265	134	21
Glenn	8	15	-	-
Humboldt	7	6	-	-
Imperial	7	146	-	-
Inyo	40	66	-	-
Kern	312	163	25	3
Kings	39	66	-	-
Lake	32	42	-	-
Lassen	3	7	-	-
Los Angeles	796	150	5	4
Madera	83	124	11	3
Marin	24	32	-	-
Mariposa	25	22	-	-
Mendocino	37	33	-	-
Merced	103	122	14	5
Modoc	1	6	-	-
Mono	17	61	-	-
Monterey	202	175	21	5
Napa	38	59	-	-
Nevada	29	54	-	-
Orange	204	77	1	1
Placer	11	100	-	-



<b>County</b>	<b>Wells Tested</b>	<b>Pesticides and Degradates Tested</b>	<b>Wells With Detections</b>	<b>Unique Chemicals Detected</b>
Plumas	5	94	-	-
Riverside	275	130	12	2
Sacramento	168	52	5	2
San Benito	53	160	13	3
San Bernardino	444	157	30	5
San Diego	69	143	2	1
San Francisco	4	3	-	-
San Joaquin	188	95	44	7
San Luis Obispo	102	127	2	2
San Mateo	21	51	-	-
Santa Barbara	87	172	3	4
Santa Clara	123	173	2	2
Santa Cruz	36	121	-	-
Shasta	26	103	-	-
Siskiyou	4	6	-	-
Solano	23	92	3	4
Sonoma	152	74	-	-
Stanislaus	159	86	22	4
Sutter	15	46	-	-
Tehama	64	102	2	2
Trinity	1	6	-	-
Tulare	233	72	44	8
Tuolumne	41	94	1	1
Ventura	55	79	-	-
Yolo	31	52	-	-
Yuba	23	113	-	-

**Table D2.** Pesticides and degradates reported as detected in the 2020 annual report by county.

County	Pesticide or Degradate Detected	Wells Tested	Wells With Detections	Concentration Range (ppb)	DPR Evaluation
Butte	ACET (degradate of atrazine or simazine)	8	1	0.156	Degradate of a registered pesticide. The detection will be evaluated.
Butte	DACT (degradate of simazine)	8	1	0.162	Degradate of a registered pesticide. The detection will be evaluated.
Fresno	1,2-dicloropropane (1,2-D)	99	2	0.001 - 0.002	Not registered for use in California since 1990.
Fresno	2-Isopropyl-6-methyl-4-pyrimidinol (degradate of diazinon)	1	1	0.006	Degradate of a registered pesticide. The detection is below the DPR screening level.
Fresno	ACET (degradate of atrazine or simazine)	71	38	0.052 - 0.603	Degradate of a registered pesticide. Thirty-one (31) detections are in GWPAs. Seven (7) detections are outside GWPAs and will be evaluated.
Fresno	Atrazine	203	3	0.008 - 0.087	Registered pesticide. Two (2) detections are in GWPAs. One (1) detection below the DPR screening level is outside GWPAs.
Fresno	Azoxystrobin	71	1	0.528	Registered pesticide. DPR conducted an investigation of this detection and determined that the detection was due to improper chemigation set-up. The problem has been corrected and no residues were detected in follow-up sampling.
Fresno	Bromacil	104	10	0.069 - 2.48	Registered pesticide. All ten (10) detections are in GWPAs.
Fresno	DACT (degradate of simazine)	71	44	0.05 - 3.36	Degradate of a registered pesticide. Thirty-three (33) detections are in GWPAs. Eleven (11) detections are outside GWPAs and will be evaluated.
Fresno	DBCP	154	82	0.01 - 0.825	Not registered for use in California since 1979.
Fresno	DEA (degradate of atrazine)	73	3	0.012 - 0.156	Degradate of a registered pesticide. All three (3) detections are in GWPAs.
Fresno	DSMN (degradate of norflurazon)	71	20	0.011 - 0.425	Degradate of a registered pesticide. All twenty (20) detections are in GWPAs.
Fresno	Diuron	71	2	0.079 - 0.124	Registered pesticide. All ten (10) detections are in GWPAs.

