

Environmental Surveillance Report

on the
U.S. Department of Energy

Rocky Flats Environmental Technology Site

Information Exchange

FIRST QUARTER 2002



**Colorado Department
of Public Health
and Environment**

This is a numerical summary of environmental surveillance measurements performed by the Department during the past quarter. Also included are additional data for earlier periods that have not been reported previously.

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Introduction

The purpose of this Environmental Surveillance Report (ESR) is to provide a quarterly update on Colorado Department of Public Health and Environment (CDPHE) air and surface water monitoring data at the Rocky Flats Environmental Technology Site (RFETS).

CDPHE currently has three Divisions that conduct monitoring at RFETS including the Air Pollution Control Division (APCD), the Hazardous Materials Waste Management Division, and the Laboratory and Radiation Services Division (LARS). APCD monitors air for contaminants such as particulates, oxides of nitrogen, ozone, volatile organic compounds (VOCs), radionuclides beryllium. The Hazardous Materials Waste Management Division conducts surface water monitoring for many parameters, including metals, inorganics and radionuclides. The Radiation Control Division performs radiological monitoring in air, and precipitation.

Under normal conditions, groundwater and soils are not monitored by Colorado Department of Public Health and Environment (CDPHE), but are monitored by DOE.

Sampling and data analysis is performed by CDPHE according to the Rocky Flats Integrated Monitoring Plan (IMP), which describes not only the monitoring done by CDPHE, but also that done by the Site and surrounding communities. It is possible that CDPHE may do some additional sampling as part of a special study or for some unusual circumstances. This report describes the results of both types of CDPHE monitoring.

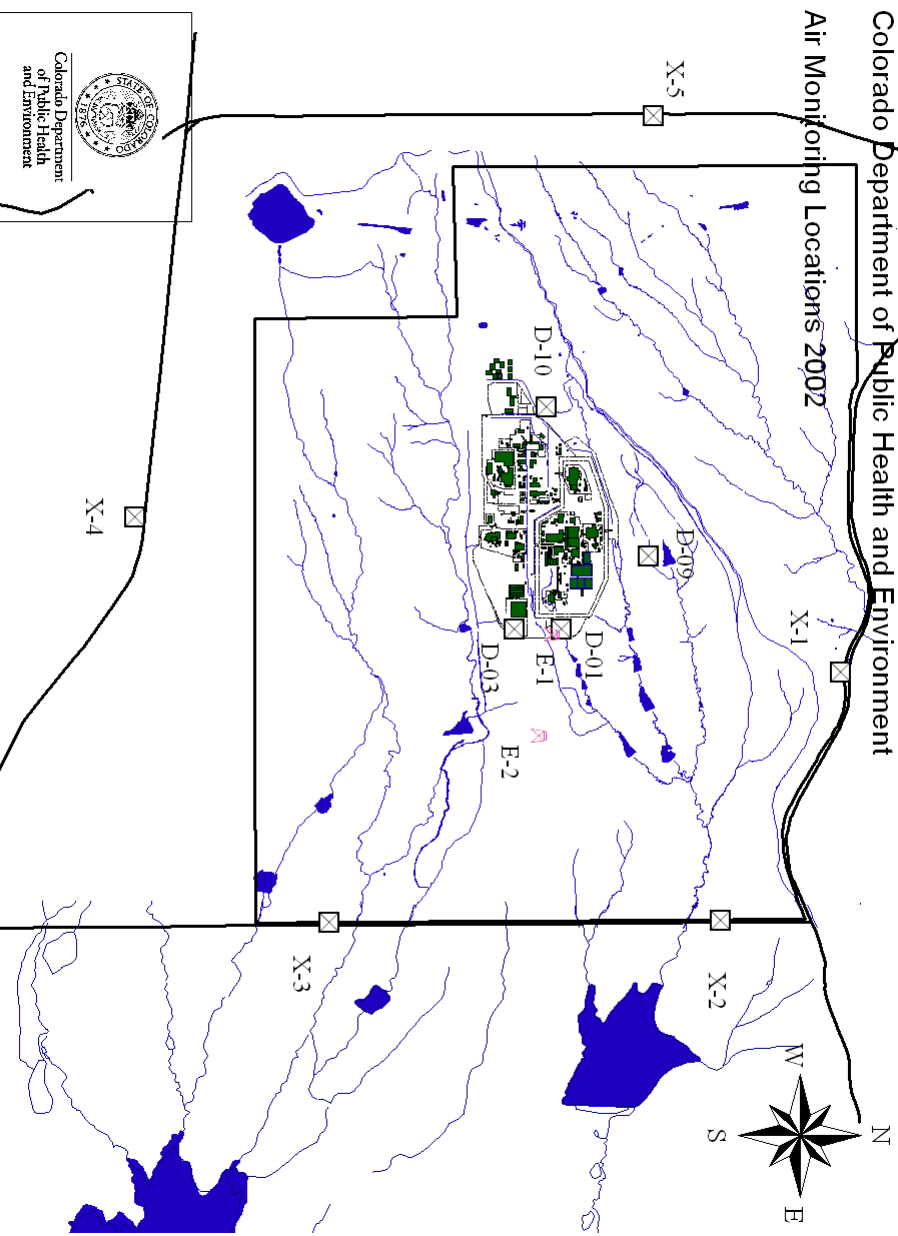
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MONITORING STATIONS

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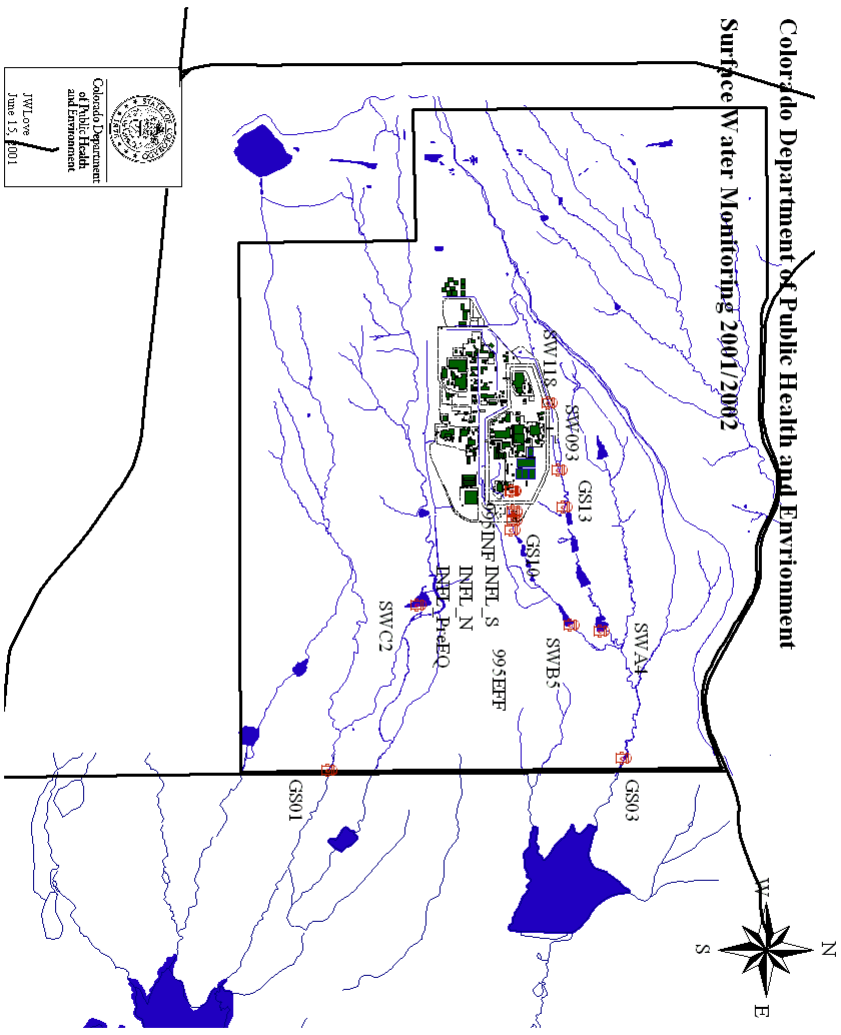
Colorado Department of Public Health and Environment

Air Monitoring Locations 2002



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Colorado Department of Public Health and Environment
Surface Water Monitoring 2001/2002



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DECISION RULES

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Decision Rules

The data acquired for each quarter is examined using standard methods of evaluation that are described in the Integrated Monitoring Plan (IMP). The methods use a series of decision rules to effectively analyze the data that has been collected, and make determinations about what actions need to be taken.

Decision rules are if-then statements pertaining to data quality objectives. The decision rules define, quantitatively and qualitatively, the point at which a decision should be made or action should be taken.

The decisions could involve many different actions including, but not limited to, further analysis of data, implementation of new monitoring stations for source detection, management decisions, or evaluation of remediation alternatives. Any exceedence of an action level for a surface water or air contaminant during the quarter are summarized in this report, along with any actions taken or follow up investigations that are required.

The primary decision rules that pertain to each media are outlined below:

A. Air Monitoring

1. Ambient Air Quality Monitoring: Nitrogen Dioxide (NO₂), Ozone (O₃) and particulate monitoring is performed by APCD. Particulate monitoring includes monitoring of both fine particulates (PM₁₀) and total suspended solids (TSP).

IF: A perimeter monitor detects an NO₂ (annual arithmetic mean) concentration of 0.053 parts per million (ppm), an O₃ (1 hr av. time) concentration of 0.12 ppm, a TSP measurement of 75 micrograms per cubic meter (µg/m³) averaged over a 1 year time period or 150 µg/m³ over a 24-hour time period, or a PM₁₀ concentration of 50 µg/m³ annually or 150 µg/m³ in a 24-hour period (Include these values in a table in the report, too confusing this way)

THEN: The Site's operating permit may potentially be revised to mitigate the exceedence.

2. Beryllium (Be) Monitoring: Emission points (stacks) are monitored for Be.

IF: Be emissions from a source exceed 10 g in a 24-hour period

THEN: CDPHE may take enforcement action.

IF: Ambient Be concentrations at monitoring sites exceed 0.01 µg/m³ over a 30-day Period

THEN: CDPHE may take action to identify the source.

3. Volatile Organic Compound (VOCs) Monitoring: Various VOC monitoring stations exist around the perimeter of the site and are maintained by APCD. It is possible that remediation processes could release significant levels of VOCs. VOC data does not tend to vary and the measured concentrations are generally very low. A significant increase from normal levels of any VOC at any monitoring site could indicate a potential problem.

IF: A measured value of any VOC exceeds trends in historical data

THEN: An investigation will be enacted to determine the source of the elevated VOC concentration.

4. Radiological Ambient Air Quality Monitoring: LARS and APCD air sampling locations are monitored for radiological contaminants, PM₁₀ and total suspended particulates (TSP).

IF: Measured values of radionuclides exceed typical trends existing in historical data

THEN: Any number of actions may be taken including, but not limited to, analysis of samples for verification, comparison of samples from nearest DOE monitoring sites, ComRad Program samplers, and/or APCD monitoring sites, request for investigation or explanation of elevated results from DOE, calculation of public dose/risk and/or a presentation to CDPHE management.

B. Surface Water Monitoring

1. Source Location: Current surface water monitoring sites monitor for Analytes of Interest (AoIs) and indicator parameters for AoIs. Contaminant levels that exceed historical trends at a certain site could indicate the presence of a new contaminant source. When a new contaminant source is identified by a current monitoring location, it may be necessary to implement additional monitoring sites to identify the exact location of the new source.

IF: A new contaminant source is identified by any monitoring station

THEN: Action should be taken to locate and quantify the source. Mitigation action will be taken pursuant to the Rocky Flats Cleanup Agreement (RFCA) Action Level Framework (ALF).

2. Wastewater Treatment Plant (WWTP) Influent Radiological Monitoring: The Site has made an effort to eliminate any possible connections between waste streams containing radionuclides and WWTP influent. Therefore, it is assumed that radiologic loads will not significantly increase from baseline values. Radiologic parameters include total plutonium, total americium, total uranium, tritium, as well as alpha and beta activity. Decontamination and decommissioning (D&D) activities could potentially introduce radiologic loads to WWTP influent. The influent is monitored to track sources of contaminants that may be introduced during the cleanup process.

IF: Influent loading for any of the radiologic parameters exceeds baseline

values determined from historical data

THEN: Evaluation will be performed to determine the source of contamination.

3. Pond Predischarge Monitoring: AoIs and some VOCs are monitored in the ponds previous to pond discharge so that discharge will not result in exceedence of stream standards.

IF: Predischarge monitoring shows exceedence of stream standards

THEN: CDPHE will notify the Site. At this point the Site may evaluate alternative options which avoid immediate discharge including, but not limited to, treatment, storage or disposal.

