

# APPENDIX A

## EXAMPLES OF CHECKLISTS

## Checklist "A"

### Applicability of Process Memorandum 97-005 for a Contaminated Source

- Does the contamination source meet the definition of an Extremely Impaired Source?
- Contains a contaminant that exceeds 10 times its [ ] Maximum Contaminant Level (MCL) or [ ] Notification Level (NL) based on chronic health effects. **Chronic health effects are based on long-term exposure to a contaminant. Examples include Volatile Organic Compounds (VOCs) such as PCE and TCE, and Inorganic Chemicals such as arsenic.**
- Contains a contaminant that exceeds 3 times its [ ] MCL or [ ] NL based on acute health effects. **Acute health effects are associated with the instantaneous exposure to a contaminant. Examples include Nitrate-Nitrogen and Perchlorate.**
- Contains one or more contaminants that meet any one of the criteria of the four points above and the source has not been adequately characterized by responsible parties.
- Is a surface water source, which requires more than 4 log Giardia/5 log virus reduction.
- Is a surface water source that on an annual average contains more than five percent treated waste water, unless it is associated with an approved drinking water-related surface augmentation project.
- Is extremely threatened with contamination due to known contaminating activities within the long-term, steady-state capture zone of a drinking water well or within the watershed of a surface water intake.
- Contains a mixture of contaminants of health concern beyond what is typically seen in terms of number and concentration of contaminants.
- Is designed to intercept known contaminants of health concerns.

**Note: If the PWS checks any of the boxes above, it is strongly encouraged to contact its DDW representatives before proceeding with planned treatment.**

## Checklist "B"

### Preliminary Data Submitted to DDW for a Potential Extremely Impaired Source

- Description of the Source
  - Location
  - Well Control Zone
  - Local Hydrogeology
  - Preliminary Design Report for Well
  
- Copy of Drinking Water Source Assessment Plan
- Excel file of groundwater quality in the vicinity of the well to be treated over prior 10 years.
- Summary of Process Memo 97-005 applicability (or not).

## Checklist "C"

### Development of Process Memo 97-005 Documentation

- Initial Meeting with DDW to discuss expectations.
- Provisions of Process Memo 97-005
- Timeline
  
- DDW staff expectations
  - Timeline
  - Submittal Process (Section-by-section)
  - DDW staff review
  
- Ancillary Documents/Tasks
  - CEQA
  - OMMP
  - Start-up Test Plan
  - Treated Water Discharge Permits
  - MS4 Permit
  - Amended Water Supply Permit Application
  - Conceptual and final Design drawing and Specifications

## Checklist "D"

### Components of Process memo 97-005

(with References to Applicable Section of Process Memo 97-005)

- Five Primary Components
  - Drinking Water Source Assessment (D.1.a) and Contaminant Assessment (D1.b)
  - Full Characterization of Raw Water Quality (D.2)
  - Drinking Water Source Protection (D.3)
  - Effective Treatment and Monitoring (D.4)
  - Evaluation of Human Health Risks Associated with the \_\_\_\_\_
  
- Six Secondary Components
  - CEQA
  - Amended Water Supply Permit Application
  - Public Hearing
  - DDW Evaluation
  - Requirements of DDW Approval
  - Issuance or Denial of Permit
  
- Ancillary Documents
  - Preparation of Operating, Maintenance, and Monitoring Plan
  - Treated Water Discharge Permit(s)
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# APPENDIX B