County	Pesticide or Degradate Detected	Wells Tested	Wells With Detections	Concentration Range (ppb)	DPR Evaluation
Fresno	Diuron-desmethyl (DCPU) (degradate of diuron)	1	1	0.008	Degradate of a registered pesticide. The detection is below the DPR screening level.
Fresno	Ethylene dichloride	5	1	0.07	Not registered for use in California since 1987.
Fresno	Fludioxonil	70	1	0.38	Registered pesticide. Multiple detections in this well. The source of the detections is under investigation.
Fresno	Hexazinone	73	4	0.021 - 0.078	Registered pesticide. DPR completed the formal review process for hexazinone in 2010. These detections were found not to pollute at the levels detected.
Fresno	Imidacloprid	71	2	0.085 - 0.47	Registered pesticide. Imidacloprid has been detected in both wells previously. DPR is currently reviewing these results along with other detections of imidacloprid.
Fresno	Linuron	71	1	11 - 12.1	Registered pesticide. DPR conducted an investigation of this detection and determined that the detection was due to improper chemigation set-up. The problem has been corrected and no residues were detected in follow-up sampling.
Fresno	Norflurazon	71	8	0.056 - 0.296	Registered pesticide. All eight (8) detections are in GWPAs.
Fresno	Simazine	203	25	0.008 - 0.101	Registered pesticide. Twenty-four (24) detections are in GWPAs. One (1) detection below DPRs screening level is outside GWPAs.
Fresno	TPA (degradate of chlorthal-dimethyl)	16	2	0.43 - 1.07	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.
Fresno	Thiobencarb	132	1	0.097	Registered pesticide. The detection will be evaluated.
Kern	1,2-dicloropropane (1,2-D)	187	2	0.54 - 0.58	Not registered for use in California since 1990.
Kern	DBCP	135	22	0.01 - 0.25	Not registered for use in California since 1979.
Kern	Ethylene dibromide	113	1	0.025 - 0.041	Not registered for use in California since 1987.
Los Angeles	1,2-dicloropropane (1,2-D)	787	1	0.69 - 2.9	Not registered for use in California since 1990.
Los Angeles	Atrazine	111	1	0.17	Registered pesticide. The detection is in a GWPA.
Los Angeles	Carbon disulfide	251	1	0.55	Not registered for use in California since 1987.

County	Pesticide or Degradate Detected	Wells Tested	Wells With Detections	Concentration Range (ppb)	DPR Evaluation
Los Angeles	DBCP	91	2	0.011 - 0.037	Not registered for use in California since 1979.
Madera	Chloropicrin	5	1	0.249	Registered pesticide. The detection will be evaluated.
Madera	DBCP	40	9	0.023 - 1.1	Not registered for use in California since 1979.
Madera	Simazine	47	1	0.012	Registered pesticide. The detection is in a GWPA.
Merced	ACET (degradate of atrazine or simazine)	10	1	0.097	Degradate of a registered pesticide. The detection is in a GWPA.
Merced	Carbon disulfide	1	1	0.4	Not registered for use in California since 1987.
Merced	DACT (degradate of simazine)	10	2	0.102 - 0.205	Degradate of a registered pesticide. Both (2) detections are in GWPAs.
Merced	DBCP	73	11	0.011 - 0.14	Not registered for use in California since 1979.
Merced	DSMN (degradate of norflurazon)	10	2	0.092 - 0.26	Degradate of a registered pesticide. Both (2) detections are in GWPAs.
Monterey	1,2-dichloropropane (1,2-D)	125	1	0.001	Not registered for use in California since 1990.
Monterey	Bromacil	111	1	0.054	Registered pesticide. The detection is in a GWPA.
Monterey	Chlorthal-dimethyl degradates (nonspecific)	40	8	0.16 - 11	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.
Monterey	Simazine	132	2	0.008 - 0.009	Registered pesticide. The detections are below the DPR screening level.
Monterey	TPA (degradate of chlorthal-dimethyl)	20	10	0.086 - 20.8	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.
Orange	Bentazon	5	1	5.3	Registered pesticide. The detection will be evaluated.
Riverside	1,2-dichloropropane (1,2-D)	222	1	0.81	Not registered for use in California since 1990.
Riverside	DBCP	118	11	0.012 - 0.26	Not registered for use in California since 1979.
Sacramento	DBCP	66	1	0.02 - 0.03	Not registered for use in California since 1979.
Sacramento	Chlorthal-dimethyl degradates (nonspecific)	41	4	0.11 - 8.6	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates