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ANALYTES OF INTEREST

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| Analytes of Interest | | | | |
|-----------------------------|------------------------------|------------|--------------|---|
| Analytes | | Air | Water | Purpose of Monitoring |
| Radionuclide | Pu | X | X | High level of public concern. Known carcinogen. Known past releases (within the past 8 years) have exceeded RFCA stream standards and action levels. This provides reasonable cause to expect future releases in excess of RFCA Action Levels. |
| | U | X | X | Known renal toxicity. Past exceedances provide reasonable cause to expect future releases in excess of RFCA stream standards and action levels. |
| | Am | X | X | Known carcinogen. Known past exceedances provide reasonable cause to expect future releases in excess of RFCA stream standards and action levels. |
| | Tritium | | X | Is an AOI due to past releases to drinking water supplies |
| Metals | Be | X | X | Known to cause berylliosis in susceptible individuals when exposed in inhalation. May also cause contact dermatitis. Will be monitored as an indicator of releases from process and waste storage areas. |
| | Cr | | X | Physiological and dermal toxicity. High level of regulatory concern due, in part to the chromic acid of incident of 1989. Low levels can cause significant ecological damage. |
| | Ag | | X | Highly toxic to fish at low levels, if chronic. State of Colorado has temporarily removed its stream standard for silver, while under study. The study has been completed, and the standard will be reinstated at the next triennial review of South Platte stream standards, if not before. Used at RFETS only for photographic development. Routinely accepted by POTWs as municipal waste, but discharge is regulated. May be removed from this list later if data do not support concern. |
| | Cd | | X | Highly toxic to fish at low levels, if chronic. Known human carcinogen (prostate cancer) and depletes physiologic calcium. Used at RFETS in plating processes. Monitoring data for the Interceptor Trench System (ITS) and the proposed discharge of untreated ITS waters into Walnut Creek provide reasonable cause to expect future releases in excess of RFCA Action Levels |
| | Hardness | | X | Required to evaluate metals analyses, due to its effect on solubility to these metals. |
| Particulates | Total suspended particulates | X | | Monitored to provide information on total airborne particulate levels. Filters also used for metals and radionuclides analyses. |

| Analytes of Interest | | | | |
|---|-------------------------------|-----|-------|---|
| Analytes | | Air | Water | Purpose of Monitoring |
| | PM ₁₀ particulates | X | | Monitored to provide information on fine airborne particulate levels. Filters also used for metals and radionuclides analyses. |
| Volatile Organic Compounds | VOCs | X | X | A variety of volatile organic compounds, some of which are toxic to humans and ecology. Known discharges to air and water as well as groundwater infiltration. |
| Real Time Monitoring of Physical and Indicator Parameters (Note A) | pH | | X | Toxicity to humans and ecology. Regulatory concern due to chromic acid incident. Real-time monitoring is an inexpensive and effective method of detecting acid spills such as (chromic acid or plutonium nitrate) or failure of treatment systems. |
| | Conductivity | | X | Conductivity is an indicator of total dissolved solids, metals, anions, and pH. Real-time monitoring of conductivity is an inexpensive indicator of overall water quality. |
| | Turbidity | | X | Turbidity is a general indicator of elevated contaminant levels, and may be correlated with Pu. |
| | NO ₃ | | X | Past releases near RFCA stream standards and action levels upstream of ponds provide reasonable cause to expect future releases in excess of RFCA stream standards and action levels. ITS discharges are often high in nitrate, and may challenge RFCA action levels. |
| | Flow | | X | Required to detect flow events, evaluate contaminant loads and plan pond operations and discharges. Affects nearly every decision rule, and is the most commonly discussed attribute of RFETS surface waters. |
| | Oxides of Nitrogen | X | | Monitored due to RFETS historical use of nitric acid. |
| | Ozone | X | | Monitored as part of the CDPHE network. Not required or part of monitoring for RFETS. |
| | Wind speed | X | | Monitored to provide emergency response modeling information. |
| | Wind direction | X | | Monitored to provide emergency response modeling information. |
| | Temperature | X | | Monitored to provide emergency response modeling information. |

Note A: These parameters provide real-time indication for a wide variety of regulated contaminants, and are also required component for monitoring for AoIs. They require no laboratory analysis and are the RFETS most cost effective defensive monitoring.

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AIR STANDARDS

NATIONAL AMBIENT AIR QUALITY STANDARDS

| POLLUTANT | AVERAGING TIME | STANDARD |
|--|--|------------------------|
| Carbon Monoxide (CO) | | |
| Primary Standard | 1 Hour ^(a) | 35 ppm |
| Primary Standard | 8 Hour ^(a) | 9 ppm |
| Ozone (O ₃) | | |
| Primary and Secondary Standards (up to 1997) | 1 Hour ^(b) | 0.12 ppm |
| Primary and Secondary Standards (as of July 1997) | 8 Hour ^(c) | 0.08 ppm |
| Nitrogen Dioxide (NO ₂) | | |
| Primary and Secondary Standards | Annual Arithmetic Mean | 0.053 ppm |
| Sulfur Dioxide (SO ₂) | | |
| Primary Standard | Annual Arithmetic Mean | 0.030 ppm |
| Primary Standard | 24 Hour ^(a) | 0.14 ppm |
| Secondary Standard | 3 Hour ^(a) | 0.5 ppm |
| Particulates (PM ₁₀) | | |
| Primary and Secondary Standards | Annual Arithmetic Mean ^(d) | 50 µg/m ³ |
| Primary and Secondary Standards | 24 Hour ^(b) prior to July 1997, ^(e) as of July | 150 µg/m ³ |
| Fine Particulates (PM _{2.5}) (as of July 1997) | | |
| Primary and Secondary Standards | Annual Arithmetic Mean ^(d) | 15.0 µg/m ³ |
| Primary and Secondary Standards | 24 Hour ^(f) | 65 µg/m ³ |
| Lead (Pb) | | |
| Primary and Secondary Standards | Calendar Quarter Average | 1.5 µg/m ³ |
| Total Suspended Particulates (TSP) | | |
| Primary Standard | Annual Geometric Mean ^(g) | 75 µg/m ³ |
| Primary Standard | 24 Hour ^(g) | 260 µg/m ³ |
| Secondary Standard | Annual Geometric Mean ^(g) | 60 µg/m ³ |
| Secondary Standard | 24 Hour ^(g) | 150 µg/m ³ |

- (a) Not to be exceeded more than once per year.
- (b) Statistically estimated number of days with concentrations above this level averaged over a three-year period, is not to be more than 1 per year.
- (c) The three-year average of the fourth maximum value for each year is not to exceed this level.
- (d) The average of three years of annual averages (based on quarterly averages) is not to exceed this level.
- (e) The three-year average of the 99th percentile for each year is not to exceed this level.
- (f) The three-year average of the 98th percentile for each year is not to exceed this level.
- (g) The TSP standard was replaced by the PM₁₀ standard on July 1, 1987. TSP is now a State standard only and was temporarily suspended from 30 August 1993 to 30 October 1995 by the AQCC.

WATER STANDARDS

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**Colorado Water Quality Control Commission Standards for
Radioactive Materials at and around RFETS**

| | SEGMENT 2 Standley Lake | SEGMENT 3 Great Western Reservoir | SEGMENTS 4a and 5 Woman Creek | SEGMENTS 4a, 4b and 5 Walnut Creek |
|---------------------|-----------------------------------|--|---|--|
| Gross Alpha (pCi/L) | 6 | 5 | 7 | 11 |
| Gross Beta (pCi/L) | 9 | 12 | 8 | 19 |
| Plutonium (pCi/L) | 0.03 | 0.03 | 0.15* | 0.15 * |
| Americium (pCi/L) | 0.03 | 0.03 | 0.15* | 0.15 * |
| Tritium (pCi/L) | 500 | 500 | 500 | 500 |
| Uranium (pCi/L) | 3 | 4 | 11 | 10 |

* The modification is a narrative standard requiring that the concentration of americium and plutonium be consistent with attaining the numerical water quality standard in Segment 4(b) of Big Dry Creek

Standards for Inorganics and Metals

| Inorganic/Metal | SEGMENTS 4a & 4b Standards (µg/L) | SEGMENT 5 Action Levels (µg/L) |
|---------------------------------|--|---|
| Ammonia | * | * |
| Beryllium, total recoverable | 4 | 4 |
| Cadmium, dissolved ** | 1.5 | 1.5 |
| Cadmium, Total recoverable | 5 | - |
| Chloride | 250,000 | 250,000 |
| Chromium (VI), dissolved** | 11 | 11 |
| Copper, dissolved** | 16 | 16 |
| Iron, dissolved | 300 | - |
| Iron, total recoverable | 1000 | 1000 |
| Manganese, dissolved** | 50 | 1000 |
| Manganese, total recoverable | 200 | - |
| Nitrate | 10,000 | 100,000 TM |
| Nitrite | 500 | 4500 TM |
| Phosphate, ortho | - | - |
| Phosphate, total | - | - |
| Selenium, dissolved** | 5 | 5 |
| Silver, dissolved** | 0.59 | 0.59 |
| Sulfate | 250,000 | 250,000 |
| Sulfide | 2 | 2 |

*There is no unionized ammonia standard for Segment 5 or Segment 4b. A standard of

0.1 mg/L applies to Segment 4a.

**The standards for these metals were calculated using a formula based on hardness. A hardness value of 143 mg/L was used because this is the average hardness found in these waters.

EPA Method 502.2 for VOCs in Surface Waters

| VOCs | MCL (µg/L) | MDL (µg/L) | PQL (µg/L) | VOCs | MCL (µg/L) | MDL (µg/L) | PQL (µg/L) |
|---------------------------|---------------|---------------|---------------|--------------------------|---------------|---------------|---------------|
| 1,1,2-Tetrachloroethane | none | 0.5 | 1 | Chloroform | none | 0.5 | 1 |
| 1,1,1-Trichloroethane | 200 | 0.5 | 1 | Chloromethane | none | 0.5 | 1 |
| 1,1,2,2-Tetrachloroethane | none | 0.5 | 1 | Dibromochloromethane | none | 0.5 | 1 |
| 1,1,2-Trichloroethane | 5 | 0.5 | 1 | Dibromomethane | none | 0.5 | 1 |
| 1,1-Dichloroethane | none | 0.5 | 1 | Dichlorodifluoromethane | none | 0.5 | 1 |
| 1,1-Dichloroethene | 7 | 0.5 | 1 | Dichloromethane | 5 | 0.5 | 1 |
| 1,1-Dichloropropene | none | 0.5 | 1 | Ethylbenzene | 700 | 0.5 | 1 |
| 1,2,3-Trichlorobenzene | none | 0.5 | 1 | Fluorotrichloromethane | none | 0.5 | 1 |
| 1,2,3-Trichloropropane | none | 0.5 | 1 | Hexachlorobutadiene | none | 0.5 | 1 |
| 1,2,4-Trichlorobenzene | 70 | 0.5 | 1 | Isopropylbenzene | none | 0.5 | 1 |
| 1,2,4-Trimethylbenzene | none | 0.5 | 1 | Naphthalene | none | 0.5 | 1 |
| 1,2-Dichlorobenzene | 600 | 0.5 | 1 | Propylbenzene | none | 0.5 | 1 |
| 1,2-Dichloroethane | 5 | 0.5 | 1 | Styrene | 100 | 0.5 | 1 |
| 1,2-Dichloropropane | 5 | 0.5 | 1 | Tetrachloroethene | 5 | 0.5 | 1 |
| 1,3,5-Trimethylbenzene | none | 0.5 | 1 | Toluene | 1000 | 0.5 | 1 |
| 1,3-Dichlorobenzene | none | 0.5 | 1 | Trichloroethene | 5 | 0.5 | 1 |
| 1,3-Dichloropropane | none | 0.5 | 1 | Vinyl chloride | 2 | 0.5 | 1 |
| 1,4-Dichlorobenzene | 75 | 0.5 | 1 | Xylene, (total) | 10,000 | 0.5 | 1 |
| 2,2-Dichloropropane | none | 0.5 | 1 | cis-1,2-Dichloroethene | 70 | 0.5 | 1 |
| 2-Chlorotoluene | none | 0.5 | 1 | cis-1,3-Dichloropropene | none | 0.5 | 1 |
| 4-Chlorotoluene | none | 0.5 | 1 | n-Butylbenzene | none | 0.5 | 1 |
| 4-Isopropyltoluene | none | 0.5 | 1 | sec-Butylbenzene | none | 0.5 | 1 |
| Benzene | 5 | 0.5 | 1 | tert-Butylbenzene | none | 0.5 | 1 |
| Bromobenzene | none | 0.5 | 1 | trans-1,2-Dichloroethene | 100 | 0.5 | 1 |
| Chloroethane | none | 0.5 | 1 | trans-1,3-Dichloroethene | none | 0.5 | 1 |

