

**LOSS OF COMMUNITY IN THE  
DESERT REGION WATER PUMPING PLANTS**

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**A REPORT  
PREPARED FOR**

**METROPOLITAN WATER DISTRICT (MWD) OF SOUTHERN CALIFORNIA**

**SUBMITTED BY**

**THE USC COMMUNITY DEVELOPMENT & DESIGN FORUM  
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## TABLE OF CONTENTS

1. Executive Summary.....	5
2. Introduction.....	6
3. What is Community? — A Literature Review.....	7
3a. Meaning of Community.....	7
3b. Community Sense and Its Measurement.....	8
4. Characteristics of MWD Pumping Stations.....	9
4a. Survey Instrument: Research Design.....	9
4b. Analysis of Survey.....	11
4c. Summary of Findings.....	29
5. Housing Opportunities in Neighboring Cities.....	31
6. Recommendations.....	32
7. Bibliography.....	34
<b>Appendix A:</b> Comments – Sense of Community Exists or Does Not Exist.....	i - iv
<b>Appendix B:</b> Comments - Reasons Why MWD Should Continue or Discontinue to Provide Housing.....	v – ix
<b>Appendix C:</b> Survey Questionnaires of Supervisors and Employees	

## 1. EXECUTIVE SUMMARY

The intent of this study is to determine the threshold number of housing units required to maintain the sense of community in the five Desert Pumping Plants (Gene, Whitsett (Intake), Iron Mountain, Eagle Mountain, and Hinds) of the Metropolitan Water District (MWD) of Southern California. We reviewed the literature on community and conducted a survey to obtain insights into the threshold size. Our study reveals the following.

First, the sense of community is prevalent across all MWD pumping stations irrespective of their size. Second, a majority of the respondents (66%) concurred that the sense of community and belonging in MWD would suffer if MWD removes housing. Third, low rent (ranging from \$80-\$100 per month) is the primary reason why respondents choose to stay in MWD provided housing. Fourth, an overwhelming majority of the respondents (89%) indicated that MWD should continue to provide housing principally because of security concerns and emergency requirements of the pumping stations. Fifth, the minimum number of employees needed to run the pumping

stations and ensure security is around seven. Sixth, alternative housing opportunities are available at affordable prices and within a reasonable commuting distance (30-60 minutes driving time) from Gene and Whitsett Intake.

We observe that the pumping station at Gene has an inordinately high number of employees (43 respondents) as compared to other pumping stations (12 respondents on average, based on Eagle, Hinds, and Iron,). Correspondingly, Gene also has a higher number of housing units to accommodate this population. If the work requirements of the pumping station at Gene are similar to other plants at Eagle, Hinds, and Iron, it clearly follows that the pumping plant at Gene could be managed with fewer employees residing on-site. Since a sense of community prevails at other pumping stations despite their small size and remoteness from neighboring cities, Gene possibly could also reduce its on-site workforce and still continue to maintain the security and other standards required to run the station.

In Gene, over one-third of the respondents live in non-MWD housing within commuting distance in Lake Havasu City. In addition, roughly one-fourth of the respondents own or

rent houses outside MWD while living in MWD provided housing. Furthermore, approximately 43% of the respondents working in Gene replied that their sense of belonging and pride will not be diminished even if MWD were to remove all housing. Of the employees who work at, but live outside of Gene, 64% clearly indicated that their sense of belonging would not be compromised if MWD removed all housing. In contrast, roughly one-third of the respondents living in other MWD housing indicated that their sense of belonging and pride would not be diminished if MWD stopped providing housing.

Therefore, Gene pumping station is a prime candidate for reduction of the number of MWD provided housing units. It appears that the sense of community, pride and belonging, emergency requirements and security conditions, can still be maintained with a pared down housing supply.

## **2. INTRODUCTION**

The Community Development and Design Forum at the USC School of Policy, Planning, and Development was commissioned by the Metropolitan Water District of Southern California (MWD) in 1998 to conduct a study on the *Loss of*

*Community* in the Water Pumping Plants located in the Desert Branch. There are five such Pump Plants—Gene, Whittsett (Intake), Iron Mountain, Eagle Mountain, and Hinds—which pump water up the hills along the course of the Colorado River Aqueduct. The aim of this study is to determine the threshold number of housing units that will sustain a sense of community in these five settlements.

