STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF SEPTEMBER 2, 2010
Prepared August 11, 2010

ITEM: **15**

SUBJECT **Update of Waste Discharge and Water Reclamation Requirements (WDRs) for Lion's Gate Golf Partners, L.L.C, Santa Clara County – WDR Order No. R3-2010-0010**

KEY INFORMATION

Discharger:	Lion's Gate Golf Partners, L.L.C.
Location:	1005 Highland Avenue, San Martin, CA
Discharge Type:	Recycled domestic sewage
Design:	Secondary treatment with a sequential batch reactor, ozone disinfection, and wetland biofiltration
Disposal:	Irrigated field
Capacity:	30,000 gallons per day (gpd)
Reclamation:	Decorative ponds (landscape impoundments)
Existing Orders:	Waste Discharge and Water Reclamation Requirements Order No. 97-50

This action: **Approve Updated Waste Discharge and Water Reclamation Requirements Order No. R3-2010-0010**

SUMMARY

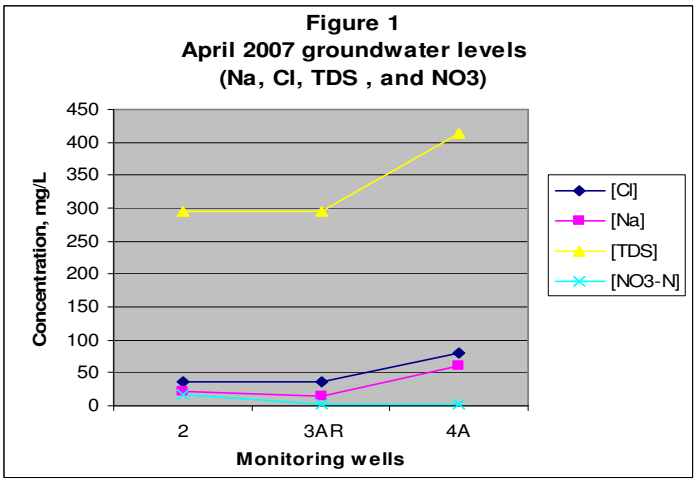
Staff proposes to update waste discharge requirements for the discharge of recycled water at the Lion's Gate Reserve (Reserve). In accordance with the updated requirements, the discharger will use recycled water to fill decorative ponds (classified as landscape impoundments in California Code of Regulations Title 22), participate in a regional salts and nutrient management plan in accordance with the State's Recycling Policy, and develop a salts management plan. Based on data collected to date, proposed monitoring reduces the number of constituents and eliminates some monitoring stations. Staff recommends the Central Coast Water Board adopt proposed Order No. R3-2010-0010.

