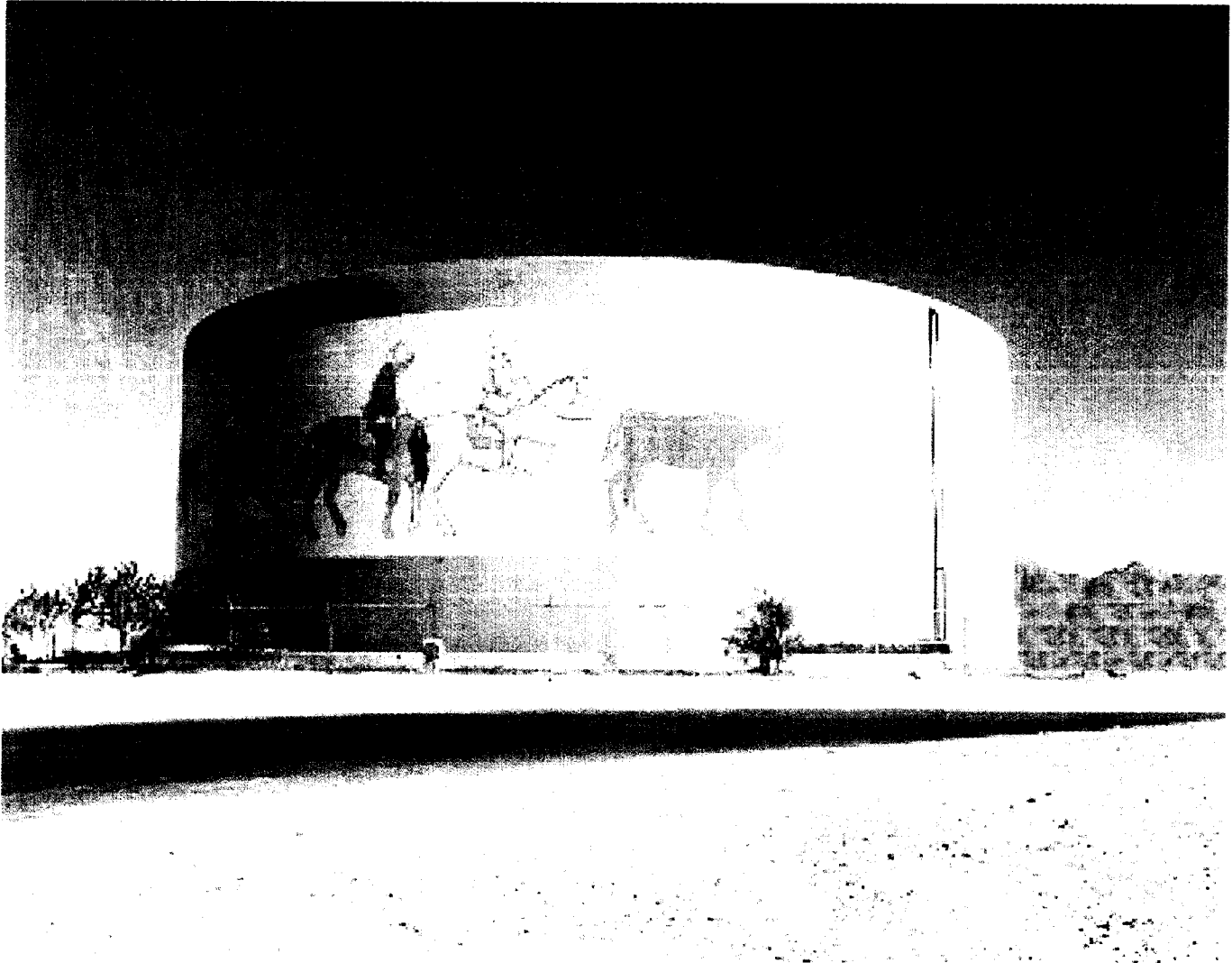


City of Las Cruces



*City of Las Cruces
Drought and Water Emergency Response Plan*

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I. EXECUTIVE SUMMARY

Drought is a natural phenomenon that has recurred at varying intervals throughout history. The City of Las Cruces Utilities Department defines drought as an extended period of below-average precipitation and/or river flow that stresses the City's water supply by reducing the City's well pumping capacity.