EXAMPLE OF POTENTIAL PLATES, TABLES,  
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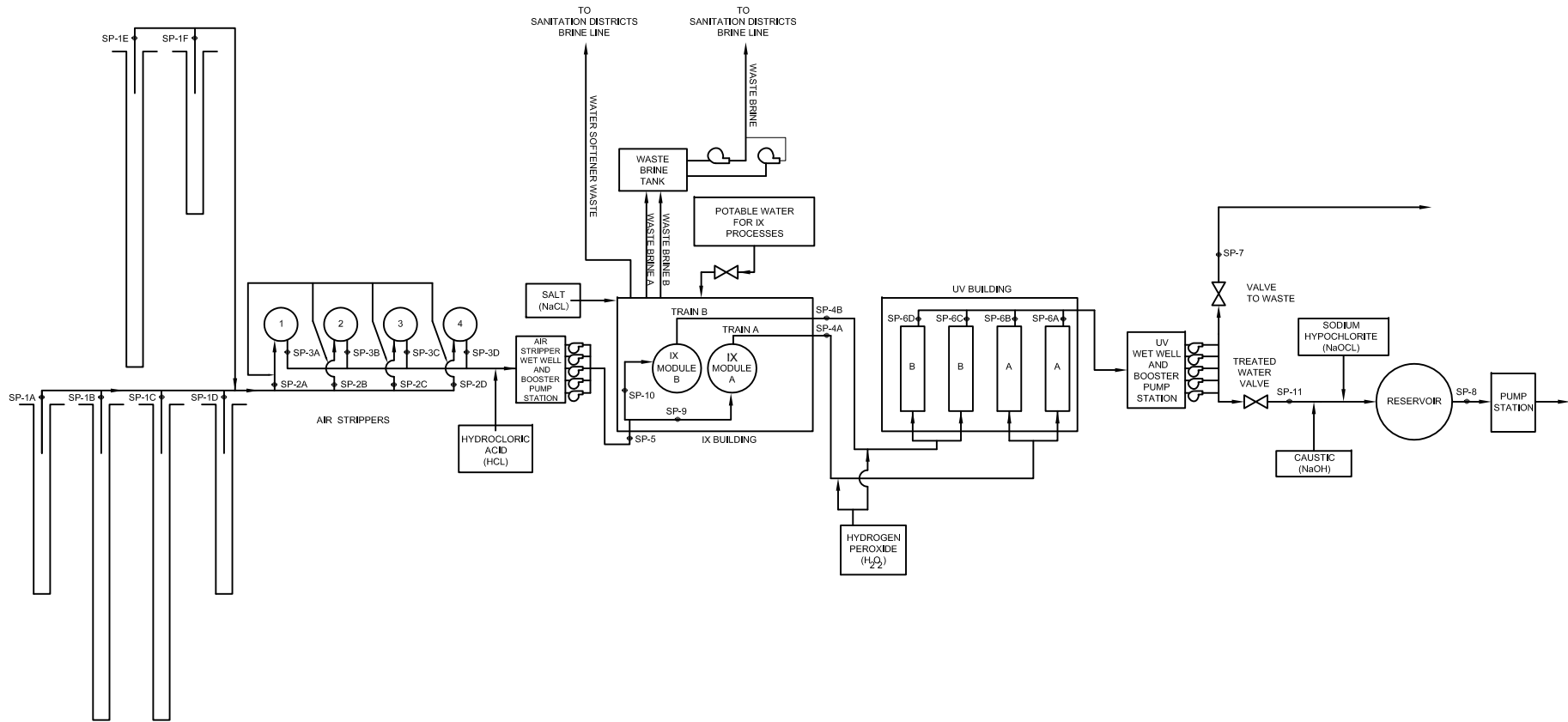