MWD has traditionally provided housing to its employees in the five Pump Plant sites. It owns and maintains nearly 117 units, ranging from four units at Whittsett to about 49 in Gene. MWD perceives an opportunity to reduce the number of housing units at these pumping stations due to the availability of housing and other services (such as schools, hospitals, shopping, recreation etc.) in the neighboring cities. For example, Gene, which is located within half an hour of commuting distance from Parker and Lake Havasu City, is a prime candidate for a reduction in housing units. The residential markets in these two cities offer a range of housing options at prices that are affordable to MWD employees. Social infrastructure is also comparatively well developed in these two cities.

Despite the opportunity for reduction, MWD perceives that a few housing units need to be maintained in each Pumping Plant. There are two primary considerations in continuing to maintain some housing stock in each Plant:

- First, some employees are required to be within a distance of 15 minutes response time to attend to alarm calls and any other emergencies that may arise in the Plant. On-site housing helps in such quick response. However, the response time is currently under review, and may alter the requirement of immediate proximity.
- Second, the on-site housing to employees aids in protecting the MWD facilities. Presence of employees has deterred curious strangers who have trespassed into the Pumping Plants in the past. The “lived-in” look at reservoirs and remote Plants provides a sense of security, and promotes a sense of ownership. Of course, alternative policing mechanisms and security alarm systems (with remotely operated video cameras and motion sensors) also exist. However, that requires consideration of cost to benefit ratios of alternative

security systems, which is outside the scope of this study.

Thus, MWD intends to maintain a threshold number of housing units and preserve a *sense of community* among the residents. The central feature of this study is to determine this threshold number required to maintain the community sense. To achieve this objective, we reviewed the relevant literature, conducted informal interviews, and designed a survey instrument targeting both MWD employees and supervisory staff. In this report, we present the results of the survey data and a summary of the key findings. From this, we draw conclusions regarding the optimal size of the settlements that sustain a sense of community.

### **3. WHAT IS A COMMUNITY – A LITERATURE REVIEW**

#### ***3a Meaning of Community***

Community has several shades of meanings. The sense of community depends on the meaning we invoke. In this

section, we review the meaning of community from different perspectives to understand its several dimensions. The review is also made in the context of small sized settlements similar to the MWD Pump Plant sites. However, the literature on small communities like MWD Plant sites is sparse. Hence, we draw lessons from an interdisciplinary literature survey of what sustains a community to arrive at the criteria for a threshold size.

There are several company towns in the United States that are similar to MWD Pumping Plant sites. Allen (1966) identified nearly 200 company towns on the west-side of the country alone. The similarities and the differences hold significance for our study. First, the company owns both housing and land. Second, similar to MWD Pump Plants, the residents work for a single corporation. Third, housing is made available to the employees at nominal rates as an incentive to attract employees to remote locations. The key point here is that the lifestyle of the employees is centered on their work; their daily social circle consists largely of fellow employees.

The MWD Pump Plants also differ from the company towns in a distinctive way. The labor requirement for the Pump Plants is much smaller than other company towns due to

technological advances and the scale of operation of water pumping. Hence the size of the MWD settlements is very small compared to others—the largest MWD settlement is less than one-fourth the average size of a small company town. Thus a comparative study with these other remotely located small company towns has limited lessons for determining the threshold size for community. Hence, we review the meaning of community for understanding the dimensions of the threshold size.

### *3b Community Sense and Its Measurement*

Traditionally, community has been linked to a place. Geographical proximity and the interpersonal dynamics that arise from it are considered to be significant for the development of the community. In such a case, the density of the housing units matters. An optimal housing density (number of housing units per unit area of land) needs to be maintained for the community feeling. While higher density results in overcrowding and infrastructural deficiencies, lower density leads to a sprawl development; in both cases the community sense is strained (Sagy et al 1996).



Sarason (1974) was path breaking in defining the sense of community from a psychological point of view. For him, the sense of community lies in the similarity of perceptions, interdependence, and identification with a group. In their influential article, McMillan and Chavis (1986) identified four elements from the psychological viewpoint. They are (i) membership, which entails a feeling of belonging; (ii) influence, which entails that the individual and the group matter for each other; (iii) reinforcement through integration and fulfillment of needs; and (iv) shared emotional connection, including a shared sense of history, places and experiences. Several other authors have used these elements to develop a Sense of Community Index, which gives a measure of the extent to which there is a feeling of community in a given setup. We adapt the four elements to the context of MWD to provide a set of indicators to give the threshold size for preserving the sense of community.

In another influential book, James Coleman (1990) defines the idea of community from a sociological perspective. Communities are informal social networks, where triangular relationships are required for closure. Oldenburg (1989) argues that there is a separation between three life spaces of

employees—the working space (company), the living space (home), and the common space (community). While the three spaces could spatially overlap, there are differences between them in the context of MWD Pumping Plant location. The Plants provide an integrated space of work and daily living to the residents, but there are limitations in terms of social amenities (e.g. shopping, church, recreation, etc.) where the third common space of community exists. The paucity of social amenities is a factor that limits community size in MWD pumping stations.