County	Pesticide or Degradate Detected	Wells Tested	Wells With Detections	Concentration Range (ppb)	DPR Evaluation
					in 2019. These degradates were found not to pollute at the levels detected.
San Benito	Chlorthal-dimethyl degradates (nonspecific)	5	2	0.23 - 0.57	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.
San Benito	Formaldehyde	2	2	0.002 - 0.006	Registered pesticide. The detections are below the DPR screening level.
San Benito	TPA (degradate of chlorthal-dimethyl)	18	9	0.072 - 3.97	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.
San Bernardino	1,2-dicloropropane (1,2-D)	321	3	0.002 - 1.1	Not registered for use in California since 1990.
San Bernardino	DBCP	334	24	0.01 - 0.23	Not registered for use in California since 1979.
San Bernardino	Simazine	107	1	0.006	Registered pesticide. The detection is below the DPR screening level.
San Bernardino	Tefluthrin	15	1	0.005	Never registered for use in California.
San Bernardino	P-Cresol	9	1	0.05	Not registered for use in California since 1991.
San Diego	1,2-dicloropropane (1,2-D)	59	2	0.53 - 0.85	Not registered for use in California since 1990.
San Joaquin	1,2-dicloropropane (1,2-D)	92	2	0.5 - 0.8	Not registered for use in California since 1990.
San Joaquin	ACET (degradate of atrazine or simazine)	9	4	0.058 - 0.181	Degradate of a registered pesticide. All four (4) detections are in GWPAs.
San Joaquin	DACT (degradate of simazine)	9	5	0.095 - 0.439	Degradate of a registered pesticide. All five (5) detections are in GWPAs.
San Joaquin	DBCP	130	36	0.01 - 0.91	Not registered for use in California since 1979.
San Joaquin	DSMN (degradate of norflurazon)	9	2	0.185 - 0.2	Degradate of a registered pesticide. Both (2) detections are in GWPAs.

County	Pesticide or Degradate Detected	Wells Tested	Wells With Detections	Concentration Range (ppb)	DPR Evaluation
San Joaquin	Chlorthal-dimethyl degradates (nonspecific)	7	1	0.37	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.
San Joaquin	Ethylene dibromide	122	1	0.026 - 0.042	Not registered for use in California since 1987.
San Luis Obispo	DEA (degradate of atrazine)	2	1	0.008	Degradate of a registered pesticide. The detection is below the DPR screening level.
San Luis Obispo	Metalaxyl	2	1	0.035	Registered pesticide. The detection is below the DPR screening level.
Santa Barbara	1,2-dicloropropane (1,2-D)	69	1	0.056	Not registered for use in California since 1990.
Santa Barbara	Carbon disulfide	16	2	0.5 - 409	Not registered for use in California since 1987.
Santa Barbara	DBCP	27	1	0.01	Not registered for use in California since 1979.
Santa Barbara	Ethylene dichloride	10	1	0.55	Not registered for use in California since 1987.
Santa Clara	Chloropicrin	3	1	0.125	Registered pesticide. The detection will be evaluated.
Santa Clara	TPA (degradate of chlorthal-dimethyl)	1	1	27.6	Degradate of a registered pesticide. DPR completed the formal review process for chlorthal-dimethyl degradates in 2019. These degradates were found not to pollute at the levels detected.
Solano	Atrazine	15	1	0.073 - 0.081	Registered pesticide. The detection is in a GWPA.
Solano	DACT (degradate of simazine)	6	1	0.215	Degradate of a registered pesticide. The detection will be evaluated.
Solano	DEA (degradate of atrazine)	6	1	0.072	Degradate of a registered pesticide. The detection is in a GWPA.
Solano	Norflurazon	6	1	0.061 - 0.079	Registered pesticide. The detection is in a GWPA.
Stanislaus	ACET (degradate of atrazine or simazine)	8	2	0.058 - 0.12	Degradate of a registered pesticide. Both (2) detections are in GWPAs.
Stanislaus	DACT (degradate of simazine)	8	3	0.331 - 0.504	Degradate of a registered pesticide. All three (3) detections are in GWPAs.