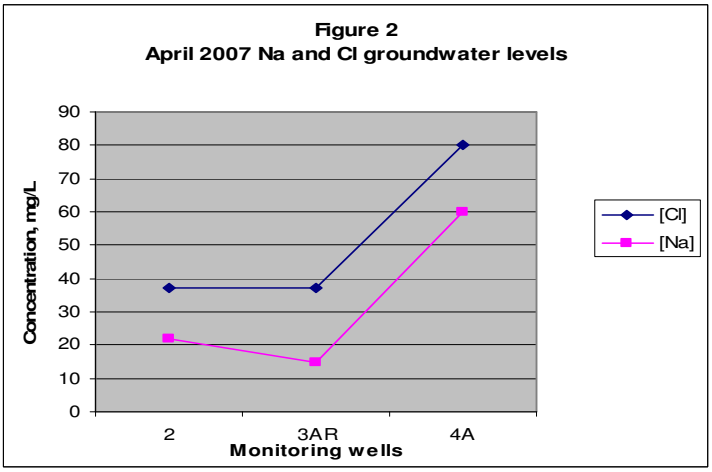
BACKGROUND

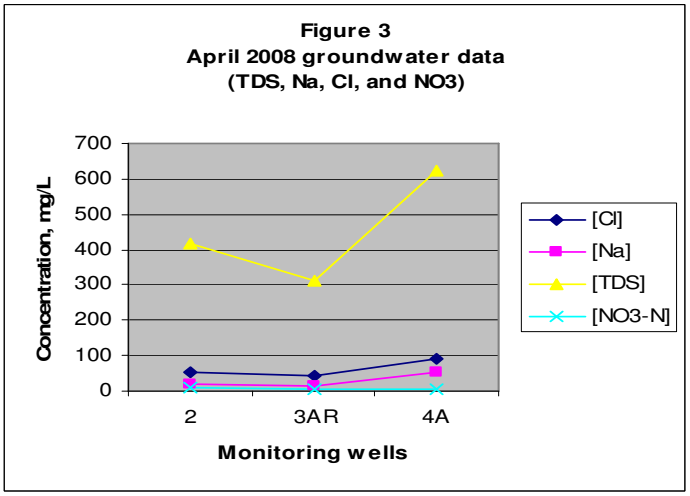
Lion's Gate Golf Partners, LLC (hereafter Discharger) owns the Lion's Gate Reserve, a golf course and residential development in Santa Clara County, California. The Discharger owns the wastewater reclamation plant, which is operated by the Lion's Gate Community Services District (CSD). The Discharger maintains five ornamental ponds (landscape impoundments) within the District's boundary. The CSD maintains the community's collection system and wastewater disposal system. The reclamation plant comprises primary treatment, a sequential batch reactor, ozone disinfection, and wetlands biofiltration. A digester stabilizes the plant's biosolids, then sent to landfill for disposal. The plant treats an average flow of 23,000 gpd.

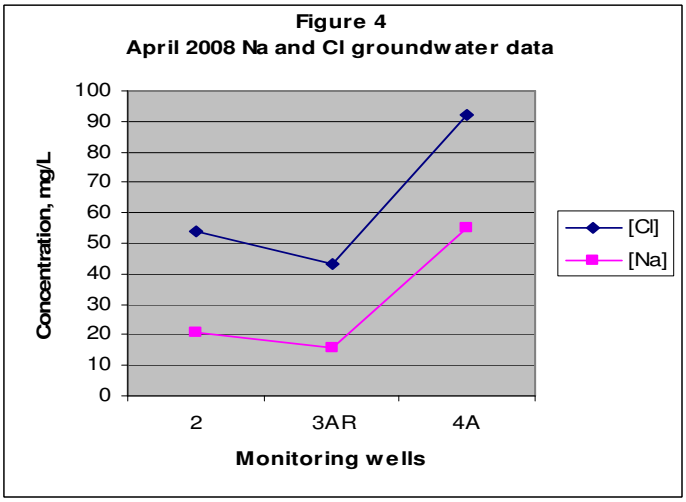
The Discharger first planned to irrigate the golf course and equestrian grazing and stable areas with recycled water. Therefore, the reclamation plant was designed and built to remove bacteria to the levels required for those uses. However, the Discharger does not irrigate the golf course or equestrian area and instead disposes of the wastewater to a lined storage pond followed by spray-irrigation of a disposal field. The recycled water's total coliform concentration is usually less than five Most Probable Number (MPN)/100 mL, well below the existing Order's limit of 240 MPN/100mL.