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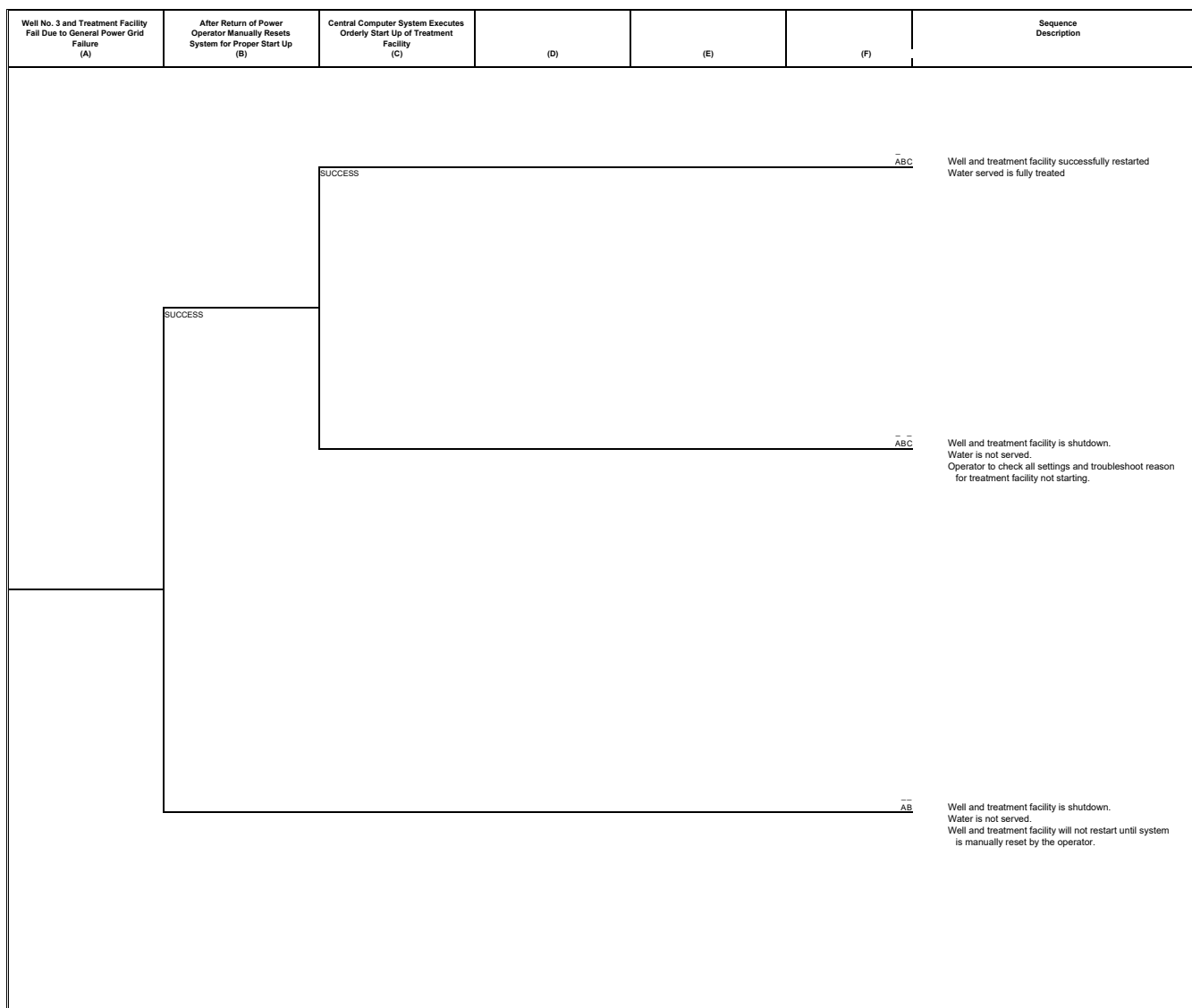
## TYPICAL PROCESS DIAGRAM