#### **4. CHARACTERISTICS OF MWD PUMPING STATIONS**

##### ***4a Survey Instrument: Research Design***

Based on the above review, several dimensions of the community can be identified which, in turn, can be operationalized for determining the threshold size for the community. This was achieved by conducting a survey that intended to gauge various facets that contribute to the sense of community within a given place. Each MWD pumping station

is unique given its location, size, proximity to neighboring cities, and access to services. The survey attempts to understand the extent to which there exists a sense of community within each of these distinctive pumping plants. The survey is of a probative nature and was voluntary. There exists a large degree of variation among the pumping plants, and the number of responses received from them; hence, the conclusions drawn from this survey are broad generalizations rather than statistically significant results.

Two survey questionnaires were distributed, one to the employees and the other to the supervisory staff. The survey instrument targeted towards the employees is geared around three distinct themes.

- The first theme relates to employees' background. This includes their work schedule, previous location of their work, and their family's affiliation with MWD, if any.
- The second theme relates to the resident status of the employees; whether they were living in MWD provided housing or residing outside in a neighboring city. The sub-theme addresses employees preference in their choice of housing (MWD or non-MWD housing), and their likes and

dislikes of MWD housing. In addition, the patterns of socialization of employees are explored within MWD housing.

- The third theme explicitly questions whether there exists a sense of community or belonging within the MWD resident population, and whether the sense of community will be diminished if MWD removes some housing.

The survey focused on the supervisory staff consists of three themes that attempt to ascertain the following:

- An overview of the number of employees working at each pumping station.
- The characteristics of the housing units as they relate to the size and age of the housing stock.
- The nature of the group activities occurring at the pumping station.

**4b Analysis of Survey**

In terms of size, Gene is the largest of all the pumping stations. Intake is the smallest and is close to Gene. The number of responses received from each pumping station is given in Table 1.

**TABLE 1: EMPLOYEE SURVEY**

<b>NAME OF PUMPING STATION</b>	<b>NUMBER OF RESPONDENTS</b>
Gene	43
Iron	17
Eagle	12
Hinds	8
Intake	3
<b>TOTAL</b>	<b>83</b>

From an analytical point of view, we have compared Gene with the remaining three pumping stations. This will

allow us to ascertain similarities or differences in the definition or the notion of community. The rationale is that if community sense is prevalent in the smaller pumping stations, then it would also exist in Gene despite a reduction in size.

In the following section, we analyze the survey data by each pumping station. The weekly work schedule of the employees is summarized in Table 2.

**TABLE 2: WORK SCHEDULE**

WORK SCHEDULE	GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
	NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>4 ON - 3 OFF</b>	7	10	17	0	0	0	0	0	0	17
	47%	36%	40%	0%	0%	0%	0%	0%	0%	21%
<b>4 ON - 2 OFF, 4 ON - 4 OFF</b>	7	16	23	0	1	1	12	6	0	42
	47%	57%	53%	0%	17%	13%	75%	50%	0%	51%
<b>9 ON - 5 OFF</b>	0	1	1	2	5	7	4	6	0	18
	0%	4%	2%	100%	83%	88%	25%	50%	0%	22%
<b>8 ON - 4 OFF, 4 ON - 4 OFF, 4 ON - 4 OFF</b>	1	1	2	0	0	0	0	0	3	5
	7%	4%	5%	0%	0%	0%	0%	0%	100%	6%
<b>NO RESPONSE</b>	0	0	0	0	0	0	1	0	0	1

Approximately half of all the residents who responded to the survey are on a 4 On – 2 Off, 4 On – 4 Off work schedule. Roughly, one-fifth of all residents who responded are on a 4 On – 3 Off, or 9 On – 5 Off work schedule. A very few residents (6%) are on an 8 On – 4 Off, 4 On – 4 Off, 4 On – 4 Off work schedule. It is obvious that, on aggregate, while one

fifth of the employees get a three days weekend, the other four-fifth have at least one stretch of four non-work days over a two weeks’ period. Additionally, all employees are on an intensive 10-hours per day work schedule (generally 6.00-4.30 p.m.) for a minimum of 4 days in a two-weeks period.