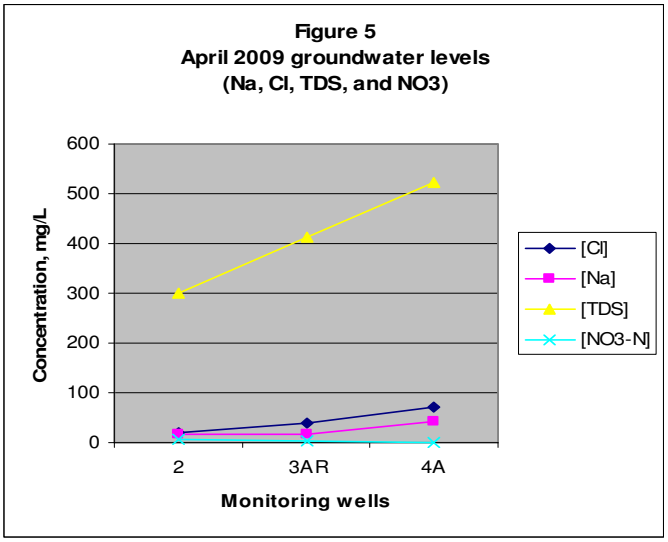
The following figures and tables provide groundwater and effluent quality data obtained through the monitoring and reporting program (MRP). The MRP requires monitoring of three groundwater monitoring wells (MW) shown in Figures 1 through 6; these are MW2, MW3A, and MW4A. Figures 1, 3, and 6 provide groundwater concentrations for Total Dissolved Solids (TDS), chloride (Cl), sodium (Na), and nitrate-nitrogen (NO3-N). MW4A is directly downgradient and across the disposal field from MW2; therefore, MW4A measures the discharge's effect on groundwater quality. Figures 2, 4, and 6 focus on Na and Cl groundwater concentrations.

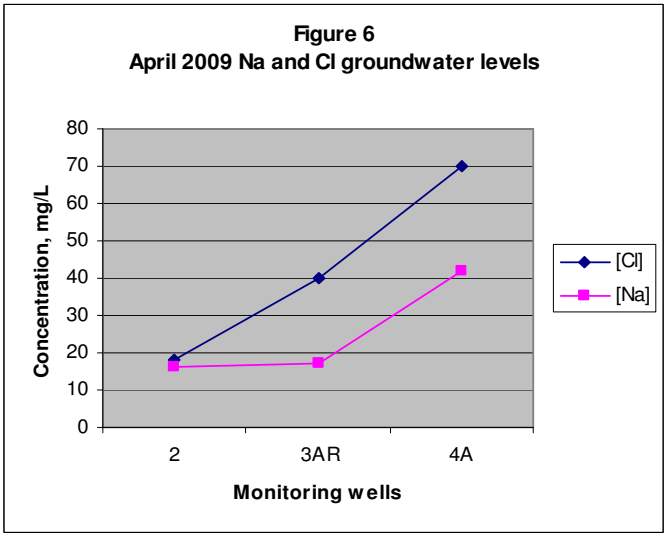












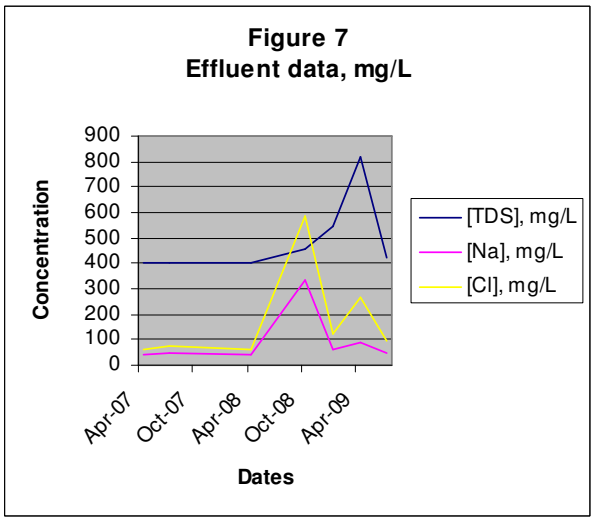


Table 1
Effluent data, mg/L

Date	[TDS], mg/L	[Na], mg/L	[Cl], mg/L
Apr-07	400	40	64
Jul-07	400	49	72
Apr-08	400	40	64
Oct-08	460	332	583
Jan-09	548	60	120
Apr-09	816	90	264
Jul-09	424	48	96
Average	**493**	**94**	**180**

Figure 7 plots TDS, Na, and Cl effluent concentrations since April 2007, and Table 1 provides semi-annual effluent TDS, Na, and Cl, and their means, which are reproduced in Table 3 for comparison.

Table 2 provides mean background groundwater concentrations for TDS, Na, and Cl for comparison with downgradient groundwater conditions illustrated in Table 3.