# APPENDIX D

## TYPICAL FAULT TREE EXAMPLE

**Plate 1  
Event Tree For General Power Failure**



# APPENDIX E

## HEALTH RISK ASSESSMENT TABULATION

**EXAMPLE ONLY**  
**(ALL INFORMATION TO BE VERIFIED)**

CONTAMINANT	REGULATIONS		CANCER RISK PHG (ug/l)	NON-CANCER RISK		CONCENTRATION OF WATER a (ug/l)	CANCER RISK (1x10 <sup>-6</sup> ) b	NON-CANCER HAZARD INDEX c
	MCL (ug/l)	NL (ug/l)		PHG (ug/l)	TARGET ORGAN			
<b>VOLATILE ORGANIC COMPOUNDS</b>								
TRICHLOROETHYLENE (TCE) d	5	NA	0.8	1000 *	KIDNEY	28.54	0.002793	0.028540
TETRACHLOROETHYLENE (PCE) e	5	NA	0.06	11	NERVOUS SYSTEM	1.77	0.002309	0.160909
CARBON TETRACHLORIDE (CTC) f	0.5	NA	0.1	5	LIVER	2.48	0.001941	0.496000
1,1 - DICHLOROETHYLENE (1,1-DCE) g	6	NA	NA	10	LIVER	ND	NA	0.000000
1,2 - DICHLOROETHANE (1,2 -DCA) h	0.5	NA	0.4	480	KIDNEY	2.1	0.000411	0.004375
cis-1,2 - DICHLOROETHYLENE (c-1,2-DCE) i	6	NA	NA	100 *	LIVER	0.28	NA	0.002800
DICHLORODIFLUOROMETHANE (FREON-12) j	NA	1000	NA	390 *	BODY WEIGHT	1.28	NA	0.003282
TRICHLOROMETHANE (CHLOROFORM) k	80	NA	1	70 *	LIVER	1.49	0.000117	0.021286
<b>INORGANIC CHEMICALS</b>								
BARIUM l	1000	NA	NA	2000 *	HEART	160	NA	0.080000
NITRATE (AS NO3) m	45000	NA	NA	45000	BLOOD	44,000	NA	0.977778
<b>CONTAMINANTS OF CONCERN</b>								
N-NITROSODIMETHYLAMINE n	NA	0.01	0.01	NA	LIVER	0.330	0.002583	NE
PERCHLORATE o	NA	6	NA	6 *	THYROID	48	NA	8.000000
1,4 - DIOXANE p	NA	3	3	NA	LIVER/KIDNEY	0.9	0.000023	NE

<b>TOTAL RISK OR HAZARD INDEX</b>	0.010177	9.774970
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**NOTES**

- NL : NOTIFICATION LEVEL IN UG/L
- NA : NOT APPLICABLE
- NE : NOT EVALUATED
- MCL : MAXIMUM CONTAMINANT LEVEL IN MICROGRAMS PER LITER (UG/L)
- PHG : PUBLIC HEALTH GOAL IN UG/L
- \* : PHG EQUIVALENT

NON-CANCER HAZARD INDEX BY TARGET ORGAN	
Blood	0.977778
Heart	0.080000
Body Weight	0.003282
Nervous System	0.160909
Kidney	0.032919
Liver	0.520086
Thyroid	8.000000
<b>TOTAL</b>	<b>9.774970</b>

- a RECENT CONCENTRATION IN WATER IN UG/L.
- b CANCER RISK IS CALCULATED FOR A PROJECT LIFE OF 20 YEARS, EVENTS OCCUR FOR 24 HOURS, ONCE EVERY 10 YEARS  
CANCER RISK = (CONCENTRATION/CANCER RISK PHG)\*(1 DAY/10 YEARS\*20 YEARS)/(365 DAYS/YEAR\*70 YEARS)
- c HAZARD INDEX = CONCENTRATION/NON-CANCER RISK PHG
- d CANCER AND NON-CANCER PHGS FROM "PUBLIC HEALTH GOAL FOR TRICHLOROETHYLENE IN DRINKING WATER" OEHHA FEBRUARY 1999
- e CANCER AND NON-CANCER PHGS FROM "PUBLIC HEALTH GOAL FOR TETRACHLOROETHYLENE IN DRINKING WATER" OEHHA AUGUST 2001
- f CANCER AND NON-CANCER PHGS FROM "PUBLIC HEALTH GOALS FOR CHEMICALS IN DRINKING WATER, CARBON TETRACHLORIDE" OEHHA SEPTEMBER 2000
- g NON-CANCER PHG FROM "PUBLIC HEALTH GOAL FOR 1,1 - DICHLOROETHYLENE IN DRINKING WATER" OEHHA FEBRUARY 1999
- h CANCER AND NON-CANCER PHGS FROM "PUBLIC HEALTH GOAL FOR 1,2-DICHLOROETHANE IN DRINKING WATER" OEHHA FEBRUARY 1999
- i NON-CANCER PHG FROM "DRAFT PUBLIC HEALTH GOAL FOR CIS- AND TRANS-1,2-DICHLOROETHYLENE IN DRINKING WATER" OEHHA MAY 2004
- j NON-CANCER PHG FROM USEPA REGION 9 PRELIMINARY REMEDIATION GOAL (PRG) LIST, LAST UPDATED OCTOBER 2004. TARGET ORGAN FROM EPA IRIS DOCUMENT FOR DICHLORODIFLUOROMETHANE, LAST UPDATE 11/01/1995
- k CANCER PHG FROM OEHHA PROP 65 NO SIGNIFICANT RISK VALUE, ADJUSTED TO A 106 RISK, NON CANCER PHG AND TARGET ORGAN FROM "TOXICOLOGICAL REVIEW OF CHLOROFORM" IRIS OCTOBER 2001
- l NON-CANCER PHG FROM "PUBLIC HEALTH GOAL FOR BARIUM IN DRINKING WATER" OEHHA SEPTEMBER 2003
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**FOR THE**