In Gene, of those respondents who live in MWD housing, 57% have a stretch of 4 non-work days over a two weeks period, and 36% have a weekend of 3 days. In Hinds, 83% have a stretch of five non-work days and 17% have a stretch of four non-work days over a two weeks period. In Iron, 75% of the respondents have a stretch of 4 non-work days and the rest have a stretch of 5 non-work days over a two weeks period. In Eagle, the respondents are equally divided between the 4 non-work days and 5 non-work days stretch over a two weeks period. It will be evident later from Table 4 that most of the employees living in MWD housing continue to live there during non-work days too.

The long stretches of non-work days (3, 4 or 5) and the respondents' continued presence in the MWD housing during these days indicate the potential for community oriented activities during this period. However, this may not happen for two reasons. First, the employees have a staggered work schedule (i.e. not all employees have the same days off). Second, after working 10 hour stretches for a sustained period of four days, they may not want to get together with the same fellow employees (as indicated in some of the comments attached in Appendix A and B).

**TABLE 3: FAMILY MEMBERS WORKING WITH MWD: PAST AND PRESENT**

		GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
		NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>FAMILY WORK BEFORE</b>	YES	5	10	15	1	1	2	3	4	2	<b>26</b>
		33%	38%	37%	50%	17%	25%	18%	33%	67%	<b>32%</b>
	NO	10	16	26	1	5	6	14	8	1	<b>55</b>
		67%	62%	63%	50%	83%	75%	82%	67%	33%	<b>68%</b>
	NO RESPONSE	0	2	2	0	0	0	0	0	0	<b>2</b>
<b>FAMILY WORK NOW</b>	YES	5	6	11	1	3	4	4	5	1	<b>25</b>
		38%	22%	28%	50%	50%	50%	27%	42%	33%	<b>32%</b>
	NO	8	21	29	1	3	4	11	7	2	<b>53</b>
		62%	78%	73%	50%	50%	50%	73%	58%	67%	<b>68%</b>
	NO RESPONSE	2	1	3	0	0	0	2	0	0	<b>5</b>

Approximately, one-third of the respondents' family members have either worked in the past or are currently working for MWD.

The substantial presence of family members actively working now, and in the past may have a bearing as to the sense of community and belonging to MWD.

**TABLE 4: WORK-DAYS AND NON-WORK-DAYS STAY**

		GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
		NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>WORK DAYS STAY</b>		15	28	43	2	6	8	17	12	3	<b>83</b>
	NO RESPONSE	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>NON-WORK DAYS STAY*</b>		14	27	41	2	6	8	15	12	3	<b>79</b>
	NO RESPONSE	1	1	2	0	0	0	2	0	0	<b>4</b>

Out of the 83 respondents, 17 (20%) live in non-MWD housing, while 66 (80%) live in MWD housing. It is evident from Table 4 that in Gene 15 out of 43 (35%) employees do not live in MWD housing. Similarly, in Hinds, 2 out of 8 employees live in non-MWD housing. Rest of the employees are living during work-days and non-work days in MWD housing.

Out of the 15 respondents living in non-MWD housing in Gene, 10 used to live in MWD provided housing before, while four never stayed in MWD housing. The two respondents living in non-MWD housing at Hinds used to live in MWD housing before they moved out.

**TABLE 5: ETHNIC BACKGROUND**

	GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
	NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>WHITE</b>	7	18	25	2	3	5	8	4	0	<b>42</b>
	78%	86%	83%	100%	75%	83%	62%	50%	0%	<b>72%</b>
<b>HISPANIC</b>	1	3	4	0	0	0	1	2	1	<b>8</b>
	11%	14%	13%	0%	0%	0%	8%	25%	100%	<b>14%</b>
<b>AFRICAN-AMERICAN</b>	0	0	0	0	0	0	0	0	0	<b>0</b>
	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0%</b>
<b>OTHER</b>	1	0	1	0	1	1	4	2	0	<b>8</b>
	11%	0%	3%	0%	25%	17%	31%	25%	0%	<b>14%</b>
<b>NO RESPONSE</b>	6	7	13	0	2	2	4	4	2	<b>25</b>

Of the 58 respondents, majority of them identified themselves as White (72%), Hispanic (14%), and 14% as Others. 25 employees did not respond to this question.



**TABLE 6: DOES THE FAMILY LIVE WITH THE MWD EMPLOYEE?**

	GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
	NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>YES</b>	11	22	33	2	5	7	13	9	2	<b>64</b>
	79%	81%	80%	100%	83%	88%	81%	75%	100%	<b>81%</b>
<b>NO</b>	3	5	8	0	1	1	3	3	0	<b>15</b>
	21%	19%	20%	0%	17%	13%	19%	25%	0%	<b>19%</b>
<b>NO RESPONSE</b>	1	1	2	0	0	0	1	0	1	<b>4</b>

On an aggregate 81% of the employees have family living along with them. This percentage is consistent across all pumping stations.