Table 2
Mean background groundwater constituent concentrations in well MW2, mg/L

Constituent		Year			
		2007	2008	2009	2007 -2009 mean
Total Dissolved Solids		345	460	390	400
Sodium		26	25	20	24
Chloride		65	61	43	56

Table 3						Effluent
Mean groundwater constituent concentrations in well MW4A, mg/L						
Constituent	**Basin Plan**	**2007**	**2008**	**2009**	**2007-2009 mean**	**2007-2009 mean**
TDS	300	500	615	580	565	493
Na	20	70	55	45	57	94
Cl	20	90	105	95	97	180

The figures and the tables above provide data spanning the years 2007 through 2009. Since the reclamation plant denitrifies the recycled water, effluent nitrate has continually been below five mg/L and has averaged one mg/L. The recycled water's nitrogen therefore cannot impair the groundwater's beneficial use as drinking water.

DISCUSSION

Salts management. Figures 1 through 6 all show substantial increases in TDS, Cl, and Na in groundwater downgradient from the disposal site monitored in well MW4A compared to upgradient groundwater monitored in MW2.

Table 2 provides constituent concentrations in groundwater upgradient from the discharge in MW2. Staff infers the discharge does not affect the quality of groundwater monitored in MW2, since it is completed in shallow groundwater more than 600 feet upgradient from the discharge point.

Table 3 provides the Basin Plan's median groundwater objectives for TDS, Na, and Cl (Basin Plan Table 3-8) for the Llagas Creek Sub-Basin to the Pájaro River, the 2007, 2008, and 2009 concentrations found in downgradient well MW4A for comparison, and the mean effluent concentrations over the same time.

These data demonstrate the following:

- While the discharge increased groundwater TDS, Na, and Cl concentrations in MW4A, the levels have not continually increased over time but have remained within a range (Table 3). Therefore, groundwater downgradient of the discharge likely accommodate the pollutants, which will likely be found at background concentrations farther downgradient. To fall to background concentrations, the downgradient groundwater TDS must drop around 150 mg/L. If the small discharge flow is compared with the much greater groundwater flowrate, it's likely that the groundwater TDS will drop to background within a relatively short distance.
- The discharge has not caused groundwater TDS to exceed the enforceable standard of 1,000 mg/L (Table 3). This fact reduces the level of concern and indicates the regulatory response to the increased salt concentrations in groundwater should be moderate.
- Mean effluent Na and Cl concentrations were around three times background (Table 2) and twice downgradient groundwater concentrations (Table 3). Therefore, effluent Na and Cl have degraded the quality of downgradient groundwater. This fact likely indicates water softener use in the community.

Water softeners within the Community Services District in residences, restaurants and other potable water use sites often employ common table salt (NaCl) to reduce the hardness of the potable water supply. When regenerated, the water softeners discharge the waste Na and Cl as brine, a highly concentrated solution of Na and Cl ions. Self-regenerating water softeners discharge the brine into the sewer and thence to the reclamation plant. The salts pass through the plant and remain in the recycled water. When disposed of to land, the Na and Cl enter the groundwater, resulting in increased concentrations, as shown in the data

provided above. Alternatively, canister water softeners eliminate discharge of Na and Cl to the wastewater stream because a service provider exchanges used canisters for new canisters and removes the used canister to a central regeneration plant. The service provider disposes of the brine in a manner protective of receiving water quality; commonly, the provider trucks the brine to a wastewater treatment plant that discharges to the Ocean or another salty or brackish receiving water, where the brine discharge does not impair beneficial uses.

Technical reports and data in Central Coast Water Board files document widespread and increasing salt and nutrient pollution in groundwater basins throughout the Central Coast Region, including the Pájaro River groundwater basin and Llagas Creek sub-basin. As shown, the discharge, albeit slightly, contributes salts to groundwater. The State's 2009 Recycled Water Policy requires recycled water users to reduce salt discharges or to participate in regional salt management programs.