For planning purposes, City of Las Cruces' water supply strategy is to have enough water to meet the customers' water needs without compromising public health and safety. It is impossible to predict when drought will occur or how long it will last. Our water supply comes from deep aquifers that are not affected by long-term droughts of one to two years. Even though our main aquifer, the Mesilla Bolson, is replenished by the Rio Grande, a long-term drought that curtails water deliveries in the river and increased groundwater pumping can have an adverse effect on well pumping capacities.

It is the intent of the City of Las Cruces Utilities Department to recognize drought conditions early and respond appropriately. Our prime drought response goal is to reduce water use so that supply will be available for the most essential uses for the drought's duration. Accordingly, we have developed this Drought and Water Emergency Response Plan (DRP) to identify triggering criteria, implementation authority, potential response measures, and variances. The DRP is also intended to respond to water emergencies that temporarily result in reduced water production or distribution.

If the City Council approves a DRP, it will be necessary to modify the City's Water Conservation Ordinance concerning declared water emergencies.

II. WATER SUPPLY AND DEMAND

The City of Las Cruces Water Utility provides water to a population of approximately 74,000. Water supply comes entirely from 28 wells in the Mesilla Bolson and four wells in the Jornada Bolson. At this time, the City's West Mesa wells are not included in this total because they are not connected to the valley water system. The peak system demand in the summer of 2002 was approximately 30,427,000 gallons per day excluding West Mesa customer demand. Even though the West Mesa production and distribution system is a "stand alone" system, the DRP would apply to its customers.

Weather is the single biggest factor affecting demand. Other factors affecting demand include population growth, the effects of the City's long-term water conservation efforts, and water rates.

III. DEFINITIONS

The following definitions are used in the DRP:

Maximum system-wide pumping capacity: The total water pumped from all wells per day at 100% capacity.

Minimum system-wide storage requirement: System-wide water tank storage levels necessary to provide the following minimum capacities to ensure public health and safety:

- Operational storage (25% of maximum peak daily demand);
- Fire flow storage (6000 gallons per minute for four hours); and
- Emergency storage (20% of average day demand).

Operational storage: Amount of water in storage needed to satisfy peak daily demand. This storage is used when water demand exceeds pumping capacity.

Seven day moving average: Running average of the seven previous days which is updated daily.

Water Emergency: System failure due to hydrological, mechanical, electrical or any other condition that reduces the total system-wide pumping and/or storage capacity, which cannot be remedied within seven days. Most water emergencies such as a major line break can be repaired within seven days.

Goal: Targeted reduction in water use measured from the seven day moving average of system-wide water production when a Level I emergency is declared.

IV. DETERMINING SEVERITY OF WATER EMERGENCY

Water pumping and storage levels are monitored on a real-time basis through a state-of-the-art supervisory control and data acquisition (SCADA) system. This information is immediately available for daily assessment of drought or water emergency impacts on the water system.

The DRP is based on three levels of drought or water emergency, each of which is triggered by the expected or actual loss of pumping and/or storage capacity at any given time. Utilizing a seven day moving average of pumping and/or storage capacity, response levels will be determined as described below. Figure 1 and Exhibit “A” shows a condition where there is no water pumping emergency. Figure 2 and Exhibit “B” shows a condition where there is no tank storage capacity emergency.