EPA Method 515.1 for Chlorinated Acid Herbicides

| Contaminant | MDL (µg/L) | PQL (µg/L) | Contaminant | MDL (µg/L) | PQL (µg/L) |
|-------------|---------------|---------------|--------------------------|---------------|---------------|
| Acifluorfen | 0.3 | 3 | 3,5-Dichlorobenzoic acid | 0.8 | 8 |
| Bentazon | 0.4 | 4 | Dichlorprop | 0.3 | 3 |
| Cloramben | 1.2 | 12 | Dinoseb | 0.6 | 6 |
| 2,4-D | 0.3 | 3 | 4-Nitrophenol | 0.8 | 8 |
| Dalapon | 0.7 | 7 | Pentachlorophenol | 0.6 | 6 |
| 2,4-DB | 0.5 | 5 | Picloram | 0.5 | 5 |
| DCPA | 0.4 | 4 | 2,4,5-T | 0.3 | 3 |
| Dicamba | 0.3 | 3 | 2,4,5-TP | 0.3 | 3 |

EPA Method 525.2 for SVOCs in Surface Waters

| SVOCs | MCL (µg/L) | MDL (µg/L) | PQL (µg/L) | SVOCs | MCL (µg/L) | MDL (µg/L) | PQL (µg/L) |
|----------------------------|---------------|---------------|---------------|-----------------------------|---------------|---------------|---------------|
| 1,2,4-Trichlorobenzene | none | 5 | 10 | Benzo(a)anthracene | none | 5 | 10 |
| 1,2-Dichlorobenzene | none | 5 | 10 | Benzo(a)anthracene | 0.2 | 5 | 10 |
| 1,3-Dichlorobenzene | none | 5 | 10 | Benzo(b)fluoranthene | none | 5 | 10 |
| 1,4-Dichlorobenzene | none | 5 | 10 | Benzo(ghi)perylene | none | 5 | 10 |
| 2,4,5-Trichlorophenol | none | 5 | 10 | Benzo(k)fluoranthene | none | 5 | 10 |
| 2,4,6-Trichlorophenol | none | 5 | 10 | Butyl benzyl phthalate | none | 5 | 10 |
| 2,4-Dichlorophenol | none | 5 | 10 | Chrysene | none | 5 | 10 |
| 2,4-Dimethylphenol | none | 5 | 10 | Di-n-butylphthalate | none | 5 | 10 |
| 2,4-Dinitrophenol | none | 25 | 10 | Di-n-octylphthalate | none | 5 | 10 |
| 2,4-Dinitroroluene | none | 5 | 10 | Dibenz(a,h)anthracene | none | 5 | 10 |
| 2-Chloronaphthalene | none | 5 | 10 | Dibenzofuran | none | 5 | 10 |
| 2-Methyl-4,6-dinitrophenol | none | 25 | 50 | Diethyl phthalate | none | 5 | 10 |
| 2-Chlorophenol | none | 5 | 10 | Dimethyl phthalate | none | 5 | 10 |
| 2-Methylnaphthalene | none | 5 | 10 | Hexachlorobutadine | none | 5 | 10 |
| 2-Methylphenol | none | 5 | 10 | Hexachlorocyclopentadiene | 50 | 5 | 10 |
| 2-Nitroaniline | none | 5 | 10 | Hexachloroethane | none | 5 | 10 |
| 2-Nitrophenol | none | 5 | 10 | Indeno(1,2,3-cd)pyrene | none | 5 | 10 |
| 3,3-Dichlorobenzidine | none | 5 | 10 | Isophorone | none | 5 | 10 |
| 3-Nitroaniline | none | 25 | 50 | N-Nitosodi-n-propylamine | none | 5 | 10 |
| 4-Bromophenylphenylether | none | 5 | 10 | N-Nitrosodiphenylamine | none | 5 | 10 |
| 4-Chloro-3-methylphenol | none | 10 | 20 | Naphthalene | none | 5 | 10 |
| 4-Chloroaniline | none | 10 | 20 | Nitrobenzene | none | 5 | 10 |
| 4-Chlorophenylphenylether | none | 5 | 10 | Pentachlorophenol | 1 | 25 | 10 |
| 4-Methylphenol | none | 5 | 10 | Phenanthrene | none | 5 | 10 |
| 4-Nitroaniline | none | 25 | 50 | Phenol | none | 5 | 10 |
| 4-Nitrophenol | none | 25 | 50 | Pyrene | none | 5 | 10 |
| Acenaphthene | none | 5 | 10 | bis(2-Chloroethoxy)methane | none | 5 | 10 |
| Acenaphthylene | none | 5 | 10 | bis(2-Chloroethyl) ether | none | 5 | 10 |
| Anthracene | none | 5 | 10 | bis(2-Ethylhexyl) phthalate | 6 | 5 | 10 |

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AIR RESULTS

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**CDPHE AIR MONITORING
FIRST QUARTER 2002**

Laboratory and Radiation Services Division

1. General Discussion

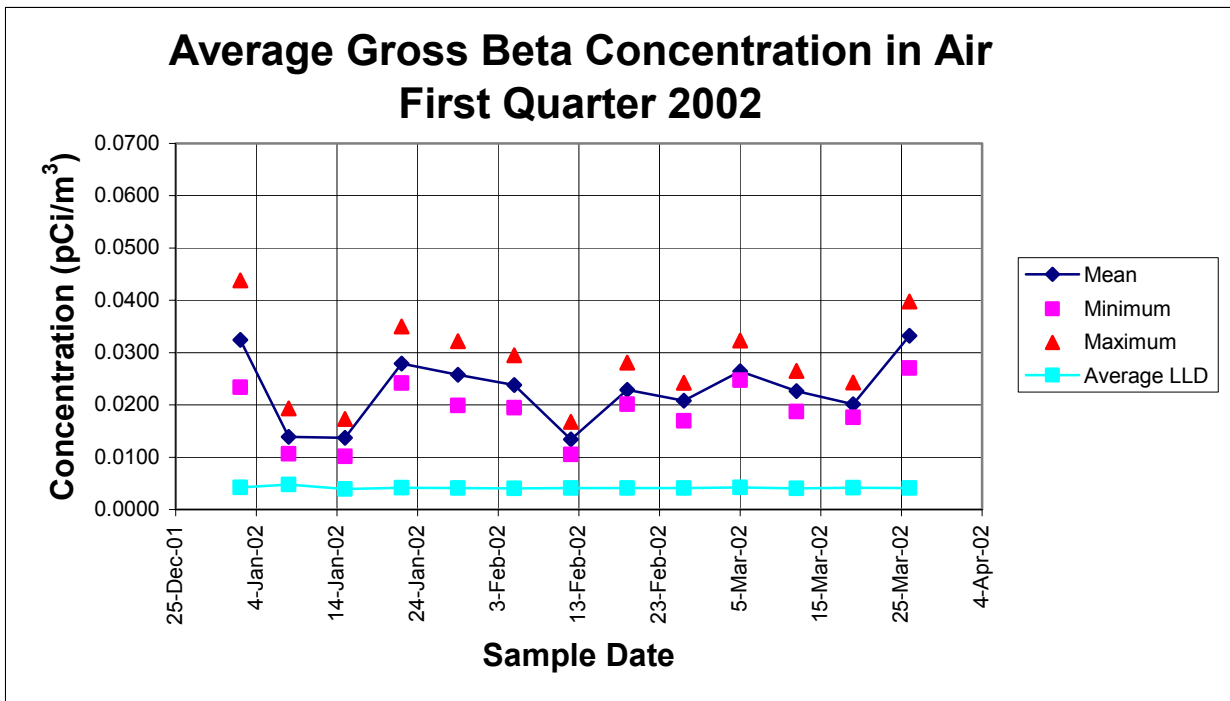
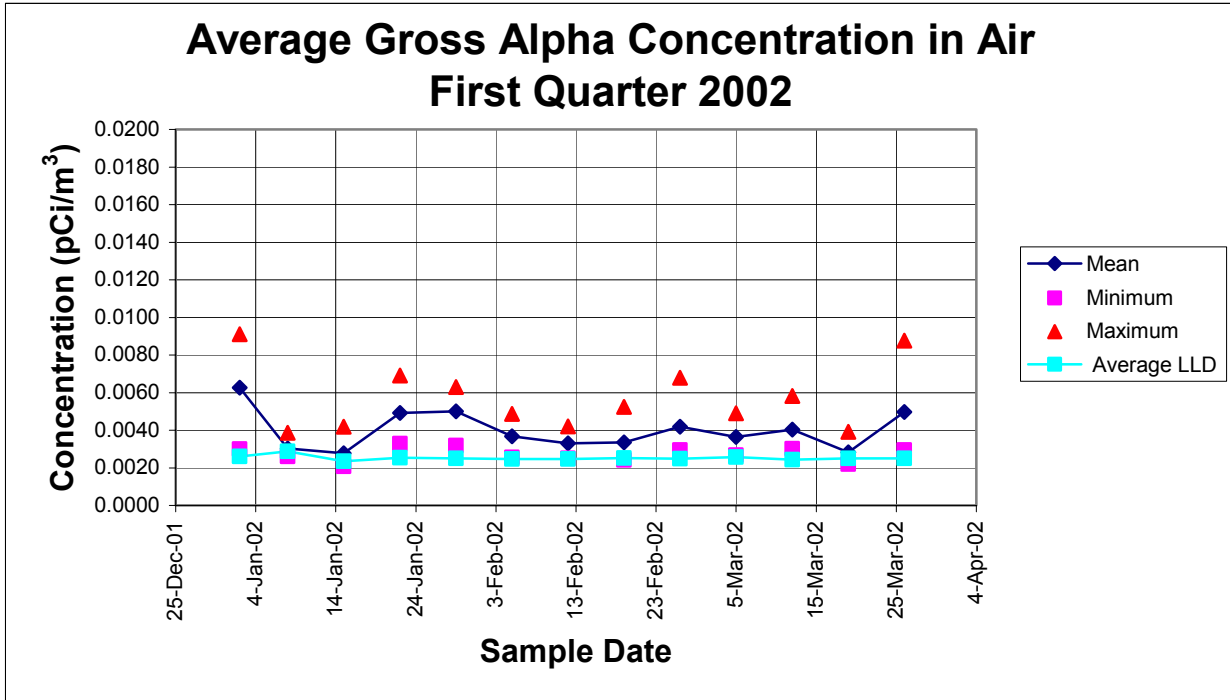
Table A contains the complete gross alpha /gross beta results for the first quarter of 2002. Table B contains complete plutonium, americium and isotopic uranium results for the third and fourth quarters of 2001. Isotopic uranium was added to the list of analytes for air filters beginning in July of 2001. All of these data show no obvious anomalies, compared to historical data.