<b>County</b>	<b>Pesticide or Degradate Detected</b>	<b>Wells Tested</b>	<b>Wells With Detections</b>	<b>Concentration Range (ppb)</b>	<b>DPR Evaluation</b>
Stanislaus	DBCP	100	19	0.011 - 0.28	Not registered for use in California since 1979.
Stanislaus	DSMN (degradate of norflurazon)	8	2	0.068 - 0.227	Degradate of a registered pesticide. Both (2) detections are in GWPAs.
Tehama	DEA (degradate of atrazine)	13	2	0.006 - 0.008	Degradate of a registered pesticide. Both (2) detections are below the DPR screening level.
Tehama	Simazine	16	1	0.005	Registered pesticide. The detection is below the DPR screening level.
Tulare	1,2-dicloropropane (1,2-D)	161	1	0.78	Not registered for use in California since 1990.
Tulare	ACET (degradate of atrazine or simazine)	21	12	0.051 - 0.802	Degradate of a registered pesticide. All twelve (12) detections are in GWPAs.
Tulare	Bromacil	59	7	0.051 - 1.23	Registered pesticide. All seven (7) detections are in GWPAs.
Tulare	DACT (degradate of simazine)	21	12	0.099 - 4.83	Degradate of a registered pesticide. All twelve (12) detections are in GWPAs.
Tulare	DBCP	115	32	0.01 - 0.7	Not registered for use in California since 1979.
Tulare	DSMN (degradate of norflurazon)	21	4	0.061 - 0.807	Degradate of a registered pesticide. All four (4) detections are in GWPAs.
Tulare	Norflurazon	21	2	0.073 - 0.356	Registered pesticide. Both (2) detections are in GWPAs.
Tulare	Simazine	146	5	0.053 - 0.089	Registered pesticide. All five (5) detections are in GWPAs.
Tuolumne	Tefluthrin	2	1	0.005	Never registered for use in California.
Yolo	Ethylene dibromide	18	1	0.053	Not registered for use in California since 1987.

## GLOSSARY OF TERMS

TERM	DEFINITION
AB 2021	See "Pesticide Contamination Prevention Act."
AB 2701	AB 2701 (Chapter 644, Statutes of 2004) amended the Pesticide Contamination Prevention Act (PCPA) to require DPR to post specified information on sampling for pesticide residues in California groundwater to its website. This law replaced the previous requirement that DPR submit the sampling information in a written report to the Legislature.
Active ingredient	The chemical or chemicals in a pesticide formulation that are biologically active and are capable, in themselves, of preventing, destroying, repelling, or mitigating insects, fungi, rodents, weeds, or other pests. The remainder of the product consists of one or more <i>inert ingredients</i> (such as water, solvents, emulsifiers, surfactants, clay, and propellants), which are there for reasons other than pesticidal activity.
Agricultural Commissioner	Local officials whose duties include pesticide use enforcement in their counties.
Agricultural use	<p>The use of any pesticide or method or device for the control of plant or animal pests, or any other pests, or the use of any pesticide for the regulation of plant growth or defoliation of plants. Agricultural use includes but is not limited to commercial production of animals or plants (including forest), parks, golf courses, cemeteries, roadsides, rights-of-way, and nurseries. It excludes pesticides intended for:</p> <ul style="list-style-type: none"> <li>a) Home use</li> <li>b) Structural pest control</li> <li>c) Industrial or institutional use</li> <li>d) The control of an animal pest under the written prescription of a veterinarian</li> <li>e) Uses by certain local districts or agencies that operate under a cooperative agreement with the California Department of Public Health, such as many mosquito abatement districts.</li> </ul> <p>See also "legal agricultural use."</p>



GLOSSARY

<b>TERM</b>	<b>DEFINITION</b>
Analysis	For well water sampling data in the Well Inventory Database, it is the act of determining whether a substance is present in a water sample using laboratory methodology.
CalEPA	California Environmental Protection Agency. Comprised of the Department of Pesticide Regulation, the Department of Toxic Substances Control, the State Water Resources Control Board, the California Air Resources Board, the Department of Resources Recycling and Recovery (CalRecycle), and the Office of Environmental Health Hazard Assessment.
California Code of Regulations (CCR)	Regulations formally adopted by state agencies. Regulations about pesticides and pest control operations are mainly in Title 3, Division 6 and Title 16, Division 19.
Chemigation	Applying pesticide through an irrigation system or mixing with irrigation water before the water is applied to the soil or crop.
Degradation	With respect to pesticides, degradation is the breakdown of the parent chemical by the action of microbes, water, air, sunlight, or other agents into daughter products (degradates) that may undergo further degradation by similar processes.  With respect to groundwater quality, degradation refers to a reduction of water quality.
Detection	A well water sample in which the presence of a pesticide is detected at or above the minimum detection limit of the analytical instruments used for analysis of the pesticide under investigation. A detection may be designated as confirmed or unconfirmed.
Director	In the context of this report, “Director” means Director of the Department of Pesticide Regulation.
Environmental fate	Describes the processes by which pesticides move and are transformed in the environment, including persistence in air, water, and soil; reactivity and degradation; migration in groundwater; and bioaccumulation in aquatic or terrestrial organisms.
FAC	Food and Agricultural Code. Divisions 6 and 7 of the FAC pertain to the registration, sale, and use of pesticides.
Formulation	Pesticide product as sold, usually a mixture of active and inert ingredients.
Groundwater	Water found below the surface of the land, usually in porous rock formations.