Figure 1: No Emergency Capacity Condition

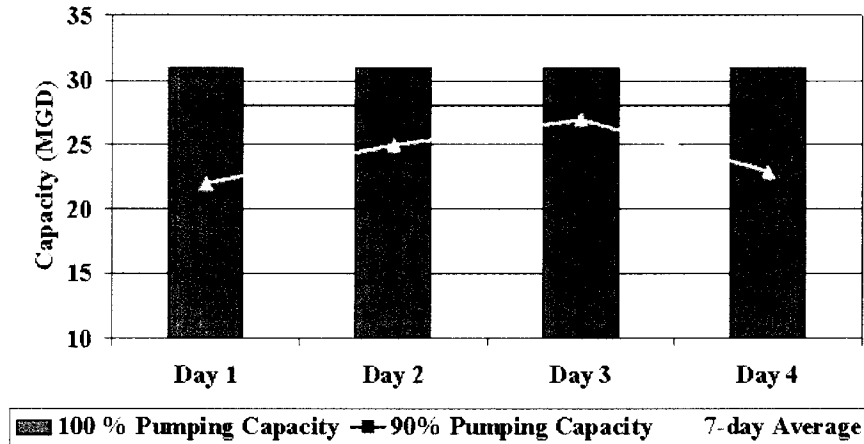
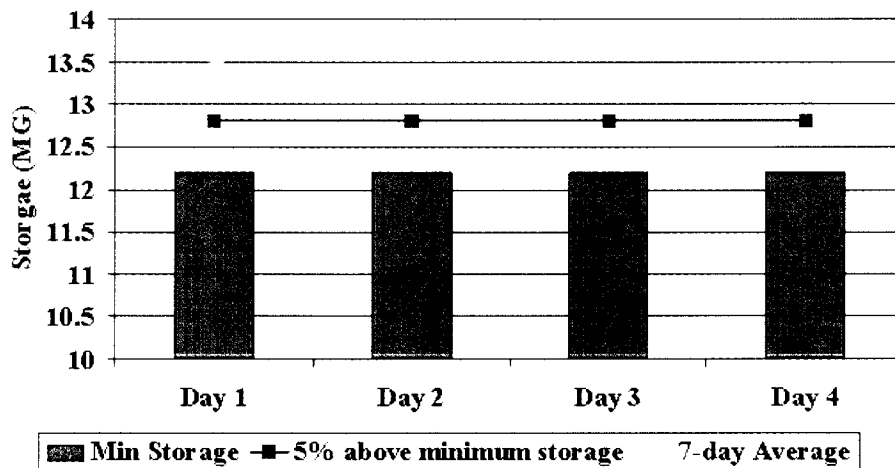


Figure 2: No Emergency Storage Condition

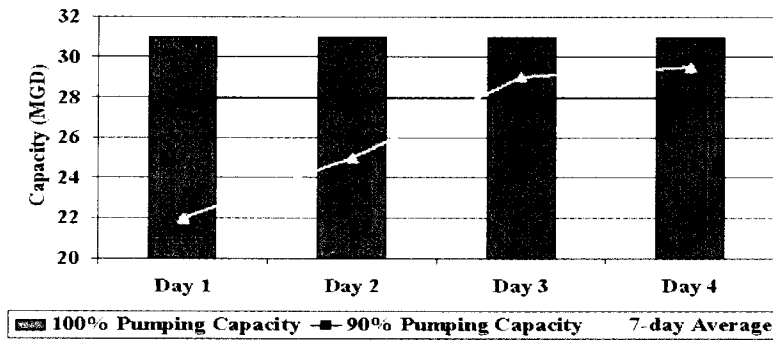


A. Level I - Mild

A Level I water emergency exists when either of the following conditions occur:

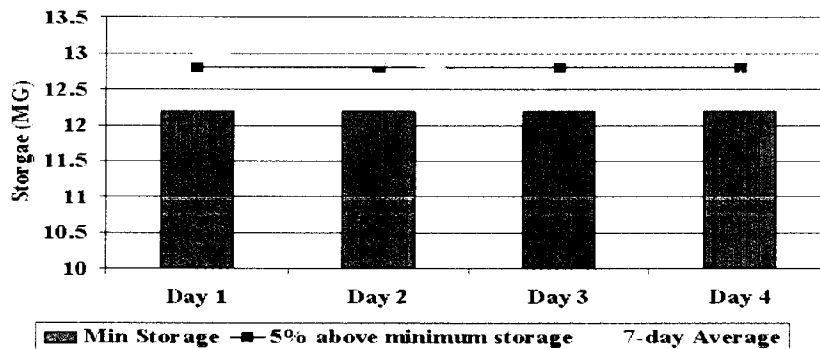
- **Condition 1.** When the seven day moving average of system-wide daily water production is within ten percent (10%) of the maximum system-wide water pumping capacity (Figure 3).