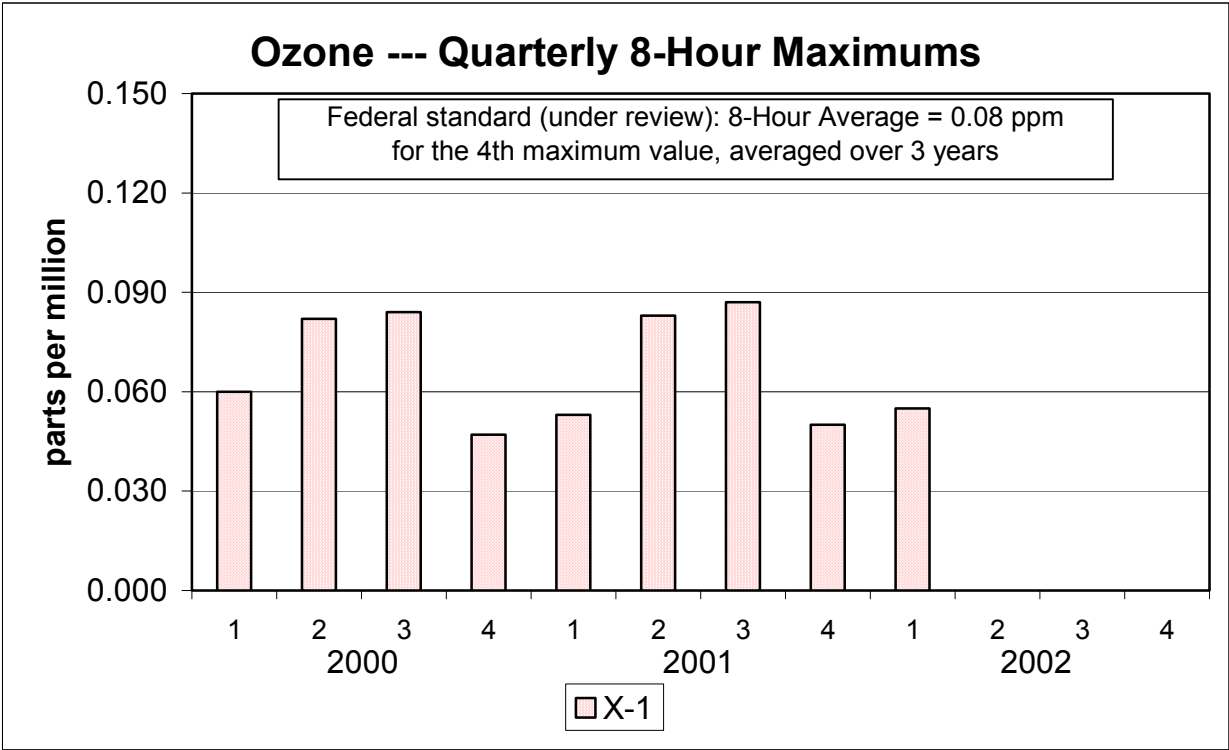
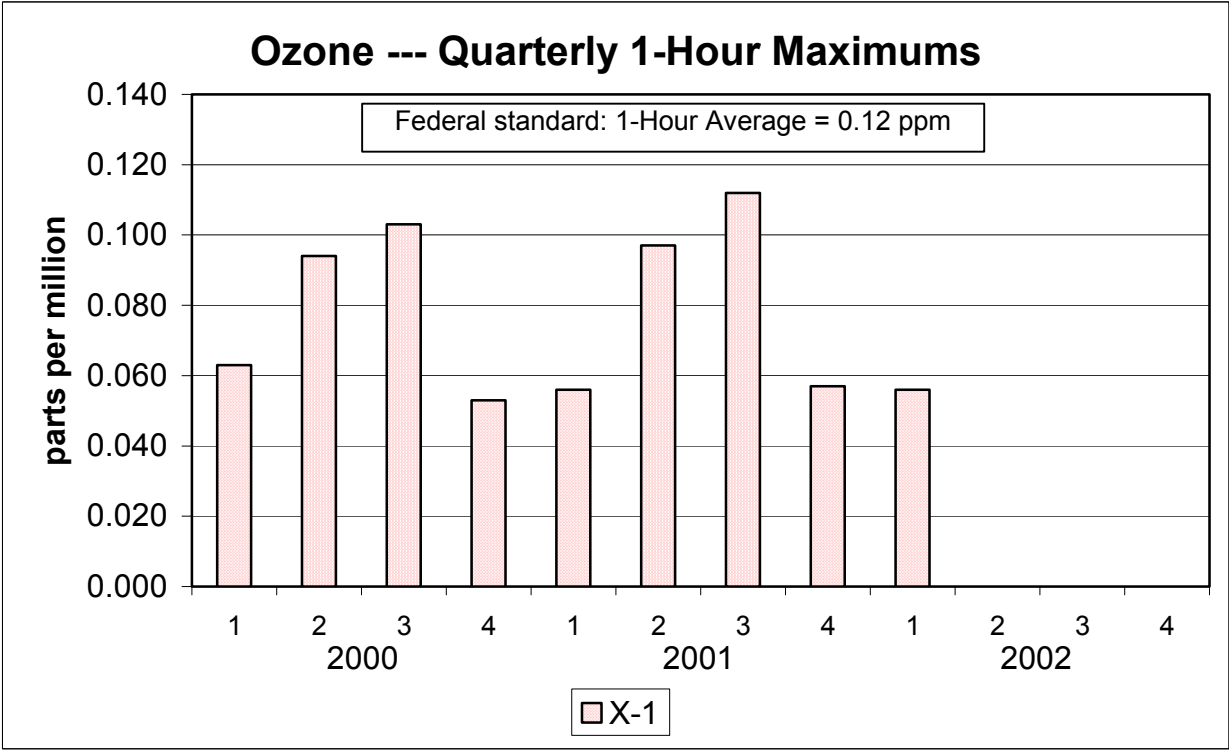
Ozone data for the first quarter of 2002 are presented in Table D. Ozone concentrations for the first quarter of 2002 are at typically low wintertime levels.

Plutonium and americium results (Table B) for the first quarter of 2002 are not yet available. Speciated uranium, americium and plutonium results for the Air Pollution Control Division samplers at X-1 through X-5 (Table B) for the first and second quarters of 2001 are not yet available. Quarterly composite beryllium data from X-1 through X-5 (Table F) for the first and second quarters of 2001 are not yet available.

2. Graphical Presentation

Graphs of pertinent and abnormal data from air monitoring are presented in this section.





3. Tabular Data - Tables of current data are presented in this section.

Environmental Surveillance Report

**TABLE A: GROSS ALPHA AND GROSS BETA RADIOACTIVITY CONCENTRATIONS
IN SUSPENDED AIRBORNE PARTICULATE MATERIAL**

FIRST QUARTER 2002

| Location | Sampler Type | Number of Samples | Gross Alpha | | | Gross Beta | | |
|---------------------------------|------------------|-------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|
| | | | Mean pCi/m ³ | Max pCi/m ³ | Min pCi/m ³ | Mean pCi/m ³ | Max pCi/m ³ | Min pCi/m ³ |
| INDUSTRIAL AREA SAMPLERS | | | | | | | | |
| D-1 | TSP / Continuous | 13 | < 0.0042 | 0.0054 | 0.0028 | 0.0266 | 0.0351 | 0.0156 |
| D-3 | TSP / Continuous | 13 | < 0.0042 | 0.0068 | 0.0014 | 0.0253 | 0.0416 | 0.0141 |
| E-1-T | TSP / Continuous | 10 | < 0.0036 | 0.0088 | 0.0012 | 0.0227 | 0.0395 | 0.0105 |
| BUFFER ZONE SAMPLERS | | | | | | | | |
| D-9 | TSP / Continuous | 11 | < 0.0041 | 0.0073 | 0.0022 | 0.0247 | 0.0438 | 0.0102 |
| D-10 | TSP / Continuous | 13 | < 0.0039 | 0.0079 | 0.0020 | 0.0236 | 0.0371 | 0.0125 |
| E-2-T | TSP / Continuous | 11 | < 0.0034 | 0.0074 | 0.0016 | 0.0233 | 0.0306 | 0.0125 |
| SITE BOUNDARY SAMPLERS | | | | | | | | |
| X-1 | TSP / Continuous | 13 | < 0.0039 | 0.0068 | 0.0006 | 0.0230 | 0.0316 | 0.0132 |
| X-2 | TSP / Continuous | 13 | < 0.0039 | 0.0062 | 0.0016 | 0.0235 | 0.0360 | 0.0131 |
| X-3 | TSP / Continuous | 11 | < 0.0043 | 0.0091 | 0.0021 | 0.0211 | 0.0320 | 0.0106 |
| X-4 | TSP / Continuous | 12 | < 0.0034 | 0.0063 | 0.0014 | 0.0214 | 0.0325 | 0.0117 |
| X-5 | TSP / Continuous | 13 | < 0.0038 | 0.0069 | 0.0018 | 0.0220 | 0.0294 | 0.0107 |

pCi/m³ = PicoCuries per cubic meter

TSP = Total Suspended Particulates
PM10 = Particulate Material < 10 microns in diameter

Environmental Surveillance Report

**TABLE B: ALPHA SPECTROMETRIC ANALYSIS AND LONG-LIVED GROSS ALPHA RADIOACTIVITY
CONCENTRATIONS IN SUSPENDED AIRBORNE PARTICULATE MATERIAL**

THIRD QUARTER 2001

| Location | Sampler Type | ²³⁹⁺²⁴⁰ Pu | ²⁴¹ Am | ²³⁹⁺²⁴⁰ Pu / ²⁴¹ Am | Mean Gross Alpha pCi/m ³ |
|----------|------------------|-----------------------|-----------------------|---|--|
| | | pCi/m ³ | pCi/m ³ | Ratio | |
| D-1 | TSP / Continuous | 0.000010 +/- 0.000005 | <0.000008 | --- | < 0.0059 |
| D-3 | TSP / Continuous | 0.000060 +/- 0.000009 | 0.000010 +/- 0.000005 | 7.5 +/- 3.0 | 0.0039 |
| X-1 | TSP / Continuous | 0.000003 +/- 0.000001 | < 0.000004 | --- | < 0.0043 |
| X-2 | TSP / Continuous | 0.000002 +/- 0.000001 | < 0.000003 | --- | < 0.0049 |
| X-3 | TSP / Continuous | 0.000007 +/- 0.000002 | < 0.000005 | --- | 0.0055 |
| X-4 | TSP / Continuous | 0.000004 +/- 0.000002 | < 0.000004 | --- | < 0.0039 |
| X-5 | TSP / Continuous | < 0.000004 | < 0.000010 | --- | 0.0051 |

| Location | Sampler Type | ²³⁴ U | ²³⁵ U | ²³⁸ U |
|----------|------------------|--------------------|--------------------|--------------------|
| | | pCi/m ³ | pCi/m ³ | pCi/m ³ |
| D-1 | TSP / Continuous | 0.000033 | < 0.000004 | 0.000039 |
| D-3 | TSP / Continuous | 0.000052 | < 0.000004 | 0.000052 |
| X-1 | TSP / Continuous | 0.000036 | < 0.000004 | 0.000030 |
| X-2 | TSP / Continuous | 0.000029 | < 0.000003 | 0.000029 |
| X-3 | TSP / Continuous | 0.000036 | < 0.000004 | 0.000030 |
| X-4 | TSP / Continuous | 0.000045 | 0.000006 | 0.000039 |
| X-5 | TSP / Continuous | 0.000040 | < 0.000005 | 0.000043 |

pCi/m³ = Picocuries per cubic meter

TSP = Total Suspended Particulates

Continuous = continuous sampling

Environmental Surveillance Report

**TABLE B: ALPHA SPECTROMETRIC ANALYSIS AND LONG-LIVED GROSS ALPHA RADIOACTIVITY
CONCENTRATIONS IN SUSPENDED AIRBORNE PARTICULATE MATERIAL**

FOURTH QUARTER 2001

| Location | Sampler Type | ²³⁹⁺²⁴⁰ Pu | ²⁴¹ Am | ²³⁹⁺²⁴⁰ Pu / ²⁴¹ Am | Mean Gross Alpha pCi/m ³ |
|----------|------------------|-----------------------|-----------------------|---|--|
| | | pCi/m ³ | pCi/m ³ | Ratio | |
| D-1 | TSP / Continuous | < 0.000004 | < 0.000007 | --- | 0.0056 |
| D-3 | TSP / Continuous | 0.000166 +/- 0.000022 | 0.000018 +/- 0.000007 | 9.2 +/- 3.8 | < 0.0054 |
| X-1 | TSP / Continuous | < 0.000002 | < 0.000005 | --- | < 0.0046 |
| X-2 | TSP / Continuous | < 0.000009 | 0.000011 +/- 0.000005 | --- | < 0.0049 |
| X-3 | TSP / Continuous | < 0.000007 | < 0.000008 | --- | < 0.0066 |
| X-4 | TSP / Continuous | < 0.000002 | < 0.000005 | --- | < 0.0043 |
| X-5 | TSP / Continuous | 0.000005 +/- 0.000002 | < 0.000004 | --- | < 0.0045 |

| Location | Sampler Type | ²³⁴ U | ²³⁵ U | ²³⁸ U |
|----------|------------------|--------------------|--------------------|--------------------|
| | | pCi/m ³ | pCi/m ³ | pCi/m ³ |
| D-1 | TSP / Continuous | 0.000031 | < 0.000005 | 0.000025 |
| D-3 | TSP / Continuous | 0.000040 | < 0.000004 | 0.000037 |
| X-1 | TSP / Continuous | < 0.000033 | < 0.000007 | 0.000035 |
| X-2 | TSP / Continuous | 0.000043 | < 0.000006 | 0.000050 |
| X-3 | TSP / Continuous | 0.000052 | < 0.000008 | 0.000054 |
| X-4 | TSP / Continuous | < 0.000022 | < 0.000004 | < 0.000022 |
| X-5 | TSP / Continuous | 0.000054 | < 0.000008 | 0.000064 |

pCi/m³ = Picocuries per cubic meter

TSP = Total Suspended Particulates

Continuous = continuous sampling

Environmental Surveillance Report

**TABLE B: ALPHA SPECTROMETRIC ANALYSIS AND LONG-LIVED GROSS ALPHA RADIOACTIVITY
CONCENTRATIONS IN SUSPENDED AIRBORNE PARTICULATE MATERIAL**

FIRST QUARTER 2002

| Location | Sampler Type | ²³⁹⁺²⁴⁰ Pu pCi/m ³ | ²⁴¹ Am pCi/m ³ | ²³⁹⁺²⁴⁰ Pu / ²⁴¹ Am Ratio | Mean Gross Alpha pCi/m ³ |
|----------|------------------|---|---|--|--|
| D-1 | TSP / Continuous | | | | |
| D-3 | TSP / Continuous | | | | |
| X-1 | TSP / Continuous | | | | |
| X-2 | TSP / Continuous | | | | |
| X-3 | TSP / Continuous | | | | |
| X-4 | TSP / Continuous | | | | |
| X-5 | TSP / Continuous | | | | |

