INDIAN WELLS VALLEY WATER DISTRICT

September 6, 2013

To: Board of Directors

From: Renee Morquecho, Chief Engineer

Subject: Required Report on Public Health Goals

Attached for your approval is a report prepared by staff comparing our District's drinking water quality with public health goals (PHGs) adopted by California EPA's Office of Environmental Health Hazard Assessment (OEHHA) and with maximum contaminant level goals (MCLGs) adopted by the USEPA. PHGs and MCLGs are not enforceable standards and no action to meet them is mandated.

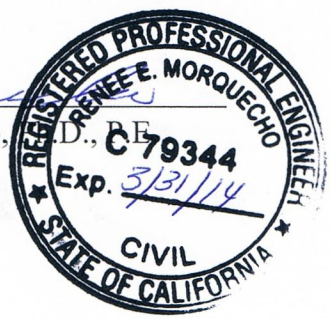
SB1307 (Calderone-Sher; effective 1-1-97) added new provisions to the California Health and Safety Code which mandate that a report be prepared by July 1, 1998, and every three years thereafter. The attached report is intended to provide information to the public in addition to the Annual Water Quality Report that is provided to each customer.

Our water system complies with all of the health-based drinking water standards and maximum contaminants levels (MCLs) required by the California Department of Public Health and the USEPA. No additional actions are recommended.

The new law requires that a public hearing be held (which can be part of a regularly scheduled public meeting) for the purpose of accepting and responding to public comment on the report. This public hearing will be scheduled as part of our regular board meeting on October 15, 2013 and will be noticed as required for public hearings.

Signed _____

Renee E. Morquecho, M.S., P.E.
Chief Engineer



INDIAN WELLS VALLEY WATER DISTRICT REPORT ON WATER QUALITY RELATIVE TO PUBLIC HEALTH GOALS

Executive Summary

The water served by the Indian Wells Valley Water District meets all State of California Department of Public Health and United States Environmental Protection Agency drinking water standards set to protect public health. This special report is required of large systems every 3 years to report on any constituents exceeding a non-enforceable Public Health Goal (PHG) or Maximum Contaminant Level Goal (MCLG). Between 2010 and 2012, the PHG/MCLG was exceeded for fluoride, arsenic and gross alpha in one or more wells. There are Best Available Technologies (BATs) available to reduce the amount of each of these constituents but the cost is prohibitive and the effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. In addition, the health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed at this time.

What are Public Health Goals (PHGs)?

PHGs are water quality goals set by the California Office of Environmental Health Hazard Assessment (OEHHA) which is part of Cal-EPA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the California Department of Public Health (CDPH) in setting drinking water standards (MDLs) are considered in setting the PHGs. These factors include analytical detection capability, treatment technology available, benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

Reporting Requirements

Provisions of the California Health and Safety Code specify that larger (>10,000 service connections) water utilities prepare a special report if their water quality measurements have exceeded any PHGs. Reporting must be done every 3 years. The law also required that where OEHHA has not adopted a PHG or a contaminant, the water suppliers are to use the MCLGs adopted by USEPA.

The purpose of this report is to inform consumers of contaminants in IWVWD drinking water that exceed the PHGs or MCLGs during 2010, 2011 and 2012. Included are the numerical public health risk associated with the MCL and the PHG or MCLG, the category or type of risk to health that could be associated with each contaminant, the best treatment technology available

that could be used to reduce the contaminant level, and an estimate of the cost to install treatment if it is appropriate and feasible. For general information about our water quality, please refer to the latest Annual Water Quality Report that was delivered to customers June 2013. The report can be found on our website at www.iwvwd.com.

Water Quality Data Considered

The water quality data collected by IWVWD between 2010 and 2012 were considered for the purpose of determining compliance with drinking water standards and PHG reporting requirements. This data is all summarized in the District's Annual Water Quality Reports. For each regulated contaminant, CDPH establishes Detection Limits for Purposes of Reporting (DLR). DLRs are the minimum levels at which any analytical result must be reported to CDPH. Analytical results below the DLRs cannot be quantified with any certainty. In some cases, PHGs are set below the DLRs. Any contaminant reported below the DLR will be considered zero for the purpose of this report, which is accepted by the CDPH.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these newly required reports. The ACWA guidelines were used in the preparation of our report. No guidance was available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and the CDPH adopted what are known as Best Available Technologies (BATs) which are the best methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHGs and MCLGs are set much lower than the MCL, it is not always possible or feasible to determine what treatment is needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at zero. Estimating the costs to reduce a constituent to zero is difficult, if not impossible because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

Constituents Detected that Exceed a PHG or a MCLG

The following is a discussion of constituents that were detected in one or more of our drinking water wells at levels above the PHG, or if no PHG, above the MCLG.

Fluoride: Fluoride is the name given to a group of compounds that are composed of the naturally occurring element fluorine and one or more other elements. Fluorides are present naturally in water and soil at varying levels. Most water supplies contain some naturally occurring fluoride. In the 1940s, scientists discovered that people who lived where drinking water supplies had naturally occurring fluoride levels of approximately 1 part per million (ppm) or greater had fewer dental caries (cavities) than people who lived where fluoride levels in drinking water were lower. Many more recent studies have supported this finding.

CDPH's predecessor, the Department of Health Services, adopted regulations in 1998 that establish standards for the addition of fluoride to drinking water. The regulations are located in Title 22 of the California Code of Regulations (CCR) Sections 64433, et. seq.. The standards require fluoridating public water systems to maintain fluoride levels within a range that has been established for its climate. This is based on the concept that people in cooler climates typically drink less water per day than people in warmer climates. The optimal level for fluoride in the Indian Wells Valley is 0.8 ppm with a control range of 0.7 to 1.3 ppm. The average naturally occurring fluoride level in the District's wells is 0.75 ppm. The District is not required to add any additional fluoride to the drinking water.