Figure 3: Level I Emergency Capacity Condition



- **Condition 2.** When the 7-day moving average of system-wide minimum daily tank storage falls within five percent (5%) of the minimum system-wide tank storage requirement (Figure 4).

Figure 4: Level I Emergency Storage Condition

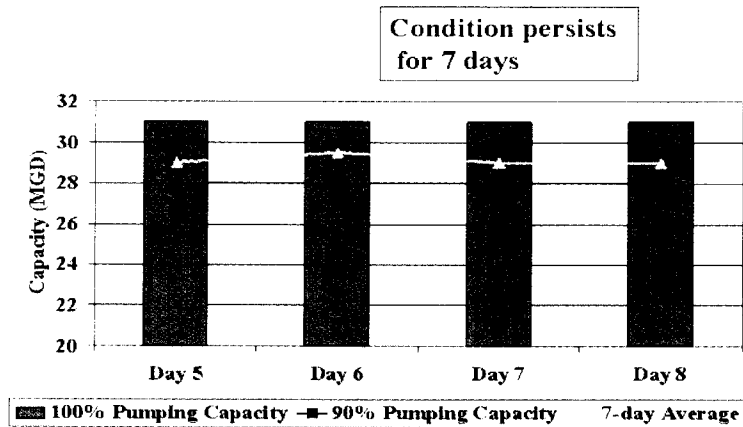


System operations will determine when Condition 1, Condition 2 or both are used to trigger a Level I water emergency.

B. Level II - Severe

A Level II water emergency exists when the seven day moving average of system-wide water production is within ten (10%) percent of the maximum pumping capacity for 7 consecutive days (Figure 5).

Figure 5 Level II Emergency

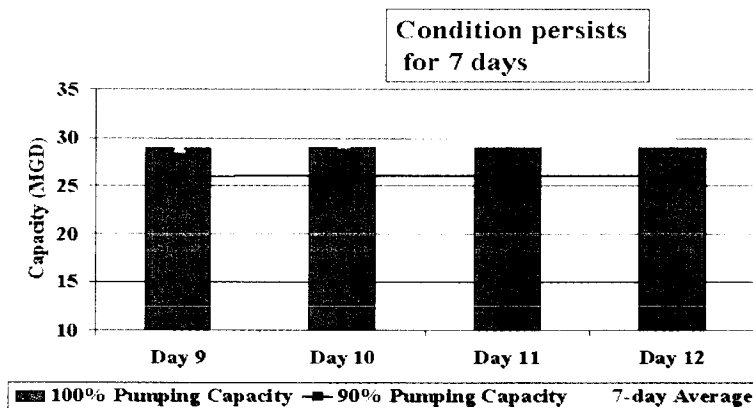


Storage condition is assumed to be severe and is not used as a trigger.

C. Level III - Critical

A Level III water emergency exists when the seven day moving average of system-wide water production equals or exceeds the maximum pumping capacity for seven consecutive days (Figure 6).

Figure 6 Level III Emergency



Storage condition is assumed to be critical and is not used as a trigger.

V. IMPLEMENTATION AUTHORITY

Once a determination is made based on operational conditions that a drought or water emergency response level has been triggered, the following occurs:

A. Level I - Mild

The Utility Director advises the City Manager, who in turn declares a Level I emergency. City Council is informed immediately. Response measures are implemented automatically.

B. Level II - Severe

The Utility Director advises the City Manager, who in turn declares a Level II emergency. Mandatory response measures are implemented immediately. An emergency City Council meeting will be called for the Council to determine whether any of the discretionary response measures should be implemented.