DATA NOT YET AVAILABLE

| Location | Sampler Type | ²³⁴ U pCi/m ³ | ²³⁵ U pCi/m ³ | ²³⁸ U pCi/m ³ |
|----------|------------------|--|--|--|
| D-1 | TSP / Continuous | | | |
| D-3 | TSP / Continuous | | | |
| X-1 | TSP / Continuous | | | |
| X-2 | TSP / Continuous | | | |
| X-3 | TSP / Continuous | | | |
| X-4 | TSP / Continuous | | | |
| X-5 | TSP / Continuous | | | |

DATA NOT YET AVAILABLE

pCi/m³ = PicoCuries per cubic meter

TSP = Total Suspended Particulates

Continuous = continuous sampling

Environmental Surveillance Report

**TABLE B: ALPHA SPECTROMETRIC ANALYSIS AND LONG-LIVED GROSS ALPHA RADIOACTIVITY
CONCENTRATIONS IN SUSPENDED AIRBORNE PARTICULATE MATERIAL**

THIRD QUARTER 2000

| Location | Sampler Type | ²³⁴ U | ²³⁵ U | ²³⁸ U | ²³⁹ Pu | ²⁴¹ Am |
|----------|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | pCi/m ³ | pCi/m ³ | pCi/m ³ | pCi/m ³ | pCi/m ³ |
| X-1 | TSP – P (1/6 day, quarterly composite) | VOID | VOID | VOID | --- | --- |
| X-1-CL | TSP – CL (1/6 day, quarterly composite) | 0.000085 | 0.000003 | 0.000098 | --- | --- |
| X-2 | TSP (1/6 day, quarterly composite) | 0.000170 | <0.000012 | 0.000172 | --- | --- |
| X-3 | TSP (1/6 day, quarterly composite) | 0.000071 | <0.000011 | 0.000066 | --- | --- |
| X-4 | TSP (1/6 day, quarterly composite) | 0.000196 | 0.000016 | 0.000199 | --- | --- |
| X-5 | TSP (1/6 day, quarterly composite) | 0.000158 | 0.000016 | 0.000158 | <0.000013 | <0.000029 |
| X-1 | PM10 (1/6 day, quarterly composite) | <0.000086 | <0.000017 | <0.000087 | --- | --- |
| X-2 | PM10 – P (1/6 day, quarterly composite) | <0.000057 | <0.000011 | <0.000058 | --- | --- |
| X-2-CL | PM10 – CL (1/6 day, quarterly composite) | <0.000091 | <0.000018 | <0.000091 | --- | --- |
| X-3 | PM10 (1/6 day, quarterly composite) | <0.000068 | <0.000014 | <0.000068 | --- | --- |
| X-4 | PM10 (1/6 day, quarterly composite) | <0.000044 | <0.000009 | <0.000044 | --- | --- |
| X-5 | PM10 (1/6 day, quarterly composite) | <0.000094 | <0.000018 | <0.000094 | <0.000017 | <0.000013 |

pCi/m³ = Picocuries per cubic meter

TSP = Total Suspended Particulates (P = primary, CL = collocated)

PM10 = Particulate Material < 10 microns in diameter (P = primary, CL = collocated)

Environmental Surveillance Report

**TABLE B: ALPHA SPECTROMETRIC ANALYSIS AND LONG-LIVED GROSS ALPHA RADIOACTIVITY
CONCENTRATIONS IN SUSPENDED AIRBORNE PARTICULATE MATERIAL**

FOURTH QUARTER 2000

| Location | Sampler Type | ²³⁴ U pCi/m ³ | ²³⁵ U pCi/m ³ | ²³⁸ U pCi/m ³ | ²³⁹ Pu pCi/m ³ | ²⁴¹ Am pCi/m ³ |
|----------|--|--|--|--|---|---|
| X-1 | TSP – P (1/6 day, quarterly composite) | 0.000066 | <0.000010 | 0.000087 | --- | --- |
| X-1-CL | TSP – CL (1/6 day, quarterly composite) | 0.000097 | <0.000007 | 0.000091 | --- | --- |
| X-2 | TSP (1/6 day, quarterly composite) | <0.000047 | <0.000009 | <0.000047 | --- | --- |
| X-3 | TSP (1/6 day, quarterly composite) | <0.000051 | <0.000010 | <0.000051 | --- | --- |
| X-4 | TSP (1/6 day, quarterly composite) | 0.000173 | <0.000010 | 0.000178 | --- | --- |
| X-5 | TSP (1/6 day, quarterly composite) | 0.000123 | <0.000013 | 0.000159 | <0.000015 | <0.000030 |
| X-1 | PM10 (1/6 day, quarterly composite) | 0.000091 | <0.000011 | 0.000106 | --- | --- |
| X-2 | PM10 – P (1/6 day, quarterly composite) | <0.000046 | <0.000009 | <0.000046 | --- | --- |
| X-2-CL | PM10 – CL (1/6 day, quarterly composite) | <0.000054 | <0.000011 | <0.000054 | --- | --- |
| X-3 | PM10 (1/6 day, quarterly composite) | 0.000190 | <0.000012 | 0.000191 | --- | --- |
| X-4 | PM10 (1/6 day, quarterly composite) | 0.000077 | <0.000012 | 0.000076 | --- | --- |
| X-5 | PM10 (1/6 day, quarterly composite) | <0.000059 | <0.000012 | <0.000059 | <0.000008 | <0.000010 |

pCi/m³ = Picocuries per cubic meter

TSP = Total Suspended Particulates (P = primary, CL = collocated)

PM10 = Particulate Material < 10 microns in diameter (P = primary, CL = collocated)

Environmental Surveillance Report

**TABLE B: ALPHA SPECTROMETRIC ANALYSIS AND LONG-LIVED GROSS ALPHA RADIOACTIVITY
CONCENTRATIONS IN SUSPENDED AIRBORNE PARTICULATE MATERIAL**

FIRST QUARTER 2001 – SECOND QUARTER 2001

| Location | Sampler Type | ²³⁴ U pCi/m ³ | ²³⁵ U pCi/m ³ | ²³⁸ U pCi/m ³ | ²³⁹ Pu pCi/m ³ | ²⁴¹ Am pCi/m ³ |
|----------|--|--|--|--|---|---|
| X-1 | TSP – P (1/6 day, quarterly composite) | | | | | |
| X-1-CL | TSP – CL (1/6 day, quarterly composite) | | | | | |
| X-2 | TSP (1/6 day, quarterly composite) | | | | | |
| X-3 | TSP (1/6 day, quarterly composite) | | | | | |
| X-4 | TSP (1/6 day, quarterly composite) | | | | | |
| X-5 | TSP (1/6 day, quarterly composite) | | | | | |
| X-1 | PM10 (1/6 day, quarterly composite) | | | | | |
| X-2 | PM10 – P (1/6 day, quarterly composite) | | | | | |
| X-2-CL | PM10 – CL (1/6 day, quarterly composite) | | | | | |
| X-3 | PM10 (1/6 day, quarterly composite) | | | | | |
| X-4 | PM10 (1/6 day, quarterly composite) | | | | | |
| X-5 | PM10 (1/6 day, quarterly composite) | | | | | |

DATA NOT YET AVAILABLE

pCi/m³ = Picocuries per cubic meter
 TSP = Total Suspended Particulates (P = primary, CL = collocated)
 PM10 = Particulate Material < 10 microns in diameter (P = primary, CL = collocated)

Environmental Surveillance Report

TABLE D: INORGANIC GASEOUS COMPOUNDS IN AIR
FIRST QUARTER 2002

| Compound | North Site (X-1) | | | |
|----------------------------|-------------------------|------------------------------|-------------------------------|------------|
| | Average 1-Hour ppm | Maximum 1-Hour ppm | Maximum 8-Hour Average ppm | # Hours |
| Ozone (O ₃) | 0.028 | JANUARY 2002 0.049 | 0.047 | 732 |
| | Ozone (O ₃) | 0.035 | FEBRUARY 2002 0.055 | 0.051 |
| MARCH 2002 0.056 | | | 0.055 | 711 |
| Ozone (O ₃) | 0.036 | | | |

ppm = Parts per million
N/A = Not available

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TABLE F: METALS IN AIR

FIRST - SECOND QUARTER 2001

| | North Site (X-1) (Quarterly composites) ug/m ³ | Northeast Site (X-2) (Quarterly composites) ug/m ³ | Southeast Site (X-3) (Quarterly composites) ug/m ³ | South Site (X-4) (Quarterly composites) ug/m ³ | West Site (X-5) (Quarterly composites) ug/m ³ |
|-------|---|---|---|---|--|
| Metal | | | | | |

First Quarter 2001

Beryllium -- TSP-P
 Beryllium -- PM10-P
 Beryllium -- TSP-CL
 Beryllium -- PM10-CL

Second Quarter 2001

Beryllium -- TSP-P
 Beryllium -- PM10-P
 Beryllium -- TSP-CL
 Beryllium -- PM10-CL

DATA NOT YET AVAILABLE

ug/m³ = Micrograms per cubic meter
 N/A = Not available
 TSP = Total Suspended Particulates (P = primary, CL = collocated)
 PM10 = Particulate Matter < 10 microns in diameter (P = primary, CL = collocated)

WATER RESULTS

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CDPHE Surface Water Sampling

First Quarter 2002

Corrected pages 26 and 27

Surface water sampling conducted by CDPHE for the 1st quarter of 2002, included:

- Wastewater Treatment Plant (WWTP) Influent were collected, on 1/23/2002, 2/20/2002, and 3/13/2002.
- Pre-discharge sample was collected from Pond B-5 on 1/7/2002 and 3/5/2002.
- Point of Compliance - Walnut Creek at Indiana Street (SW114) samples was collected on 3/25/2002 during Pond B5 discharge.
- Nutrient sampling (nitrate and ammonia) was conducted 2/20/2002 at the following locations: WWTP effluent, Pond B-5, GS-10, Pond A-4, SW093 and SW-118.

Wastewater Treatment Plant Influent

WWTP Influent is monitored to evaluate routine and non-routine discharges to the WWTP. The CDPHE sampling supplements sampling conducted by the Site for operational evaluations and permit requirements of the WWTP. Only the CDPHE results are presented in this document.

This quarters' WWTP Influent results exhibited detectable levels of silver 0.5 to 1.9 µg/L in each of the three samples. [The influent silver is determined by the total recoverable fraction (unfiltered) rather than the "dissolved" fraction (filtered through a 0.45 micron filter) used for ambient surface water samples.] Samples collected at locations downstream of the WWTP effluent, did not exhibit any detectable concentrations of silver.

With the efficacy of the WWTP the influent wastewater quality poses no real concerns either to the Plant, to effluent quality or ambient stream quality under normal conditions, which now include the decommissioning efforts to date. Decommissioning is now a routine activity, but each building has its own specific concerns and issues.

Pre-Discharge Monitoring

The Pre-Discharge sampling program is conducted for compliance evaluation of the Site's ability to discharge storm water and treated wastewater to the Big Dry Creek drainage. Pre-Discharge Monitoring is conducted at the terminal ponds on Walnut Creek (Pond A4 and Pond B5) and Woman Creek (Pond C2), only when discharges are planned. Typically the Walnut Creek Ponds A4 and B5 are discharged 8-10 times per years and Woman Creek Pond C2 once a year. Sampling is conducted by both the Site and CDPHE. Only the CDPHE results are presented in this document.

This quarters pre-discharge samples did not exhibit any concentrations above established RFCA action levels or applicable WQCC stream standards. With exception of ammonia detected at 4.1 mg/L

as compared to adjusted allowable limit of 1.0 mg/L [standard adjusted based on pH and temperature factors].

Point of Compliance - Surface Water Results

Point of Compliance monitoring is conducted below the terminal ponds and at the Site boundary along Indiana Street, on both Walnut and Woman Creek. Point of Compliance monitoring is conducted to evaluate Site compliance with WQCC stream standards and RFCA action levels, as appropriate. Point of Compliance monitoring activities are shared between CDPHE and the Site. Only the CDPHE monitoring results are presented in this document.