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## Appendix G

### Extremely Impaired Sources Producing Potable Drinking Water

#### SWRCB-DDW permits issued

Site Name	Water System Name	Water System Number	Permit Number	Permit Date	City Served	County
San Fernando Valley Area 2 (GOU)	City of Glendale	1910043	04-15-00PA-000	7/1/2000	Glendale	Los Angeles
San Gabriel Valley Area 1 (EMOU)	City of El Monte	1910038	04-16-99PA-000	7/7/1999	Portion of El Monte	Los Angeles
			1910038PA-001	6/10/2003		
			1910038PA-002	2/26/2016		
			1910038PA-004	1/25/2019		
San Gabriel Valley Area 1 (SEMOU)	Golden State Water Company - South San Gabriel	1910223	04-07-01PA-000	10/24/2001	parts of Rosemead and San Gabriel	Los Angeles
	Monterey Park	1910092	1910092PA-006	8/18/2006	Monterey Park	Los Angeles
	San Gabriel Valley Water Company (Plant 8)	1910039	1910039PA-001 1910039PA-006	7/18/2002 9/29/2006	A portion of the cities of West Covina, La Puente, Industry, Irwindale, Baldwin Park, Arcadia, El Monte, Rosemead, South El Monte, San Gabriel, Monterey Park, Montebello, Santa Fe Springs, Pico Rivera and Whittier, and the nearby unincorporated Los Angeles County areas	Los Angeles
San Gabriel Valley Area 2 (BPOU)	Valley County Water District	1910009	1910009PA-003	11/7/2005	Water from Lante treatment plant is mainly wholesaled to Suburban Water Systems - San Jose. Population served is based on the Suburban system.	Los Angeles
	San Gabriel Valley Water Company (B6 Plant)	1910039	1910039PA-002 1910039PA-004 1910039PA-013 1910039PA-015	6/13/2005 2/17/2006 8/25/2014 5/8/2018	A portion of the cities of West Covina, La Puente, Industry, Irwindale, Baldwin Park, Arcadia, El Monte, Rosemead, South El Monte, San Gabriel, Monterey Park, Montebello, Santa Fe Springs, Pico Rivera and Whittier, and the nearby unincorporated Los Angeles County areas	Los Angeles
	San Gabriel Valley Water Company (B5 Plant)	1910039	1910039PA-008 1910039PA-009	4/21/2008 6/30/2009	A portion of the cities of West Covina, La Puente, Industry, Irwindale, Baldwin Park, Arcadia, El Monte, Rosemead, South El Monte, San Gabriel, Monterey Park, Montebello, Santa Fe Springs, Pico Rivera and Whittier, and the nearby unincorporated Los Angeles County areas	Los Angeles
	La Puente Valley County Water District	1910060	04-16-01PA-000 04-16-02PA-000 1910060PA-001 1910060PA-002	2/15/2001 5/8/2002 12/19/2008 6/15/2010	Portion of La Puente	Los Angeles