C. Level III - Critical

The Utility Director advises the City Manager, who in turn declares a Level III emergency. Mandatory response measures are implemented immediately. An emergency City Council meeting will be called to determine whether any of the discretionary response measures should be implemented.

VI. GENERAL RESPONSE MEASURES

A. **Increasing Water Supply.** The City of Las Cruces Water Resources could increase its water supply in the event of a drought. There are several options for doing this, each presenting its own set of intergovernmental and technical considerations. Among the possibilities:

- Drill additional wells.
- Negotiate water supply agreements with other water providers.

B. **Decreasing Water Demand.** The City Water Resources' prime drought response is to reduce water use so that supply will be available for the most essential uses during the duration of the drought or water emergency. There are a wide variety of options that could be used to decrease water use. In general, it is expected that reductions would be voluntary during a mild drought, with mandatory measures being phased in if drought conditions become more serious. It is important to ensure that any discomfort, difficulty or potential loss is shared as equitably as possible across all customer classes.

VII. SPECIFIC RESPONSE MEASURES AND EXPECTED GOALS FOR EACH EMERGENCY LEVEL

A. Level I – Mild

1. Goal: 10% reduction in water use
2. Mandatory Response Measures to be Implemented by City Manager:
 - Initiate campaign to alert public to drought or water emergency and to response measures that they can expect if emergency continues or intensifies.
 - Begin vigorous enforcement of Water Conservation Ordinance.
 - Require that the City and request that other governmental entities reduce their own water use by 10% or more to demonstrate leadership in dealing with the crisis, and then publicize their results.
 - Notify water customers of the City Manager’s action and the time framework for implementation of emergency response measures.
 - Contact special interest groups with heavy water use to get their ideas and support.
 - Publish suggestions for temporarily reducing water use.
 - Encourage City residents connected to private wells or a private water utility company to reduce water use.
 - Ask customers to voluntarily reduce outdoor water use using their own methods and water suggestions.
 - Discourage changes in landscape or establishment of new landscape that increase water demand.
 - Monitor drought response effectiveness, recommend adjustments monthly to City Manager, report to the public regularly, and document results.

B. Level II - Severe

1. Goal: 20% reduction in water use.
2. Mandatory Response Measures to be Implemented by City Manager:
 - Continue all measures initiated in Level I.
 - Require that the City and request that other government entities reduce their own water use by 20 percent or more to demonstrate leadership in dealing with the crisis, and then publicize the results.

- Establish and generate publicity about a Drought Response Hotline, and prepare Las Cruces Utilities and customer service employees to respond to drought-related questions and give information.
 - Train and assign Las Cruces Utilities field services and meter reading personnel to:
 - Monitor outdoor water use.
 - Issue warnings and report to Codes Enforcement.
 - Restrict outdoor vegetation watering
 - Prohibit planting new lawns from seed or sod.
 - Generate more intense public discussion and media involvement about water use priorities, ways to cut water use while minimizing impacts on landscape, and recovery planning.
 - Intensify public discussion about water use priorities and ways to reduce water use, and involve the Las Cruces Fire Department more intensively in these public discussions.
 - Intensify public information to reinforce the need for extreme measures.
 - Encourage customers to voluntarily limit or eliminate non-essential water uses and provide guidelines.
 - Publish extraordinary efforts of residential and commercial customers as examples of leadership.
 - Perform water use audits for high-volume water users in all customer classes, advise them on ways to reduce water use and, where appropriate, recommend retrofit devices.
 - Publish a do-it-yourself “water waste reduction” brochure for households and aggressively promote it by inserting it into water bills, by utilizing the City’s web site, and using other effective distribution methods.
 - Further restrict vehicle washing.
 - Monitor effectiveness and update City Council on a monthly basis.
3. Discretionary Response Measures Which May Be Implemented by City Council:
- Introduce drought pricing mechanisms such as a surcharge on water use in excess of the average daily per capita or per household consumption.
 - Revoke waivers to franchised private water utilities for their customers within the City limits and require compliance with City’s outdoor vegetation watering restrictions.