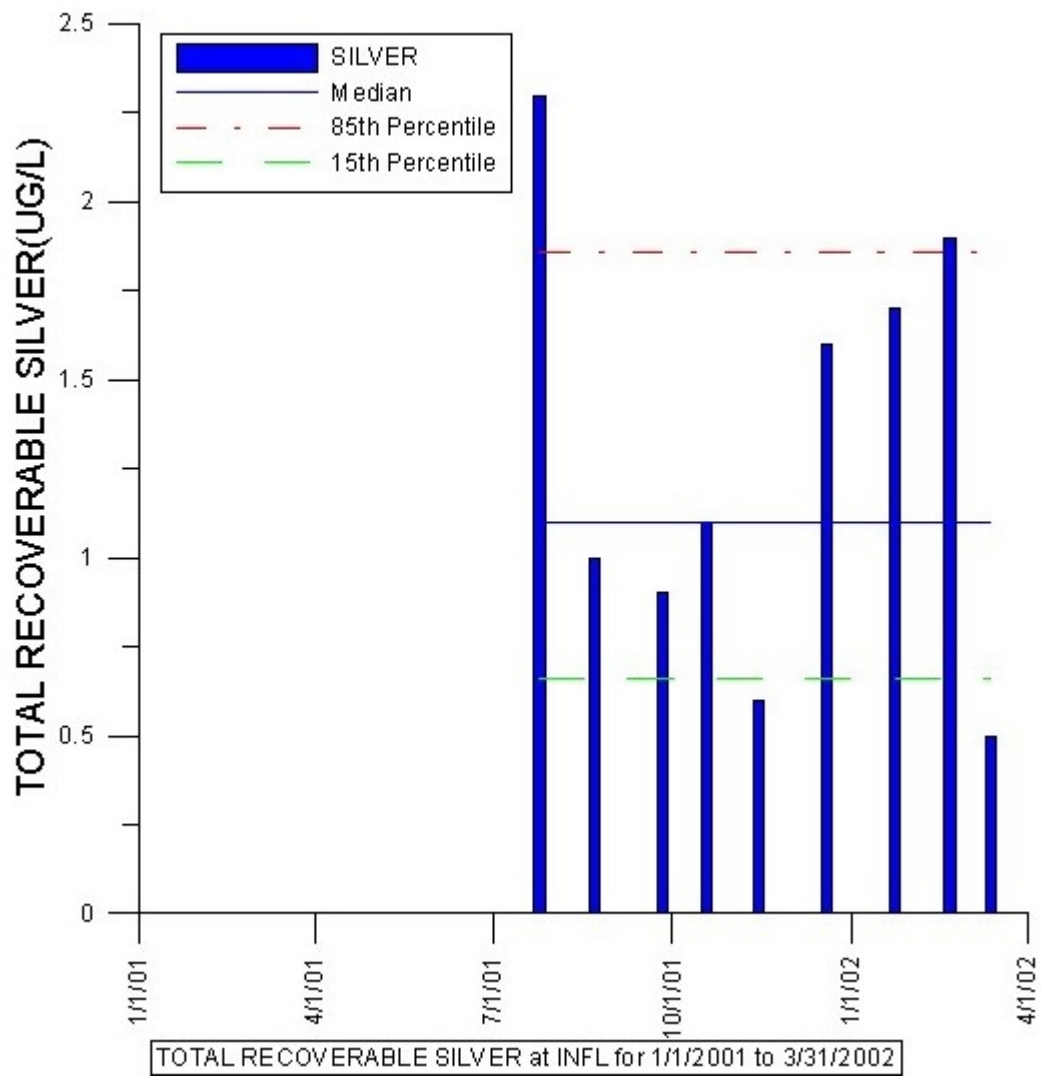
The sample collected this quarter coincided with discharge of water from Pond B5. During this quarters' ambient water sampling at RFETS no exceedances of an action level was observed. Ammonia was detected at 3.3 mg/L at the Indiana Street POC, thus exceeding the adjusted allowable limit of 1.2 mg/L [standard adjusted based on pH and temperature factors].

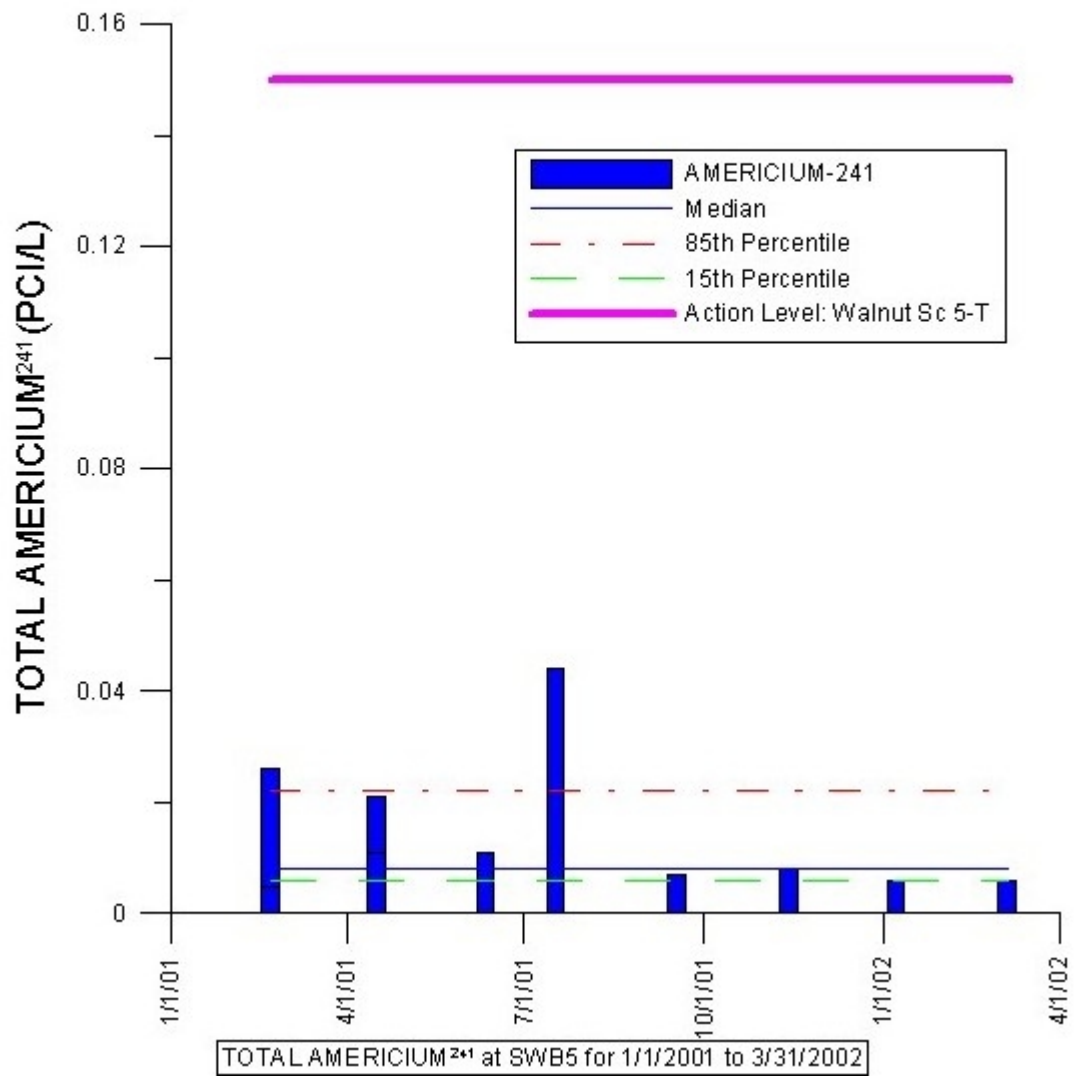
Nutrient Sampling - North Walnut Creek

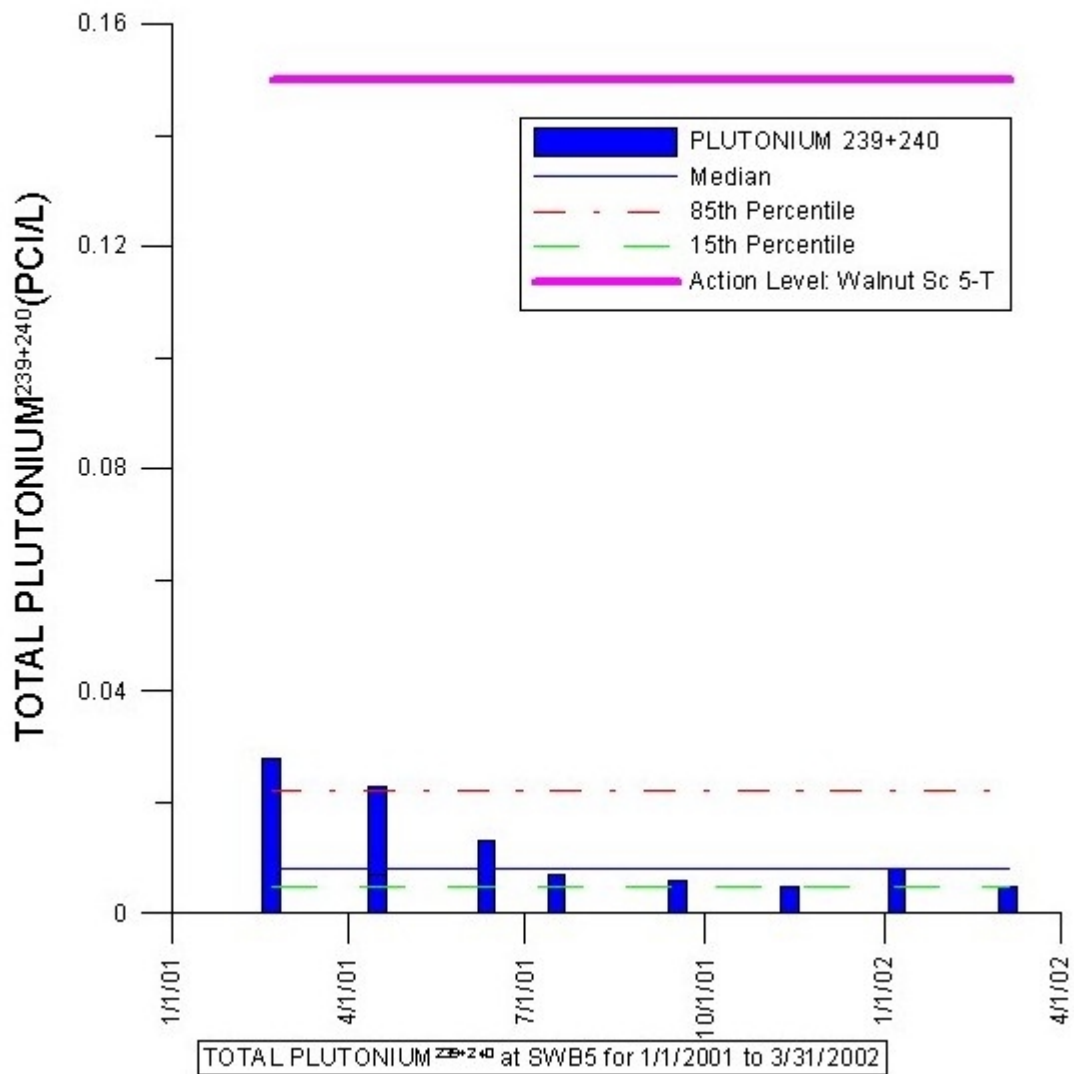
This *Ad Hoc* program conducted by CDPHE monitors nutrient concentrations related to nitrate and ammonia in the North and South Walnut Creek drainages as a result of Sewage Treatment Plant Operations and Solar Pond Groundwater Plume. The nitrate profile in the Walnut Creek drainages exhibits a pattern of elevated levels in excess of the underlying standard, since the time the French drain and active treatment system for the solar pond area was dismantled and discontinued, and the installation of the passive solar pond plume passive treatment project. Historically the highest exceedances are at GS-13, which more represent the full impact of the solar pond nitrate plume into North Walnut Creek.