GLOSSARY

<b>TERM</b>	<b>DEFINITION</b>
Ground Water Protection Area (GWPA)	A geographic area defined in state regulations as vulnerable to pesticide contamination though the mechanism of either leaching or runoff.
Groundwater Protection List (GWPL)	A list of pesticides having the potential to pollute groundwater included in 3CCR section 6800.
Inert ingredient	Any substance other than an active ingredient which is intentionally included in a pesticide product. Also known as “other” ingredients, they do not attack a particular pest but may be chemically or biologically active.
Leaching	A pathway by which agricultural pesticides may reach groundwater; the process by which residues are dissolved in soil water and follow the movement of water through the soil matrix as it recharges a groundwater aquifer.
Legal agricultural use	The application of a pesticide, according to its labeled directions and in accordance with federal and state laws and regulations, for agricultural use as defined in FAC section 11408.  See also “agricultural use.”
Maximum contaminant level (MCL)	MCLs are health protective drinking water standards to be met by public water systems. MCLs take into account not only chemicals' health risks but also factors such as their detectability, treatability, and the cost of treatment.
Maximum contaminant level goal (MCLG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
Mitigation measure	A use practice designed to reduce the risk of harm to people or the environment.
Model	Mathematical equations that represent certain processes. These equations can be implemented in a computer program to facilitate calculations and to test model predictions against measured data.
Monitoring well	A well principally used for any of the follow purposes: (1) observing groundwater levels and flow conditions, (2) obtaining samples for determining groundwater quality, or (3) evaluating hydraulic properties of water-bearing strata.

GLOSSARY

TERM	DEFINITION
Non-agricultural use	<i>See “agricultural use.”</i>
Nonpoint source	Pollution sources which are diffuse and do not have a distinct discharge point (compare with <i>point source</i> ), for example, applications of agricultural pesticides to crops.
Permit	Time- and site-specific permits are issued by County Agricultural Commissioners for the use of pesticides designated as restricted materials.
Pest	Any undesired insect, rodent, nematode, fungus, bird, vertebrate, invertebrate, weed, virus, bacteria, or other microorganism (except microorganisms on or in humans or animals) which is declared to be injurious to human health or the environment.
Pest control	The use or application of any pesticide. It also means the use of any substance, method or device to control pests; prevent, destroy, repel, mitigate or correct any pest infestation or disorder of plants; or inhibit, regulate, stimulate or otherwise alter plant growth by direct application to plants.
Pesticide	A substance, or mixture of substances, intended to defoliate plants, regulate plant growth, or prevent, destroy, repel, or mitigate any insects, fungi, bacteria, weeds, rodents, predatory animal, or any other form of plant or animal life declared to be a pest detrimental to vegetation, man, animal, or households, or any environment. Also, in California only, a spray adjuvant.
Pesticide Contamination Prevention Act (PCPA, AB 2021)	A law, effective January 1, 1986, which added agricultural use sections 13141 through 13152 to Division 7 of the FAC. The PCPA requires the following: 1) each registrant of an agricultural use pesticide to submit environmental fate data to DPR; 2) the Director to use those data to establish a list of pesticides with the potential to pollute groundwater (GWPL); 3) the Director to monitor groundwater for these pesticides; 4) all local, county, and state agencies to report to DPR the results of pesticides sampled in groundwater; 5) the Director to maintain a specified well sampling database and to post certain information annually on its website about pesticides in groundwater; and 6) a specified subcommittee and the Director to conduct a formal review to determine if continued use of a pesticide can be allowed if it is detected and verified in groundwater due to legal agricultural use.