C. Level III – Critical

1. Goal: 30% reduction in water use
2. Mandatory Response Measures to be Implemented by City Manager:
 - Continue all measures initiated in Level I and Level II.
 - Prohibit all fire hydrant uses except those required for public health and safety.
 - Require all hotels, motels, and bed and breakfast establishments to have only showerheads and faucet aerators meeting maximum flow rates of 2.5 gallons per minute as per the 1997 Uniform Plumbing Code Sec. 402.1-9.
 - Intensify reductions of outdoor water use:
 - Authorize Water Resources staff to assist Codes Department personnel in policing water conservation ordinance violations.
 - Prohibit all vehicle washing.
 - Prohibit filling private swimming pools.
Reduce the use of or close public and private swimming pools.
 - Require that ornamental fountains be turned off.
 - Impose further restrictions in landscape water use in proportion to the severity of the drought.
 - Restrict greenhouse and plant nursery water use.
 - Restrict water use for fertilization, pesticide and herbicide application by commercial enterprises or by individuals.
 - Prohibit all new landscaping including planting of trees and shrubs except for extremely drought resistant varieties such as cacti or mesquite.
3. Discretionary Response Measures Which May Be Implemented by City Council:
 - Refine or adjust drought pricing mechanisms.
 - Prohibit all outdoor water use except for subsistence irrigation of trees and shrubs.
 - Terminate water utility service if a violation is not immediately corrected after written notice is given to the customer or posted on the customer's premises.
 - Impose a moratorium on new water connections.

VIII. TERMINATION OF RESPONSE MEASURES

A. Level 1 - Mild

Level I response measures may be rescinded by the City Manager when the triggering conditions have ceased to exist for at least seven consecutive days.

B. Level II – Severe

Mandatory Level II response measures may be rescinded by the City Manager when the triggering conditions have ceased to exist for at least seven consecutive days. Upon termination of mandatory Level II response measures, Level I response measures go into effect unless otherwise determined by the City Manager. Discretionary Level II response measures may only be rescinded or modified by the City Council.

C. Level III – Critical

Mandatory Level III response measures may be rescinded by the City Manager when the triggering conditions have ceased to exist for at least seven consecutive days. Upon termination of the mandatory Level III response measures, the mandatory Level II response measures go into effect unless otherwise determined by the City Manager. Discretionary Level III response measures may only be rescinded or modified by the City Council.

IX. PUBLIC OUTREACH

During a drought, it is essential that City staff communicate effectively not only with our customers, but also with other area water suppliers, local governments, and other groups who may be affected by the City's drought response.

During drought or water emergency conditions, Utility staff is directed to actively work with the City Public Information Office and other agencies to ensure the public is fully informed about the conditions affecting water supply.

X. VARIANCES

Customer specific variances may be granted in cases of hardship or very special conditions. Variances shall be submitted to the Utilities Director for review and recommendation. Final determination as to whether a particular circumstance warrants a variance will be made by the City Manager in consultation with the Legal Department.

A variance will be granted only if it is found that the requested water use is necessary to prevent an emergency condition relating to public health or safety, or extreme economic hardship; or essential governmental services such as fire and similar emergency services. Efforts made to conserve water at any time prior to onset of emergency conditions may be considered in granting a variance.