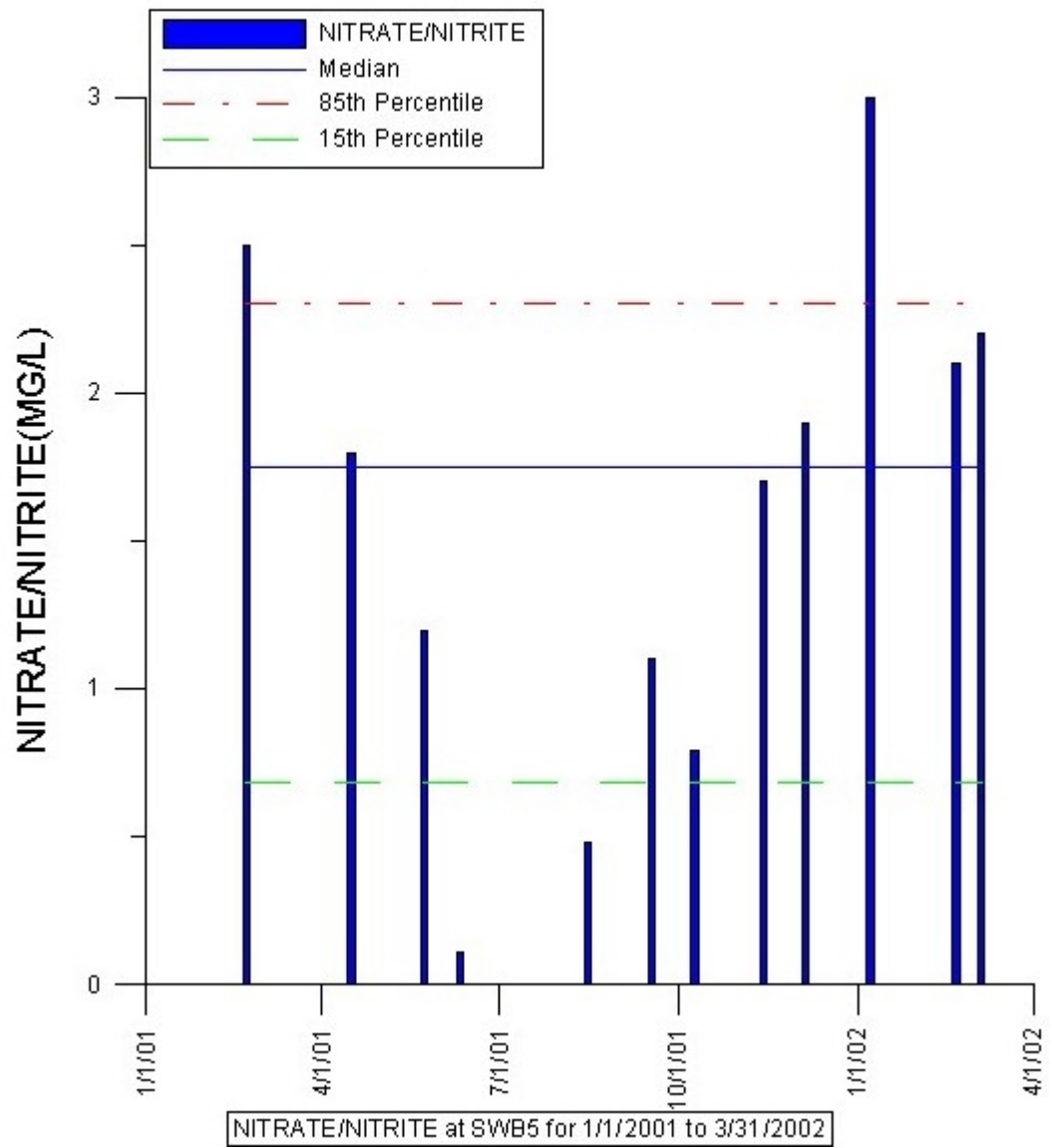
This quarters nitrate results ranged from <0.3 mg/L to 3 mg/L in Pond B5. All results were less than the temporary modification of 100 mg/L and the underlying stream standard of 10 mg/L.

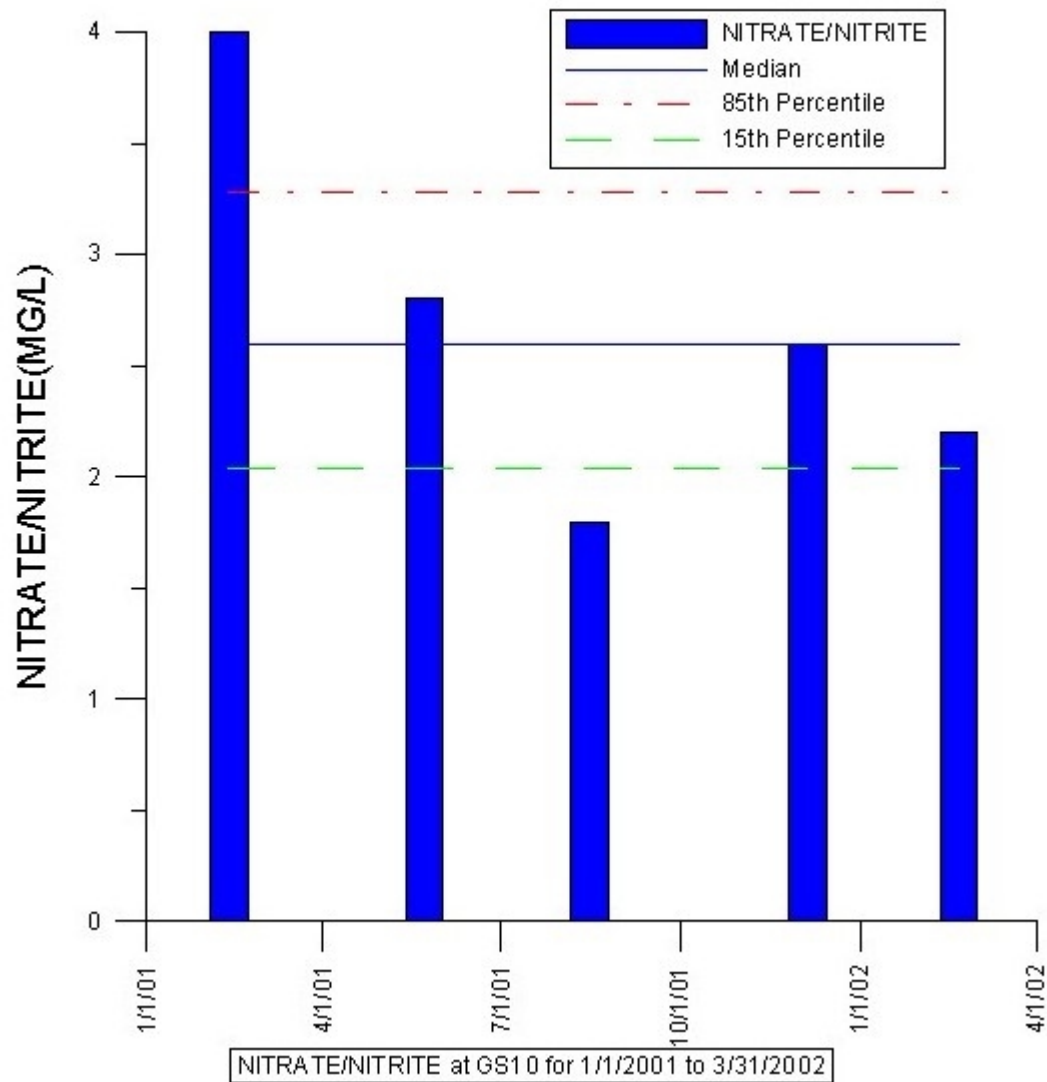
This quarters ammonia results ranged from <0.01 mg/L to 11 mg/L compared against the conservative unionized standard of 0.1 mg/L (segment 4a stream standard). The highest concentration 11 mg/L was associated with WWTP effluent. Samples collected downstream of the effluent in Pond B5 exhibited a decrease to 3.6 mg/L of ammonia, and at 3.3 mg/L of ammonia at the Walnut Creek and Indiana Point of Compliance. Applying adjustments for pH and temperature impacts, the standards for comparison range from 1.0 mg/L to 31 mg/L. The only location that exceeds the adjusted values were the Pond B5 (sample 4.1 mg/L vs. 1.0 mg/L adjusted allowable limit) and SW114 (sample 3.3 mg/L vs. 1.2 mg/L adjusted allowable limit).

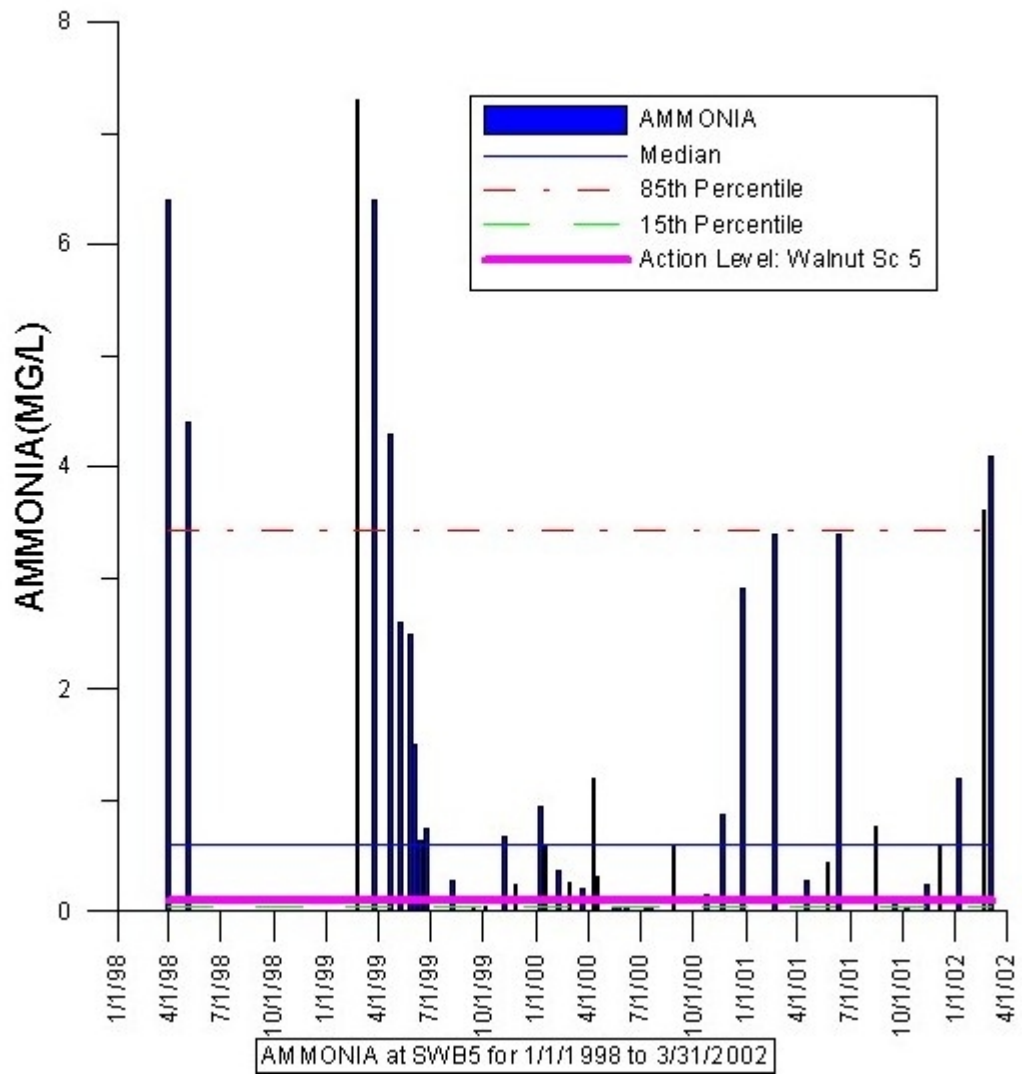


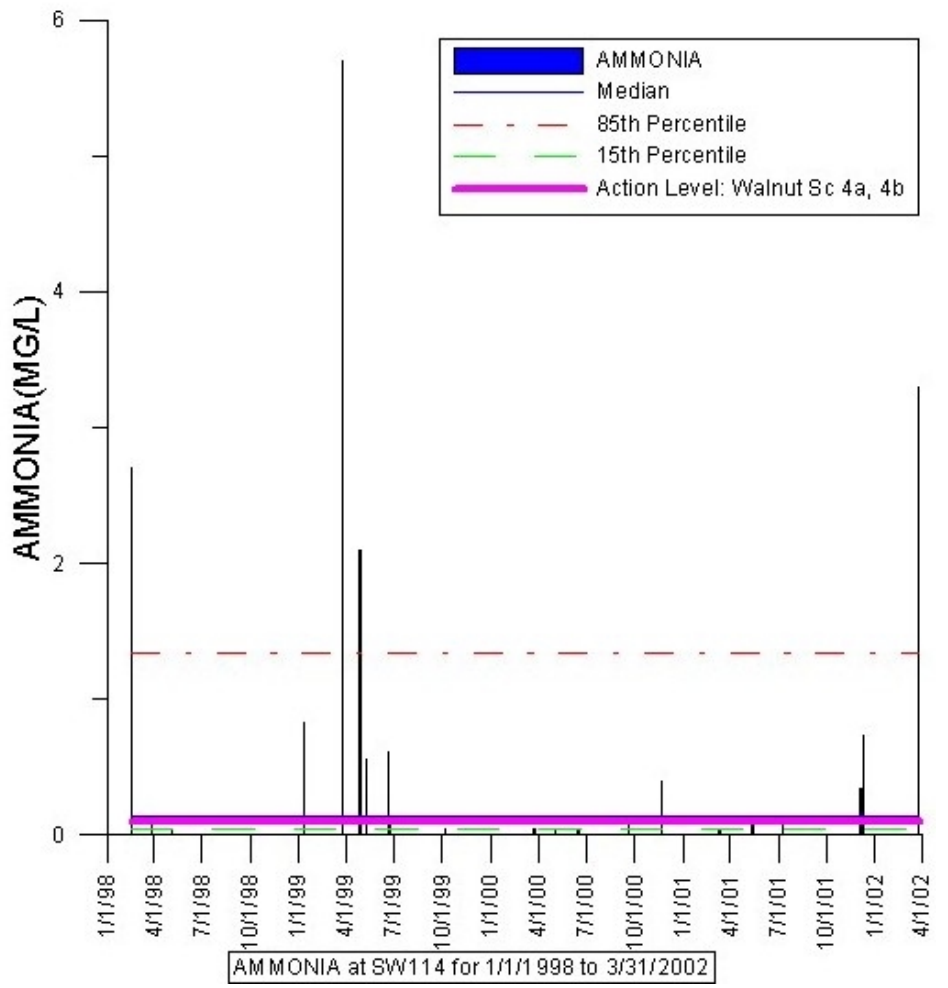












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Environmental Surveillance Report
TABLE H - INORGANIC ANALYSIS OF SURFACE WATER
FIRST QUARTER 2002