**TABLE 7: TYPE OF MWD HOUSE**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>3 BEDROOM HOUSE</b>	21	6	14	10	2	<b>53</b>
	78%	100%	88%	83%	67%	<b>83%</b>
<b>2 BEDROOM HOUSE</b>	2	0	1	0	0	<b>3</b>
	7%	0%	6%	0%	0%	<b>5%</b>
<b>ONE BEDROOM HOUSE</b>	0	0	0	0	0	<b>0</b>
	0%	0%	0%	0%	0%	<b>0%</b>
<b>MOBILE HOUSE</b>	4	0	1	2	1	<b>8</b>
	15%	0%	6%	17%	33%	<b>13%</b>
<b>NO RESPONSE</b>	1	0	1	0	0	<b>2</b>

Table 7 clearly indicates that the 3-Bedroom house constitutes majority of the housing stock (83%). Mobile houses comprise of another 13%, and the 2-Bedroom houses account for the remaining units.

**TABLE 8: RESPONDENTS RENTING OR OWNING HOUSES OUTSIDE MWD WHILE LIVING IN MWD HOUSING**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>YES</b>	6	2	10	5	1	<b>24</b>
	24%	33%	67%	42%	50%	<b>40%</b>
<b>NO</b>	19	4	5	7	1	<b>36</b>
	76%	67%	33%	58%	50%	<b>60%</b>
<b>NO RESPONSE</b>	3	0	2	0	1	<b>6</b>

Of the 60 respondents, 40% rent or own houses outside the confines of MWD. In Iron, 10 (67%) of the respondents own or rent housing outside the pumping station. Gene shows the lowest percentage of respondents renting or owning housing outside the pumping station despite/because of its close proximity to Lake Havasu.

**TABLE 9: FACTORS INFLUENCING STAY AT MWD HOUSING**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>PROXIMITY</b>	20	6	9	8	1	<b>44</b>
<b>LOW RENTAL</b>	23	5	9	12	0	<b>49</b>
<b>SOCIALIZATION</b>	14	1	6	3	0	<b>24</b>
<b>SECLUSION</b>	19	4	6	7	0	<b>36</b>
<b>OTHER</b>	9	0	1	3	1	<b>14</b>

The factors that influence the employees stay at MWD housing in descending order of preference include:

- Low rentals in the range of \$80 - \$100 per month for a typical 3-Bedroom unit.
- Proximity to site
- Seclusion
- Socialization
- Other

**TABLE 10: DISLIKES OF MWD HOUSING**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>ISOLATED</b>	2	1	3	1	1	<b>8</b>
<b>INADEQUATE SHOPPING</b>	9	3	9	8	2	<b>31</b>
<b>FAR FROM CHILDREN'S SCHOOL</b>	4	3	6	4	1	<b>18</b>
<b>DRIVING LONG HOURS</b>	3	3	4	4	2	<b>16</b>
<b>INADEQUATE RECREATION</b>	1	2	5	4	1	<b>13</b>
<b>INADEQUATE SOCIALIZATION</b>	2	3	4	2	2	<b>13</b>
<b>OTHER</b>	2	1	1	3	1	<b>8</b>

The dislikes of MWD housing in descending order of preference include:

- Inadequate shopping
- Far from children’s school
- Driving long hours
- Inadequate recreation
- Inadequate socialization

- Isolated, and
- Other

**TABLE 11: RECREATIONAL ACTIVITIES DURING NON-WORK HOURS AT MWD HOUSING**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>SOCIALIZATION</b>	13	1	7	3	1	25
<b>TV/CABLE</b>	21	5	11	10	1	48
<b>DIRT BIKE/ OTHER SPORTS</b>	12	3	8	7	1	31
<b>INDIVIDUAL PROJECTS</b>	25	3	14	11	1	54
<b>OTHER</b>	5	3	2	4	1	15

An overwhelming majority of residents at MWD housing are engaged in “individual projects” during their non-work recreation time. Their preferences of spending time during non-work hours in descending order is listed below:

- Individual projects
- TV/Cable
- Dirt Biking/Other sports
- Other

**TABLE 12: FREQUENCY OF SOCIALIZATION**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>NO TIME FOR SOCIALIZING</b>	4	2	2	2	0	<b>10</b>
	16%	40%	18%	25%	0%	<b>20%</b>
<b>ONCE OR TWICE A MONTH</b>	9	1	3	3	1	<b>17</b>
	36%	20%	27%	38%	50%	<b>33%</b>
<b>3-4 TIME A MONTH</b>	3	1	1	0	0	<b>5</b>
	12%	20%	9%	0%	0%	<b>10%</b>
<b>MORE THAN 4 TIMES A MONTH</b>	9	1	5	3	1	<b>19</b>
	36%	20%	45%	38%	50%	<b>37%</b>
<b>NO RESPONSE</b>	3	1	6	4	1	<b>15</b>

Roughly 20% of those who responded do not socialize at all. In contrast, approximately one-third of those who responded socialize more than 4 times a month.