## Appendix G

### Extremely Impaired Sources Producing Potable Drinking Water

#### SWRCB-DDW permits issued

Site Name	Water System Name	Water System Number	Permit Number	Permit Date	City Served	County
Wittaker Bermite	Santa Clarita Valley Water Agency -Imported Division (SPTF)	1910048	1910048PA-002	12/30/2010	A Regional whole saler serving the following water systems in the Santa Clarita Valley: Los Angeles County Water Works District #36 (LACWWD #36), , SCVWA-Santa Clarita Division, SCVWA- Valencia Division, SCVWA-Castaic Division, SCVWA-Pinetree Division, SCVWA-Newhall Division, and the SCVWA-Tesoro Division. The service area of LACWWD 36 includes Hasley Canyon and the community of Val Verde. The SCVWA-Castaic Division, SCVWA-Pinetree Division, SCVWA-Newhall Division, and SCVWA-Tesoro Division serve the communities of Castaic, Pinetree, Newhall and the Tesoro Del Valle Development, respectively. The SCVWA-Santa Clarita Division's service area includes the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Saugus, Canyon Country, and Newhall. The SCVWA-Valencia Division serves the communities of Valencia, Stevenson Ranch, and portions of Saugus and Castaic.	Los Angeles
Alhambra OU	City of Alhambra	1910001	1910001PA-003	6/22/2009	Alhambra	Los Angeles
Whittier OU	City of Whittier	1910173	1910173PA-002	9/5/2003	Whittier	Los Angeles
Jet Propulsion Lab	City of Pasadena	1910124	1910124PA-003	3/17/2011	Pasadena	Los Angeles
	Lincoln Avenue Water Company	1910063	04-16-02P-003	10/30/2002	Pasadena and unincorporated Los Angeles County Altadena area	Los Angeles
			1910063PA-001	7/26/2004		
			1910063PA-003	6/28/2017		
Santa Monica OU	City of Santa Monica	1910146	1910146PA-003	2/27/2014	City of Santa Monica	Los Angeles
			1910146PA-004	8/22/2018		
Rockets, Fireworks, Flares	West Valley WD (fluidized bed reactor)	3610004	05-13-16PA-010	5/17/2016	Rialto	San Bernardino
	West Valley WD (fixed bed reactor)	3610004	05-13-19PA-006	5/6/2019	Rialto	San Bernardino
San Bernardino County Mid-Valley Sanitary Landfill	Rialto, City of (Rialto 3)	3610038	05-13-06PA-005	5/6/2006	Rialto	San Bernardino
	Loma Linda, City of	3610013	05-13-10PA-018	8/25/2010	Loma Linda	San Bernardino

## Appendix G

### Extremely Impaired Sources Producing Potable Drinking Water

#### SWRCB-DDW permits issued

Site Name	Water System Name	Water System Number	Permit Number	Permit Date	City Served	County
Crafton Redlands Plume	Riverside, City of (Sunnyside)	3310031	05-20-10PA-059	12/29/2010	Riverside	Riverside
	Riverside, City of (Tippecanoe)	3310031	05-20-08PA-017	5/1/2008	Riverside	Riverside
	Riverside, City of (Gage Well 46 1R))	3310031	05-20-08PA-012	2/29/2008	Riverside	Riverside
Norton AFB	Riverside, City of (Raub)	3310031	05-20-06PA-027	6/7/2006	Riverside	Riverside
Newmark Groundwater Contamination	San Bernardino, City of (Newmark)	3610019	03-13-99P-002	12/30/1999	San Bernardino	San Bernardino
	San Bernardino, City of (Waterman GAC)	3610019	03-13-99P-002	12/30/1999	San Bernardino	San Bernardino
	San Bernardino, City of (Waterman PTA)	3610019	03-13-99P-002	12/30/1999	San Bernardino	San Bernardino
	San Bernardino, City of (19th Street)	3610019	03-13-99P-002-PA4	11/4/2004	San Bernardino	San Bernardino
Chino GW Basin (No OU identified)	Chino Desalter Authority (Chino 1 Desalter)	3610075	03-13-02P-001	6/4/2002	Chino, Chino Hills, Ontario, Jurupa Valley	Riverside, San Bernardino
South Archibald Plume	Chino Desalter Authority (Chino 2 Desalter)	3310083	Pending	Pending	Ontario, Jurupa Valley, Norco	Riverside, San Bernardino