The MCL for fluoride is 2.0 ppm; the PHG and MCLG is 1.0 ppm. We detected fluoride in two wells in 2011 that exceed the PHG. This was the last time the wells were tested for fluoride. The concentration of fluoride in well 10 was 1.2 ppm and the concentration in well 9A was 1.4 ppm.

The PHG for fluoride was established to prevent primarily dental fluorosis, or mottling of the teeth. Dental fluorosis is not a sign of fluoride poisoning. It is a condition where the dental hard tissues (enamel) are more porous than is found in normal enamel. Like many common substances vital for health (e.g. zinc and iron), fluoride can be poisonous in excessive amounts. Daily intake over many years of 20-80 milligrams or more, depending upon body weight, is required to produce symptoms of chronic poisoning. Doses such as these are associated with water supplies that contain at least 10 ppm of naturally-occurring fluoride. Millions of people have been consuming water containing natural or adjusted fluoride at 0.7 to 1.2 ppm throughout their lives with no adverse health effects.

The BAT for reducing fluoride in water (according to the EPA) is reverse osmosis or distillation. Blending is also a proven method for reducing fluoride in water. The most likely treatment that the District would install would be blending to reduce the level to 1.0 ppm. A cost estimate supplied by ACWA for groundwater blending including annualized capital and O&M costs is $0.64 per 1,000 gallons treated. Based on production from both wells 9A and 10 in 2012, the annual cost to blend water from these wells would be approximately $200,000.00 or about

$17.00 per customer per year. This is only an approximation using a cost estimate provided by one utility surveyed by ACWA that is blending to treat for fluoride.

Arsenic: Arsenic is a naturally occurring element in the earth's crust and is very widely distributed in the environment. All humans are exposed to microgram quantities of arsenic (inorganic and organic) largely from food and to a lesser degree from drinking water and air. In certain geographical areas, natural mineral deposits may contain large quantities of arsenic and this may result in higher levels of arsenic in water. Waste chemical disposal sites may also be a source of arsenic contamination of water supplies. Arsenic does not have a tendency to accumulate in the body at low environmental exposure levels. Studies in humans have shown considerable individual variability in arsenic toxicity. The levels of arsenic that most people ingest in food and water (ca. 50 µg/day) have not usually been considered to be of health concern for non-cancer effects.

The MCL for arsenic is 10 ppb, the PHG and MCLG for arsenic is 0.0004 ppb. We have detected concentrations of arsenic in all our wells except well 30 above the PHG from 2010 to 2012. The maximum level detected was 42 ppb in well 9A (May 2010) before the current arsenic treatment facility was operational. No water above the MCL of 10 ppb has been served from any well since August 1, 2011.

The health risk associated with arsenic, and the reason that a drinking water standard was adopted for it, is that people who drink water containing arsenic above the MCL throughout their lifetime could experience an increased risk of getting some cancers. The OEHHA (part of the California Environmental Protection Agency) has set the PHG at 4 parts per trillion (0.0004 ppb). The PHG is based on a level that will result in not more than 1 excess cancer in 1 million people who drink 2 liters daily of this water for 70 years. The actual cancer risk may be lower or zero.

The BETs for removal of arsenic in water are: activated alumina, coagulation/filtration, lime softening, ion exchange and reverse osmosis. The District is very familiar with the cost of treating wells for arsenic using coagulation/filtration technology. Most of the time, the District is reducing the arsenic concentrations in wells 9A, 10, 11 and 13 to non-detect levels (<2.0 ppb). Any results below the detection limit of 2.0 ppb is considered zero by CDPH. Currently, the cost per 1,000 gallons to reduce arsenic is $2.34, or $123.35 per customer per year. If all the District's wells except for well 30 had to be treated for arsenic to below the DLR, the cost could be almost $5,000,000.00 per year or almost $400.00 per customer per year. The cost could be much higher or lower depending on the technology chosen and facilities constructed.

Gross Alpha: Gross alpha activity detections are typically due to uranium. Exceedences of gross alpha particle activity can be considered a substitute for the uranium measurement if the gross alpha particle activity does not exceed 5 pCi/L. The only well tested during this reporting period for gross alpha was well 34. The average of the five sampling taken at well 34 during this reporting period was 3.6 pCi/L. This is just above the DLR of 3.0 pCi/L. The MCL for gross alpha is 15 pCi/L and the MCLG is zero. Therefore, the average from well 34 exceeded the MCLG of zero.

The BET cited in the literature to remove gross alpha particle activity and uranium is reverse osmosis (RO). Treatment of water by RO is a very costly and energy-consuming process. The District has looked at using RO to treat brackish groundwater at an estimated cost of $814.00 per acre-ft of water (primary desalting only). This translates into $2.50 per 1,000 gallons of water treated. Based on production from well 34 in 2012, the cost to remove gross alpha particle activity using RO would cost approximately $603,700.00 or $51.40 per customer per year. If all the District's wells had to be treated for gross alpha particle activity using RO, the cost could be over $10,000,000.00 per year or over $800.00 per customer per year.

Recommendations for Further Action

The water served by the Indian Wells Valley Water District meets all State of California Department of Public Health and USEPA drinking water standards set to protect public health. To further reduce the constituents identified in this report that are already significantly below the health-based Maximum Contaminant Levels established to provide "safe drinking water", additional costly treatment process would be required. The effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. In addition, the health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed at this time.