**TABLE 13: NUMBER OF PEOPLE WITH WHOM RESPONDENTS SOCIALIZE PER MONTH**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>NO TIME FOR SOCIALIZING</b>	4	2	4	2	0	<b>12</b>
	15%	33%	31%	17%	0%	<b>20%</b>
<b>ONE OR TWO</b>	7	2	1	4	0	<b>14</b>
	26%	33%	8%	33%	0%	<b>23%</b>
<b>THREE TO FOUR</b>	6	2	5	1	1	<b>15</b>
	22%	33%	38%	8%	50%	<b>25%</b>
<b>FOUR TO SIX</b>	6	0	1	1	0	<b>8</b>
	22%	0%	8%	8%	0%	<b>13%</b>
<b>MORE THAN SIX</b>	4	0	2	4	1	<b>11</b>
	15%	0%	15%	33%	50%	<b>18%</b>
<b>NO RESPONSE</b>	1	0	4	0	1	<b>6</b>

One-fifth of the respondents do not socialize or do not have time for socialization. One-fourth of the respondents had 3-4 instances of socialization per month while 23% of the employees socialized with one or two people per month. In contrast, 18% of the respondents socialized with more than six people a month.



**TABLE 14: CAN MORE GROUP ACTIVITIES BE PROMOTED? AND HOW?**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>TOTAL</b>
<b>YES</b>	17	2	9	6	1	<b>35</b>
	71%	40%	82%	60%	100%	<b>69%</b>
<b>NO</b>	7	3	2	4	0	<b>16</b>
	29%	60%	18%	40%	0%	<b>31%</b>
<b>NO RESPONSE</b>	4	1	6	2	2	<b>15</b>
<b>PREFERENCES:</b>						
<b>SPORTING EVENT</b>	8	1	5	4	0	<b>18</b>
<b>HIKING</b>	4	0	2	0	0	<b>6</b>
<b>DRIVING TOGETHER</b>	2	0	0	0	0	<b>2</b>
<b>OTHER</b>	12	1	4	4	0	<b>21</b>

More than two-third of the respondents suggest that group activities can be promoted at MWD housing. These activities include in order of preference “Other Activities” (such as ballgames, potlucks, barbecue parties), sporting event, and hiking.

**TABLE 15: SENSE OF COMMUNITY**

	GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
	NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>YES</b>	7	19	26	0	6	6	8	7	3	<b>50</b>
	50%	68%	62%	0%	100%	75%	53%	58%	100%	<b>63%</b>
<b>NO</b>	7	9	16	2	0	2	7	5	0	<b>30</b>
	50%	32%	38%	100%	0%	25%	47%	42%	0%	<b>38%</b>
<b>NO RESPONSE</b>	1	0	1	0	0	0	2	0	0	<b>3</b>

Of all the respondents, 63% agreed that there is a sense of community prevalent in MWD housing. The remaining 38% (rounded up) indicated that there was no sense of community. Three-fourth of respondents at Hinds indicated that there is a sense of community, while nearly half of the respondents at Iron and Eagle each suggested that there exists a sense of community. Roughly 62% of the respondents at Gene suggested that there is a sense of community at the pumping station.

Some of the respondents also commented on the issue whether the sense of community exists among the residents at the pumping stations. Their responses have been tabulated in *Appendix A: Comments – Sense of Community Exists or Does Not Exist*

**TABLE 16: SHOULD MWD CONTINUE TO PROVIDE HOUSING?**

	GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
	NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>YES</b>	7	27	34	1	6	7	15	12	3	<b>71</b>
	50%	96%	81%	50%	100%	88%	100%	100%	100%	<b>89%</b>
<b>NO</b>	7	1	8	1	0	1	0	0	0	<b>9</b>
	50%	4%	19%	50%	0%	13%	0%	0%	0%	<b>11%</b>
<b>NO RESPONSE</b>	1	0	1	0	0	0	2	0	0	<b>3</b>

An overwhelming majority of respondents (89%) indicated that MWD should continue to provide housing. In contrast, only a small minority of individuals (11%) is against this idea. At Gene, 19% of the respondents wanted MWD housing to be discontinued. In the pumping stations at Eagle and Iron, all respondents expressed a need for MWD to provide housing.