Therefore, the proposed Order's Provision D.4. requires the Discharger to maintain a salts/nutrient management program or to participate in a regional program. The Santa Clara Valley Water District is developing a regional program, in which the Order requires the Discharger to participate at the level of involvement appropriate to the discharge's adverse effect on the groundwater basin's water quality. Furthermore, Provision D.5 requires the Discharger to address water softener use in the Community Services Area by describing in a technical report when it shall replace all self-regenerating water softeners with canister softeners. The proposed Order requires the Discharger to replace the regenerating water softeners by December 1, 2011.

Landscape impoundments. When deemed necessary, the Discharger proposes to fill its five ornamental ponds with recycled water. California Code of Regulations Tile 22, Division 4, Chapter 1, Article 1 section 60301.550 defines a landscape impoundment as "impoundments in which recycled water is stored or used for aesthetic enjoyment or landscape irrigation, or which otherwise serves similar purposes, and is not intended to include public contact." Typically, the reclamation plant reduces bacteria in the recycled water to less than two Most Probable Number (MPN) per 100 mL, well below the limit in the existing Order of 240 MPN/100mL. The proposed Order would lower the limit to 23 MPN/100mL, 30-day average. The recycled water's quality is suitable for use in a landscape impoundment, as well as its continued use to irrigate landscaping and feed. The proposed Order's Discharge Specification No. B.6 requires the Discharger to continue to post the disposal areas and to begin to post the landscape impoundments to warn the public that recycled water is stored or used at the sites.

COMPLIANCE HISTORY/STATUS

The Discharger has invariably complied with all discharge requirements and specifications included in the existing Order.

CHANGES TO THE ORDER

As discussed above, the proposed Order differs from the existing Order. The proposed Order:

- Reduces the Total Coliform effluent limit to 23 MPN/100mL from 240 MPN/100 mL,
- Adds landscape impoundments as an approved use of the recycled water,
- Requires the Discharger to participate in development and implementation of the regional salts and nutrient management program being created by the Santa Clara Valley Water District, and
- Requires the Discharger to investigate water softener use within the service district and to replace all self-regenerating softeners with canister softeners by December 1, 2011.

CHANGES TO THE MONITORING AND REPORTING PROGRAM (MRP)

Based on review of monitoring results, staff proposes to reduce monitoring of some wastewater constituents in groundwater. MRP No. R3-2010-0010 requires groundwater sampling for TDS, sodium, chloride, pH, and the nitrogen species (nitrate, nitrite, total nitrogen, and total Kjeldahl nitrogen).

Eliminated are calcium, carbonate, bicarbonate, phosphorus, hardness, silica, boron, iron, magnesium, alkalinity, and sulfate. Staff proposes to eliminate monitoring for these constituents because nine years of data show they have remained at stable concentrations, have been less than relevant Basin Plan objectives, and can be measured as a group via TDS monitoring, to which they contribute. Staff proposes to eliminate groundwater monitoring for ammonia because the reclamation plant converts ammonia, which is found in raw domestic wastewater, to nitrate. Therefore, ammonia is unlikely to be found in groundwater affected by the discharge. Staff proposes to eliminate monitoring for 2,4-dinitrophenylahydrazine because groundwater samples have never contained it, it has been banned, and is not used. Staff proposes to eliminate monitoring for chlorothalonil because monitoring has not detected it in any sample.

Staff proposes to eliminate surface water monitoring because the disposal field drains into the reclamation plant's pond and no farther. Therefore, the recycled water cannot adversely affect the quality of surface waters.

CEQA SUMMARY

These waste discharge requirements are for an existing facility and are exempt from provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.) in accordance with Section 15301, Chapter 3, Title 14, of the California Code of Regulations.

COMMENTS

Santa Clara County Environmental Health Department – No response
William Marcum – No response

RECOMMENDATION

Adopt Updated Waste Discharge and Water Reclamation Requirements Order No. R3-2010-0010, as proposed

ATTACHMENTS

1. Proposed Waste Discharge and Water Reclamation Requirements Order No. R3-2010-0010
2. Proposed Monitoring and Reporting Program No. R3-2010-0010.