GLOSSARY

TERM	DEFINITION
Pesticide Management Zone (PMZ)	A geographic surveying unit of approximately one-square-mile, which is vulnerable to groundwater contamination based on detections of pesticides or pesticide degradates in groundwater due to agricultural use. PMZs were formally listed in 3CCR section 6802 and were pesticide specific. The use of a pesticide inside its PMZs was subject to certain groundwater protection restrictions and requirements. PMZs were renamed GWPAs in May 2004.
Point source	A source of contamination, such as a spill or at a waste site that is initially deposited and concentrated in a small, well-defined area.
Pollution	Food and Agriculture Code section 13142 defines “ <i>pollution</i> ” as “the consequence of polluting,” and “ <i>pollute</i> ” as “...to introduce a product into the groundwaters of the state resulting in an active ingredient, other specified ingredient, or a degradation product of a pesticide above a level that does not cause adverse health effects, accounting for an adequate margin of safety.”
Public health goal (PHG)	PHGs are established by <a href="#">OEHHA</a> . They are concentrations of drinking water contaminants that pose no significant health risk if consumed for a lifetime, based on current risk assessment principles, practices, and methods. OEHHA establishes PHGs pursuant to Health and Safety Code section 116365(c) for contaminants with MCLs.
Range	When used in the context of mapping locations, a range is a single series or row of townships, each six miles square, extending parallel to, and numbered east and west from, a survey base meridian line.  A range is a vertical column of townships.
Registered pesticide	A pesticide product approved by the U.S. EPA and DPR for use in California.
Regulations	These are adopted by state agencies to implement or clarify statutes enacted by the California Legislature. They can also be adopted in response to federal legislation, court decisions, changing technologies, and concerns for the health and well-being of the residents of California.

GLOSSARY

TERM	DEFINITION
Reporting limit	<p>The minimum value for an analysis method and chemical that a reporting laboratory/agency lists they will accept as a valid detection of that chemical. Values below that level are generally either not reported or reported as a trace. The Reporting Limit value should be greater than zero. In this document a “Reporting Limit” of zero (0) indicates a Reporting Limit was not specified in the agency data.</p> <p>DPR defines the reporting limit as the smallest amount detected following the analytical method that is set at a level high enough to account for matrix effects. Whereas, trace concentrations are the concentrations below the reporting limit where a signal is detected but may not be as reliably quantified. Other agencies use different terminology and standards for their limits.</p>
Restricted material	<p>A pesticide that with certain exceptions may be possessed or used only by or under the supervision of licensed or certified persons, and only in accordance with a permit issued by the CAC.</p>
Senate Bill (SB) 1117	<p>SB 1117 of 2014 amended the Pesticide Contamination Prevention Act (PCPA) to require DPR to regulate each active ingredient, other specified ingredient, or degradation product of a pesticide on the GWPL that is detected as a result of lawful agricultural use. It also revises the information that DPR is required to post on its website to include pesticide degradation products and other specified ingredients.</p> <p>SB 1117 also revises the information included in the GWPL to include not only each active ingredient, but other specified ingredients or degradation product(s) of a pesticide that, when applied, have the potential to pollute groundwater. It also requires DPR’s Director—in consultation with a specified subcommittee of the Director’s Pesticide Registration and Evaluation Committee—to develop a peer-reviewed method to determine pollution potential using specific numerical values.</p>
Section	<p>Section/Township/Range: Public Land Survey System units. A section is a one-square-mile block of land containing 640 acres. A township contains 36 sections. A range is a vertical column of townships.</p>
Specific numerical values (SNV)	<p>Certain numeric threshold values that the PCPA requires to be established for the following physical and chemical properties of pesticide active ingredients: water solubility, soil adsorption coefficient, hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation (the field dissipation SNV has not been established). The PCPA associates these properties with the longevity and mobility of a pesticide in the soil and requires the establishment of SNVs in regulation as a means of predicting which pesticides are likely to pollute groundwater.</p>

GLOSSARY

<b>TERM</b>	<b>DEFINITION</b>
Township	<p>When used in the context of mapping locations, a township is a public land surveying unit that is a square parcel of land, six miles on each side. The location of a township is established as being so many six-mile units east or west of a north-south line running through an initial point (called the “principal meridian”) and so many six-mile units north or south of an east-west line running through another point (called the “baseline”).</p> <p>A township normally contains 36 sections.</p>
Well Inventory Database	<p>A statewide database, required by the PCPA and maintained by DPR, of wells sampled for pesticides and pesticide degradates.</p>