Some of the respondents tried to justify why MWD should continue or discontinue to provide the housing at the pumping stations. Their comments have been tabulated in

*Appendix B: Comments - Reasons Why MWD Should Continue or Discontinue to Provide Housing.*

**TABLE 17: SENSE OF BELONGING AND PRIDE IF MWD REMOVED ALL HOUSING**

	GENE			HINDS			IRON	EAGLE	INTAKE	TOTAL
	NON-MWD	MWD	NON-MWD & MWD	NON-MWD	MWD	NON-MWD & MWD				
<b>YES</b>	5	19	24	0	5	5	11	9	3	<b>52</b>
	36%	68%	57%	0%	83%	63%	79%	75%	100%	<b>66%</b>
<b>NO</b>	9	9	18	2	1	3	3	3	0	<b>27</b>
	64%	32%	43%	100%	17%	38%	21%	25%	0%	<b>34%</b>
<b>NO RESPONSE</b>	1	0	1	0	0	0	3	0	0	<b>4</b>

Two-third of all respondents indicated that the sense of pride and belonging in MWD would be diminished if MWD removes housing. A majority of respondents at pumping stations in Iron (79%) and Eagle (75%) feel that the sense of belonging and pride would be curtailed if MWD removes housing. In contrast, 43% of the respondents at Gene indicated no loss of pride or belonging even if MWD removes all housing.

**TABLE 18: MINIMUM NUMBER OF EMPLOYEES REQUIRED FOR RUNNING AND FOR SECURITY PURPOSES AT THE PUMPING STATION: SUPERVISOR’S RESPONSE**

	<b>GENE</b>	<b>HINDS</b>	<b>IRON</b>	<b>EAGLE</b>	<b>INTAKE</b>	<b>AVERAGE</b>
<b>MINIMUM NO. OF EMPLOYEES REQD. TO RUN STATION</b>	7	8	7	8	6	7.2
<b>MINIMUM NO. OF EMPLOYEES FOR EMERGENCY &amp; SECURITY</b>	5	8	3	2	8	5.2

The results from the supervisor’s survey indicate that on an average seven employees are the minimum number required to run the pumping station. Similarly, on an average, five employees are required at a minimum for emergency and security purposes at each of the pumping station.

members have either worked in the past or are currently working for MWD. On average, 81% of the employees have family living along with them. This percentage is consistent across all pumping stations. Most of the respondents who live in MWD housing reside in 3-Bedroom houses (83%).

**4c Summary of Findings**

- Out of the 83 respondents to our survey, 20% live in non-MWD housing, while 80% live in MWD provided housing. Majority of the employees are White (72%). Approximately, one-third of the respondents’ family

- Approximately, one-third of the respondents in Gene reside in non-MWD housing. The pumping station at Gene is in close proximity to Lake Havasu City, and Parker City (Refer Table 1). Both Lake Havasu City, and Parker City offer alternate opportunities for housing, in addition to schools, hospitals, shopping, recreation, and other such

activities. Respondents residing in these two cities cite such amenities as their basis of decision to locate in non-MWD housing. The respondents' preferences were shaped by the amenities available in these cities, affordability of housing, and other facilities such as schools and hospitals.

- The three major factors that influence the employees to stay at MWD housing in order of preference include affordability due to low rentals, proximity to work place, and seclusion or isolation. However, the common dislikes associated with MWD housing are inadequate facilities such as shopping, proximity to schools, long commutes and inadequate recreation and socialization opportunities. The employees spend their recreation time working on individual projects, watching TV/Cable and engaging in a variety of sports activities, including dirt biking.
- One-fifth of the respondents do not socialize or do not have time for socialization. In contrast, approximately one-third of those who responded socialize more than 4 times a month. Similarly, 18% of the respondents socialized with more than six people a month. More than two-thirds of the

respondents suggested that group activities should be promoted at MWD housing. These activities include ballgames, potlucks, barbecue parties, sporting events, and hiking.

- Of the 60 residents who responded, 40% rent or own houses outside the confines of MWD. In Iron, 10 (67%) of the residents own or rent housing outside the pumping station. Gene shows the lowest percentage of residents renting or owning housing outside the pumping station despite/because of its close proximity to Lake Havasu.
- Of all the respondents, 63% agreed that there is a sense of community prevalent in MWD housing. The remaining 38% (rounded up) indicated that there was no sense of community. An overwhelming majority of respondents (89%) indicated that MWD should continue to provide housing. In contrast, only a small minority of individuals (11%) is against this idea. Two-third of all respondents indicated that the sense of pride and belonging in MWD would be diminished if MWD removes housing.