| Location | Sample Date | Parameter | Analysis Level | *Analysis* | | |
|---|-------------|------------------------------|-----------------|----------------|-----|-----|
| | | | | Units | 1st | 2nd |
| Influent to Sewage Treatment Plant (INFL) | | | | | | |
| | 1/23/2002 | pH | 8.1 | Standard Units | | |
| | | Temperature | 12.1 | °C | | |
| | | Americium ²⁴¹ | < 0.024 | pCi/L | | |
| | | Gross Alpha | < 4 | pCi/L | | |
| | | Gross Beta | 16 +/- 4 | pCi/L | | |
| | | Plutonium ²³⁹⁺²⁴⁰ | 0.011 +/- 0.004 | pCi/L | | |
| | | Uranium, Total | < 2 | pCi/L | | |
| | | Arsenic, Total Recoverable | < 1 | ug/L | | |
| | | Beryllium, Total Recoverable | < 1 | ug/L | | |
| | | Cadmium, Total Recoverable | < 0.3 | ug/L | | |
| | | Chromium, Total Recoverable | < 3 | ug/L | | |
| | | Copper, Total Recoverable | 32 | ug/L | | |
| | | Iron, Total Recoverable | 400 | ug/L | | |
| | | Lithium, Total Recoverable | 6 | ug/L | | |
| | | Manganese, Total Recoverable | 26 | ug/L | | |
| | | Nickel, Total Recoverable | < 20 | ug/L | | |
| | | Selenium, Total Recoverable | < 1 | ug/L | | |
| | | Silver, Total Recoverable | 1.7 | ug/L | | |
| | | Thallium, Total Recoverable | < 1 | ug/L | | |
| | | Total Suspended Solids | 55 | mg/L | | |
| | 2/20/2002 | pH | 7.8 | Standard Units | | |
| | | Temperature | 12.1 | °C | | |
| | | Americium ²⁴¹ | < 0.006 | pCi/L | | |
| | | Gross Alpha | < 4 | pCi/L | | |
| | | Gross Beta | 18 +/- 4 | pCi/L | | |
| | | Plutonium ²³⁹⁺²⁴⁰ | 0.010 +/- 0.004 | pCi/L | | |
| | | Uranium, Total | < 2 | pCi/L | | |
| | | Arsenic, Total Recoverable | < 1 | ug/L | | |
| | | Beryllium, Total Recoverable | < 1 | ug/L | | |
| | | Cadmium, Total Recoverable | < 0.3 | ug/L | | |
| | | Chromium, Total Recoverable | < 3 | ug/L | | |
| | | Copper, Total Recoverable | 25 | ug/L | | |
| | | Iron, Total Recoverable | 290 | ug/L | | |
| | | Lithium, Total Recoverable | 4 | ug/L | | |
| | | Manganese, Total Recoverable | 23 | ug/L | | |
| | | Nickel, Total Recoverable | < 20 | ug/L | | |
| | | Selenium, Total Recoverable | < 1 | ug/L | | |
| | | Silver, Total Recoverable | 1.9 | ug/L | | |
| | | Thallium, Total Recoverable | < 1 | ug/L | | |
| | | Total Suspended Solids | 52 | mg/L | | |

3/13/2002

| | | | |
|------------------------------|---|----------|-------|
| Gross Alpha | < | 5 | pCi/L |
| Gross Beta | | 16 +/- 4 | pCi/L |
| Uranium, Total | < | 2 | pCi/L |
| Arsenic, Total Recoverable | < | 1 | ug/L |
| Beryllium, Total Recoverable | < | 1 | ug/L |
| Cadmium, Total Recoverable | < | 0.3 | ug/L |
| Chromium, Total Recoverable | < | 3 | ug/L |
| Copper, Total Recoverable | | 23 | ug/L |
| Iron, Total Recoverable | | 330 | ug/L |
| Lithium, Total Recoverable | | 5 | ug/L |
| Manganese, Total Recoverable | | 34 | ug/L |
| Nickel, Total Recoverable | < | 20 | ug/L |
| Selenium, Total Recoverable | | 1 | ug/L |
| Silver, Total Recoverable | | 0.5 | ug/L |
| Thallium, Total Recoverable | | 1 | ug/L |
| Total Suspended Solids | | 58 | mg/L |

Pond B5 - Pre-Discharge Monitoring

1/7/2002

| | | | |
|------------------------------|---|-----------------|----------------|
| Dissolved Oxygen | | 19.2 | mg/L |
| pH | | 9.7 | Standard Units |
| Temperature | | 7 | °C |
| Americium ²⁴¹ | | 0.006 +/- 0.004 | pCi/L |
| Gross Alpha | | 8 +/- 3 | pCi/L |
| Gross Beta | | 17 +/- 4 | pCi/L |
| Plutonium ²³⁹⁺²⁴⁰ | | 0.008 +/- 0.003 | pCi/L |
| Uranium, Total | < | 2 | pCi/L |
| Arsenic, Total Recoverable | < | 1 | ug/L |
| Beryllium, Dissolved | < | 1 | ug/L |
| Cadmium, Dissolved | < | 0.3 | ug/L |
| Chromium, Total | < | 3 | ug/L |
| Copper, Dissolved | < | 3 | ug/L |
| Iron, Total Recoverable | | 120 | ug/L |
| Lithium, Total | | 8 | ug/L |
| Manganese, Total Recoverable | | 16 | ug/L |
| Nickel, Dissolved | < | 20 | ug/L |
| Selenium, Dissolved | < | 1 | ug/L |
| Silver, Dissolved | < | 0.4 | ug/L |
| Thallium, Total | < | 1 | ug/L |
| Ammonia as N | | 1.2 | mg/L |
| Chloride | | 130 | mg/L |
| Hardness as CaCO3 | | 180 | mg/L |
| Nitrate/Nitrite | | 3 | mg/L |
| Orthophosphate | | 1.6 | mg/L |
| Total Phosphate | | 1.9 | mg/L |
| Total Suspended Solids | | 28 | mg/L |

2/20/2002

| | | | |
|-------------|--|------|----------------|
| pH | | 8.27 | Standard Units |
| Temperature | | 6.7 | °C |

| | | | |
|----------|-------------------------------|---------|----------------|
| 3/5/2002 | Ammonia as N | 3.6 | mg/L |
| | Nitrate/Nitrite | 2.1 | mg/L |
| 3/5/2002 | Dissolved Oxygen | 12.07 | mg/L |
| | pH | 9.2 | Standard Units |
| | Temperature | 7.3 | °C |
| | Americium ²⁴¹ | < 0.006 | pCi/L |
| | Gross Alpha | < 4 | pCi/L |
| | Gross Beta | 8 +/- 4 | pCi/L |
| | Plutonium ²³⁹⁺²⁴⁰ | < 0.005 | pCi/L |
| | Uranium, Total | < 2 | pCi/L |
| | Arsenic, Total Recoverable | < 1 | ug/L |
| | Beryllium, Dissolved | < 1 | ug/L |
| | Cadmium, Dissolved | < 0.3 | ug/L |
| | Chromium, Total | < 3 | ug/L |
| | Copper, Dissolved | < 3 | ug/L |
| | Iron, Total Recoverable | 150 | ug/L |
| | Lithium, Total | 8 | ug/L |
| | Nickel, Dissolved | < 20 | ug/L |
| | Selenium, Dissolved | < 1 | ug/L |
| | Silver, Dissolved | < 0.4 | ug/L |
| | Thallium, Total | < 1 | ug/L |
| | Ammonia as N | 4.1 | mg/L |
| | Chloride | 130 | mg/L |
| | Hardness as CaCO ₃ | 160 | mg/L |
| | Nitrate/Nitrite | 2.2 | mg/L |
| | Orthophosphate | 2.6 | mg/L |
| | Total Phosphate | 3.1 | mg/L |
| | Total Suspended Solids | 30 | mg/L |

Point of Compliance

Walnut Creek at Indiana St. (SW114)

3/25/2002

| | | | |
|-----------|-------------------------------|-------|----------------|
| 3/25/2002 | pH | 8.89 | Standard Units |
| | Temperature | 4.6 | °C |
| | Arsenic, Total Recoverable | 1 | ug/L |
| | Beryllium, Dissolved | < 1 | ug/L |
| | Cadmium, Dissolved | < 0.3 | ug/L |
| | Chromium, Total | < 3 | ug/L |
| | Copper, Dissolved | 5 | ug/L |
| | Iron, Total Recoverable | 260 | ug/L |
| | Lithium, Total | 10 | ug/L |
| | Manganese, Total Recoverable | 19 | ug/L |
| | Nickel, Dissolved | < 20 | ug/L |
| | Selenium, Dissolved | < 1 | ug/L |
| | Silver, Dissolved | < 0.4 | ug/L |
| | Thallium, Total | < 1 | ug/L |
| | Ammonia as N | 3.3 | mg/L |
| | Hardness as CaCO ₃ | 190 | mg/L |

| | | |
|------------------------|-----|------|
| Nitrate/Nitrite | 2.6 | mg/L |
| Total Phosphate | 1.8 | mg/L |
| Total Suspended Solids | 26 | mg/L |

Nutrient Monitoring

South Walnut Creek above B-Series Bypass (GS10)

| | | | |
|-----------|-----------------|------|----------------|
| 2/20/2002 | pH | 8.58 | Standard Units |
| | Temperature | 6.5 | °C |
| | Ammonia as N | 0.28 | mg/L |
| | Nitrate/Nitrite | 2.2 | mg/L |

Effluent from Sewage Treatment Plant (EFFL)

| | | | |
|-----------|-----------------|------|----------------|
| 2/19/2002 | pH | 6.9 | Standard Units |
| | Temperature | 12.3 | °C |
| | Ammonia as N | 11 | mg/L |
| | Nitrate/Nitrite | 0.56 | mg/L |

SW118 2/19/2002

| | | | |
|--|-----------------|--------|----------------|
| | pH | 7.32 | Standard Units |
| | Temperature | 3.2 | °C |
| | Ammonia as N | < 0.01 | mg/L |
| | Nitrate/Nitrite | < 0.3 | mg/L |

Walnut Creek below Portal 3 (SW093)

| | | | |
|-----------|-----------------|--------|----------------|
| 2/20/2002 | pH | 7.84 | Standard Units |
| | Temperature | 5.2 | °C |
| | Ammonia as N | < 0.01 | mg/L |
| | Nitrate/Nitrite | 0.41 | mg/L |

Pond A4

| | | | |
|-----------|-----------------|--------|----------------|
| 2/20/2002 | pH | 8.26 | Standard Units |
| | Temperature | 6.6 | °C |
| | Ammonia as N | < 0.01 | mg/L |
| | Nitrate/Nitrite | < 0.3 | mg/L |

GLOSSARY

| | |
|--------------------|--|
| Ag | silver |
| Am | americium |
| AOI | analyte of interest |
| APCD | Air Pollution Control Division |
| AQCC | Air Quality Control Commission |
| ALF | action level framework |
| B | found in blank |
| Be | beryllium |
| CAS | chemical abstracts service number |
| Cd | cadmium |
| CDPHE | Colorado Department of Public Health and Environment |
| Cr | chromium |
| D&D | decontamination and decommissioning |
| DOE | Department of Energy |
| EPA | Environmental Protection Agency |
| ESR | Environmental Surveillance Report |
| H | exceeds holding time |
| IMP | Integrated Monitoring Plan |
| J | detected but below practical quantitative limit |
| LARS | Laboratory and Radiation Services |
| mg/L | Milligram per liter |
| MCL | Maximum Contaminant Level (below MCL is safe) |
| MDL | minimum detection level |
| Nd | not detected |
| NO ₃ | nitrate |
| pCi/L | picocuries per liter |
| pCi/m ³ | picocuries per cubic meter |
| PM | particulate material |
| ppb | parts per billion |
| ppm | parts per million |
| PQL | practical quantitative level |
| Pu | plutonium |
| QNS | quantity not sufficient |
| RFCA | Rocky Flats Cleanup Agreement |
| RFETS | Rocky Flats Environmental Technology Site |
| TLV | ACGIH Threshold limit value |
| TSP | Total Suspended Particulate |
| TSS | Total Suspended Solids |
| µg/L | microgram per liter |
| µg/m ³ | micrograms per cubic meter |
| U | uranium |
| VOCs | volatile organic compounds |
| WQCC | Water Quality Control Commission |
| WQCD | Water Quality Control Division |
| WWTP | wastewater treatment plan |

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If you have questions or comments about this report, or if you would like to be placed on the mailing or email list to receive copies of this report in the future, please write to:

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