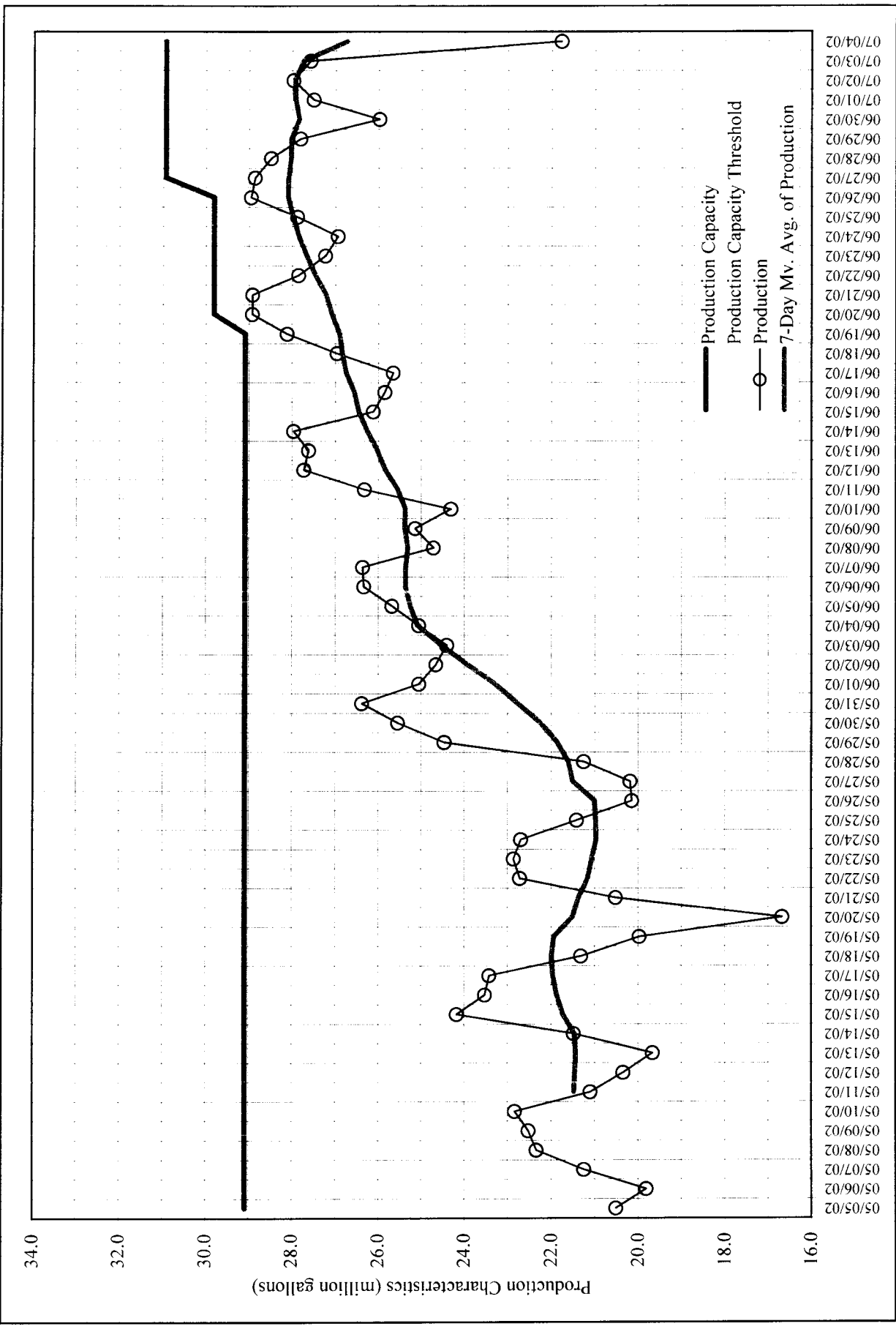
XI. SUMMARY

The DRP provides a technical approach to monitor water supply conditions using the City's SCADA system. Real time monitoring of water supply and storage are used to develop "triggers" of water emergency levels. Emergency levels are classified as Mild, Severe and Critical, depending on specific system conditions.

Each emergency level has a series of measures intended to reduce water use anywhere from ten (10) to thirty (30) percent during the duration of the emergency conditions. Measures may include the introduction of water pricing mechanisms as directed by the City Council.

