


MEMORANDUM

TO: CITY COUNCIL

FROM: STEVEN ADAMS, CITY MANAGER 

SUBJECT: CONSIDERATION OF GROUNDWATER MONITORING AND TEST FINDINGS

DATE: OCTOBER 27, 2009

RECOMMENDATION:

It is recommended the Council: 1) review groundwater monitoring and testing results; and 2) direct staff to prepare recommendations to address water supply and potential seawater intrusion issues.

FINANCIAL IMPACT:

There are no direct costs associated with the results of the report, but there will likely be significant costs associated with water supply measures that will be evaluated.

BACKGROUND:

During development of the City's 2001 General Plan and 2005 Urban Water Master Plan, the lack of water resources was identified as a significant issue. At the August 24, 2004 meeting, the City Council reviewed a Water Alternatives Study identifying 17 alternatives for Council consideration. Since that time, a number of presentations have been considered by the City Council regarding water alternative study results.

In 2008, it was determined the City had utilized 99% of its water entitlements. At the August 12, 2008 meeting, the City Council approved a Resolution declaring a "severely restricted water supply condition." Mandatory conservation measures were enacted.

Feasibility studies and efforts have been prepared on the following water supply alternatives:

- Nacimiento Water project
- Price Canyon oil field recycled water
- Desalination
- Recycled water
- Raising of the spillway at the Lopez Lake dam

A number of cost, environmental and regulatory challenges associated with these alternatives have been identified. Additional studies are currently being prepared on

**CITY COUNCIL
CONSIDERATION OF GROUNDWATER MONITORING AND TEST FINDINGS
OCTOBER 27, 2009
PAGE 2**

recycled water and raising the spillway at the Lopez Lake dam in response to direction received from the City Council at the September 9, 2009 meeting.

Meanwhile, the City's water conservation program and tiered rate structure were expanded, which have been successful in reducing water usage by 10% over the past year. In January 2009, the City entered into a 5-year temporary water purchase agreement with the Oceano Community Service District (OCSD). Efforts are also under way to determine the feasibility of obtaining State water from the County's excess allocation (subject to voter approval) and to activate Well #10 and reactivation of Well #11.

In early 2008, a groundwater study was prepared by Todd Engineering in coordination with Grover Beach, Pismo Beach and OCSD (northern cities overlying the Santa Maria groundwater basin) to determine if groundwater allocations could be increased. The results did not justify any increase in the safe yield, but did indicate that the basin was not in an overdraft condition at the time. It was recommended that a well monitoring program be initiated in response to conditions of the Santa Maria Groundwater Basin adjudication judgment and to better assess safe yield in the future.

In early 2009, a groundwater monitoring program created by Todd Engineering was implemented consistent with the Santa Maria Groundwater Basin adjudication judgment and the *2008 Annual Monitoring Report, Northern Cities Management Area*. As part of the overall monitoring plan, a program was also developed to sample and analyze water quality in sentry wells located along the coast. There are four sentry well clusters near the Northern Cities shoreline, distributed from Pismo Beach in the north to south of Oceano within the Oceano Dunes State Vehicular Recreation Area. Each of the four sentry well clusters includes multiple individual monitoring wells that tap distinct aquifer zones. Groundwater levels in the sentry wells were measured and water quality samples were taken in May and August 2009.

ANALYSIS OF ISSUES:

The Annual Monitoring Report documented low groundwater levels, including a broad range of groundwater levels below mean sea level that extended inland from the coast to encompass most of the major local municipal well fields. The low groundwater levels along the coast indicate a potential for seawater intrusion into the freshwater aquifers of the groundwater sub-basin. Seawater intrusion is a serious threat. Seawater is highly saline (with typical chloride concentrations of 19,000 mg/L) and mixing of even a small amount, as little as two percent, with groundwater is enough to make the water undrinkable. Once seawater has intruded and mixed in a groundwater basin, it is very difficult and costly to remove.

The water quality sampling of the sentry wells in May 2009 showed early chemical signs of seawater intrusion in one of the sentry well clusters, located near Oceano. Indicators at this well include increased concentrations of key constituents (such as

**CITY COUNCIL
CONSIDERATION OF GROUNDWATER MONITORING AND TEST FINDINGS
OCTOBER 27, 2009
PAGE 3**

chloride) and specific geochemical signatures similar to seawater. The deep and intermediate wells in this sentry well cluster have shown low groundwater levels for the past two years.

The May 2009 monitoring event revealed partial filling or blocking of several wells, and generally overdue maintenance at all of the wells. Accordingly, in August 2009 the sediment was removed, water levels were measured and the sentry wells were sampled again. A cluster of observation wells owned by OCSD was also sampled.

The second round of water quality sampling in August 2009 confirmed the preliminary findings from May 2009 that showed signs of seawater intrusion in the sentry well cluster near Oceano. Moreover, while most of the results from the other sentry wells showed little change, the August data from the sentry well cluster near Oceano showed that water quality in the middle and deep wells deteriorated significantly from May to August 2009. This indicates further intrusion onshore of the mixing zone that typically separates onshore fresh groundwater from offshore seawater.

Given available data, it is difficult to determine the potential extent or cause(s) of the problem, as well as the impact of the condition on the safe yield of the basin. However, it is clear that the test results further underscore concerns regarding the City's current water supply and immediate action is necessary. A number of meetings have been held with staff representatives from Pismo Beach, Grover Beach and the OCSD to develop a joint strategy. A consultant has been retained to prepare a peer review of the Todd Engineering report in order to confirm the conclusions. Immediate short-term measures being evaluated include the following:

- Temporary purchase of water from Avila Beach Community Services District;
- Increase of State water usage by OCSD to decrease groundwater use near the sentry well cluster in question;
- Trade of Lopez Water for groundwater with Pismo Beach in order to reduce groundwater pumping by Pismo Beach near the sentry well cluster in question;
- Temporary allocation of State water from the County;
- Development of a groundwater model to determine accurate data analysis on the extent and cause of potential seawater intrusion;
- Coordination of efforts with Nipomo and agricultural landowners; and
- Expansion of water conservation measures.

Long-term measures jointly being studied by the jurisdictions include raising the Lopez Lake spillway, obtaining State water, and development of a recycled water system. A recycled water system is particularly important since it could include an injection system designed to establish a seawater barrier at locations where seawater intrusion has been demonstrated to be a threat. Staff anticipates providing additional information and recommendations regarding immediate actions within the next month.

**CITY COUNCIL
CONSIDERATION OF GROUNDWATER MONITORING AND TEST FINDINGS
OCTOBER 27, 2009
PAGE 4**

ALTERNATIVES:

The following alternatives are provided for the Council's consideration:

- Review results of the testing and monitoring and direct staff to prepare recommendations.
- Provide other direction to staff.

ADVANTAGES:

The advantage of the monitoring program and testing have been to identify potential water quality issues so the City can respond proactively to address potential issues prior to a serious impact on the overall water supply.

DISADVANTAGES:

The results of the testing further heighten staff's concerns regarding water supply issues. Therefore, additional study and recommendations are necessary.

ENVIRONMENTAL REVIEW:

No environmental review is required for this item.

PUBLIC NOTIFICATION AND COMMENTS:

The Agenda was posted in front of City Hall on Thursday, October 22, 2009 and on the City's website on Friday, October 23, 2009. No comments were received.