# APPENDIX H

## BACKGROUND INFORMATION FOR DIVISION OF DRINKING WATER METRICS

Summary of  
State Water Resources Control Board  
Division of Drinking Water (DDW)  
Action Levels

**Maximum contaminant levels (MCLs)**<sup>1</sup> are adopted by the State as regulations. They are health-protective drinking water standards to be met by public water systems. State MCLs must be at least as stringent as federal MCLs and as close as technically and economically feasible to public health goals (PHGs; see below). MCLs take into account not only chemicals' health risks but also factors such as their detectability, treatability, and cost of treatment. MCLs are adopted in a public process with public review and comment. Along with the MCL, a regulated chemical also has a detection limit for purposes of reporting (DLR), which is the level at which we are confident about the concentration reported by a laboratory. DDW conducts an MCL review process at least every five years and includes the following steps:

1. Initial screening
  - a. Compare the PHG to existing federal and state MCLs;
  - b. Evaluate changes in treatment technology(ies); and
  - c. Evaluate changes in risks to human health.
  - d. Evaluate the occurrence of the regulated contaminant in public water supplies.
2. Base available analytical data on the DLR values for consistency.

<sup>1</sup> [https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/MCLReview.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLReview.html) and [https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/MCLsandPHGs.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html)

Following this process, MCL values can either decrease or increase in response to changes in PHG values or other factors. Importantly, however, an MCL for a regulated contaminant cannot be established until a PHG has been determined by OEHHA.

**Public Health Goals (PHGs)**<sup>2</sup> are established by OEHHA as 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. PHGs are used by the PWS to inform customers of water quality in annual Consumer Confidence Reports. OEHHA does not consider economic or technological feasibility when establishing PHGs, and PHGs are not regulatory standards.

**Notification Levels (NLs)**<sup>3 4</sup> are health-based advisory levels that are established by DDW for chemicals that do not have MCLs. NLs are calculated using standard risk assessment methods by OEHHA for non-cancer and cancer endpoints, and NLs do not consider the capabilities of available treatment technologies, analytical capabilities, or cost of compliance. For non-carcinogens, the NL is derived from the no observable adverse effect level (NOAEL), adjusted by appropriate uncertainty factors to scale from laboratory animal studies to human exposures, and other considerations used in standard human health risk assessments. For carcinogens, the NL is considered to pose “*de minimis*” risk (i.e., a theoretical lifetime risk of up to one excess case of cancer in a population of 1,000,000 people – the  $10^{-6}$  risk level). NLs may either remain in place indefinitely or be replaced with an MCL. For example, of the 93 chemicals for which an NL has been established, 40 are now associated with an MCL – of the remaining 53

<sup>2</sup> <https://oehha.ca.gov/water/public-health-goals-phgs>

<sup>3</sup> <https://oehha.ca.gov/water/notification-levels-chemicals-drinking-water>

<sup>4</sup> [https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/documents/notificationlevels/notification\\_levels\\_response\\_levels\\_overview.pdf](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/notificationlevels/notification_levels_response_levels_overview.pdf)

chemicals, 29 have current NLs and 24 are associated with archived action levels. Once an MCL has been adopted, the NL is no longer used.

**Response Levels (RLs)**<sup>5</sup> are established by DDW for certain chemicals as the concentration that would require a source to be taken out of service. The RL is equal to a  $10^{-4}$  risk level for contaminants considered to pose a carcinogenic risk, and 10 times the NL for non-carcinogens.

**USEPA Health Advisory Levels**<sup>6</sup> are non-enforceable and non-regulatory levels that provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. HA values are provided for certain contaminants based on non-cancer health effects and are a function of the duration of exposure (e.g., one-day, ten-day, lifetime). The Lifetime HA is the concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime of exposure, calculated using the oral Reference Dose and incorporating a drinking water Relative Source Contribution factor of contaminant-specific data or a default of 20 percent of total exposure from all sources.

<sup>5</sup>[https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/documents/notificationlevels/notification\\_levels\\_response\\_levels\\_overview.pdf](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/notificationlevels/notification_levels_response_levels_overview.pdf)

<sup>6</sup><https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information>