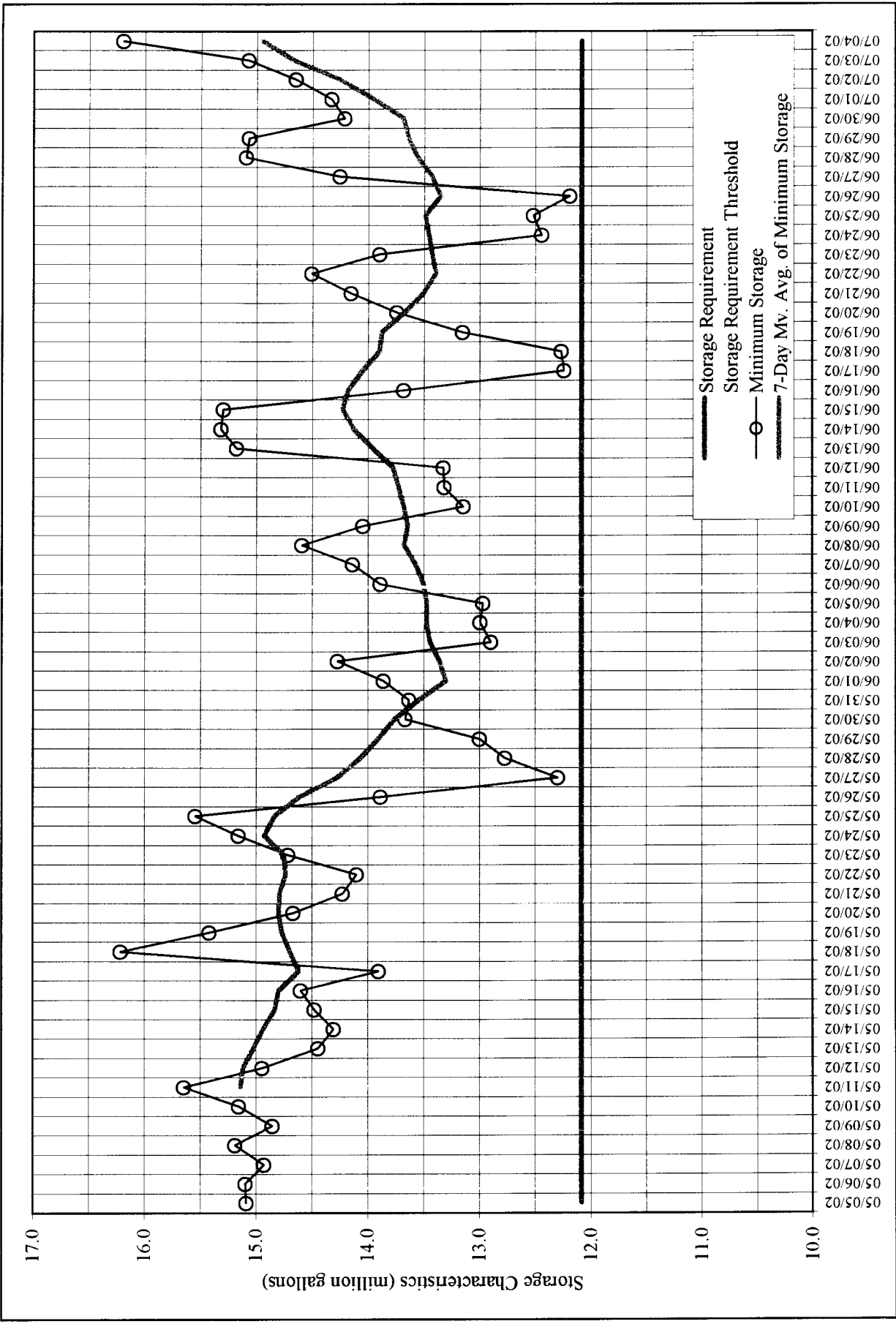
While the options listed in the DRP are based on lessons learned here and from other water utilities during past droughts, it is important to understand that every drought is different and that the City Manager, in consultation with the Utilities Director, will adjust and refine measures based on actual drought conditions. This plan is intended to help the City of Las Cruces be better prepared when a drought or water emergency occurs.

Exhibit A



CITYWIDE DAILY PRODUCTION
 (does not include the West Mesa system)

Exhibit B



CITYWIDE DAILY MINIMUM TANK STORAGE
 (does not include the West Mesa system)