- The results from the supervisor’s survey indicate that on an average seven employees are the minimum number required to run the pumping station. Similarly, on an average, five employees are required at a minimum for emergency and security purposes at each of the pumping station.

## 5. HOUSING OPPORTUNITIES IN NEIGHBORING CITIES

Our study of the housing opportunities in the neighboring cities reveals that there is a range of housing options available in an affordable range in the neighboring cities. Table 19 lists a sampling of housing prices in neighboring cities from which the respondents commute or go for shopping, recreation, or medical requirements.

**TABLE 19: MEDIAN HOME PRICE FOR SELECTED CITIES NEAR MWD PUMPING PLANTS**

CITIES	1998 MEDIAN HOME PRICE
Lake Havasu	\$84,700
Parker	\$85,000
Needles	\$74,250
Blythe	\$86,000
Indio	\$90,016
Palm Springs	\$140,599
Palm Desert	\$155,000
Kingman	\$73,750
Bullhead City	\$90,000
Twentynine Palms	\$55,919
Yucca Valley	\$65,000
Hemet	\$82,000
Yuma	\$89,875

Source: Dataquick

The Gene Pumping Plant is located within commuting distance from Parker or Lake Havasu City (30 to 45 minutes). The pumping plant at Intake is close to Gene. Most of the respondents living in non-MWD housing commute from either of these two cities; the respondents in MWD housing go to either of these cities for shopping, recreation, or medical purposes. The pumping facility falls in the Needles Unified

School District, but most respondents educate their children in either of these two cities. The median home price in 1998, in Lake Havasu City, was \$82,164 and in Parker City, it was \$91,889, both within an affordable range.

The other three Pumping Plants at Hinds, Eagle Mountain and Iron Mountain are more remotely located, Iron being the remotest. Respondents in Hinds and Eagle go to Indio, Palm Desert, or Blythe for shopping or medical services, which takes 60-90 minutes commute time. Iron is more remotely located with a minimum commute time of 90-120 minutes for such facilities.

Thus, while there are alternative housing opportunities available within commuting distance for employees at Gene, the other Pumping Plants are more remotely located.

## **6. RECOMMENDATIONS**

Based on the above analysis from the survey of the employees, supervisors, and comments, we reach the following conclusions:

First, sense of community is prevalent across pumping stations irrespective of the size of the community. Second, an overwhelming majority of respondents indicated that MWD should continue to provide housing principally because of security concerns and emergency requirements of the pumping station. Third, low rent (ranging from \$80-\$100 per month) is the principal reason why respondents choose to stay in MWD provided housing. Fourth, a majority of respondents concurred that the sense of community and belonging in MWD would suffer if MWD removes housing. Fifth, the minimum number of employees needed to run the pumping station and ensure security is around seven. Sixth, alternative housing opportunities are available at affordable prices and within a reasonable commuting distance (30-60 minutes driving time) from Gene.

We observe that the pumping station at Gene has inordinately higher number of employees (43 respondents) when compared with other pumping stations (12 respondents on average, based on Eagle, Hinds, and Iron,). Correspondingly, Gene also has a higher number of housing units to support this population. If the work requirements of the pumping station at Gene are similar to other plants at Eagle, Hinds, and Iron, it



clearly follows that the pumping plant at Gene could be managed with fewer employees residing on-site. Since, a sense of community prevails at even the smaller pumping stations, despite their small size and distant locations from neighboring cities, Gene possibly could also reduce its on-site workforce and still maintain the security and other standards required to run the station.

In Gene, over one-third of the respondents live in non-MWD housing within commuting distance of Lake Havasu. In addition, roughly one-fourth of the respondents own or rent houses outside MWD while living in MWD provided housing. Furthermore, approximately 43% of the respondents working in Gene replied that their sense of belonging and pride would not be diminished if MWD were to remove all housing. Of the employees who live outside of Gene, 64% clearly indicated that their sense of belonging would not be compromised if MWD removes all housing. In contrast, roughly one-third of the respondents living in MWD housing indicated that their sense of belonging and pride would not be diminished if MWD stopped providing housing.

Therefore, Gene pumping station is a prime candidate for a reduction of the number of MWD provided housing units. It appears that the sense of community, pride and belonging, emergency requirements and security conditions, can still be maintained with a pared down housing supply.

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