



Agenda Item #: _____

Staff Report

City of Manhattan Beach

TO: Honorable Mayor Cohen and Members of the City Council

THROUGH: Geoff Dolan, City Manager

FROM: Jim Arndt, Director of Public Works
Steve Finton, City Engineer

DATE: July 28, 2009

SUBJECT: Review of Water and Sewer Capital Improvement Needs

RECOMMENDATION:

Staff recommends that the City Council hear a presentation by staff and AKM Consulting Engineers regarding the status of the water and sewer system master plan development.

FISCAL IMPLICATION:

The purpose of the master plans is to identify capital needs for the water and sewer systems. The extent of future fiscal impact will depend on the outcome of the water and sewer rate study and the extent of infrastructure funding allocated by City Council.

BACKGROUND:

The City's last water and sewer system master plans were completed in 1994 and 1995 respectively. Those plans were used to guide development of the City's water and sewer infrastructure management plans. Utility master plans require updating from time to time to account for further system deterioration, regulatory mandates and environmental changes. The water master plan must address the current water supply crisis and apparent accelerated deterioration of cast iron water mains. The sewer master plan must be updated to comply with condition assessment and capital improvement requirements of the State Waste Discharge Requirements (WDR) regulations.

On August 5, 2008, City Council awarded a professional services contract in the amount of \$1,277,340 (including \$423,400 for sewer cleaning and inspection) to AKM Consulting Engineers (AKM) to complete a master plan for the City's water and sewer systems. The purpose of the master plans was to determine the overall condition of the systems, identify any operational deficiencies and to determine the costs of needed improvements. The water master plan includes the additional task of identifying actions to be taken to assure an uninterrupted water supply for the foreseeable future. The general scope of the contract with AKM included the following:

Water Master Plan Scope:

- System-wide Data Collection and Review
- Fire Hydrant Flow Testing
- Water System Modeling and Evaluation
- Engineering Evaluation of Water System (including adequacy of storage capacity)
- Operational Evaluation of Water System
- Update GIS Database
- Cost Estimates – Supply and Pumping System Improvements
- Develop Rating System and Capital Improvement Program
- Prepare Water Master Plan Document

Sewer Master Plan Scope:

- System-wide Data Collection and Review
- Sewer Main Cleaning and Inspection (Closed Circuit Television (CCTV) Inspection)
- Engineering Evaluation of Collector System – Structural and Hydraulic
- Develop measurable performance indicators to manage assets at lowest life cycle costs
- Update Geographic Information System (GIS) Database
- Pumping System Analysis (wet well capacity and emergency overflow capacity)
- Cost Estimates – Collection and Pumping System Improvements
- Develop Rating System and Capital Improvement Program
- Prepare Sewer Master Plan Document

AKM is nearing completion of their efforts to complete the master plans. They have completed much of the scope and their preliminary results are discussed below:

DISCUSSION:

Executive Summary:

AKM has performed an in-depth assessment of the City’s water and sewer systems and has identified capital improvement needs in excess of \$165,000,000. AKM recommends completion of these improvements during the period from 2010 to 2030; however, the pace of completion will depend on the outcome of the water and sewer rate study currently being considered by City Council. A summary of the recommended improvements is provided below:

Recommended Water System Improvements	
Water Main Replacements	\$95,450,000
Fire Hydrant Additions	\$3,361,500
Booster Pump Station Improvements	\$2,430,000
New Well	\$4,320,000
Well Collection Pipelines	\$4,722,300
Reservoirs	\$16,200,000
Total Water	\$126,483,800

Recommended Sewer System Improvements	
Sewer Main Rehabilitation	\$26,042,000
Manhole Rehabilitation	\$1,998,000
Pump Station Improvements	\$11,142,940
Total Sewer	\$39,182,940

Water System Master Plan:

The City’s water system serves a population of 33,800 through 13,500 water meter accounts. Water consumption averages 7000 acre-feet per year or an average flow of 4,350 gallons per minute.

The water system consists of 114 miles of water mains, two wells, four booster pump stations, and three reservoirs providing 9.8 million gallons of water storage. The estimated replacement value of the system is approximately \$250,000,000.

Water Supply:

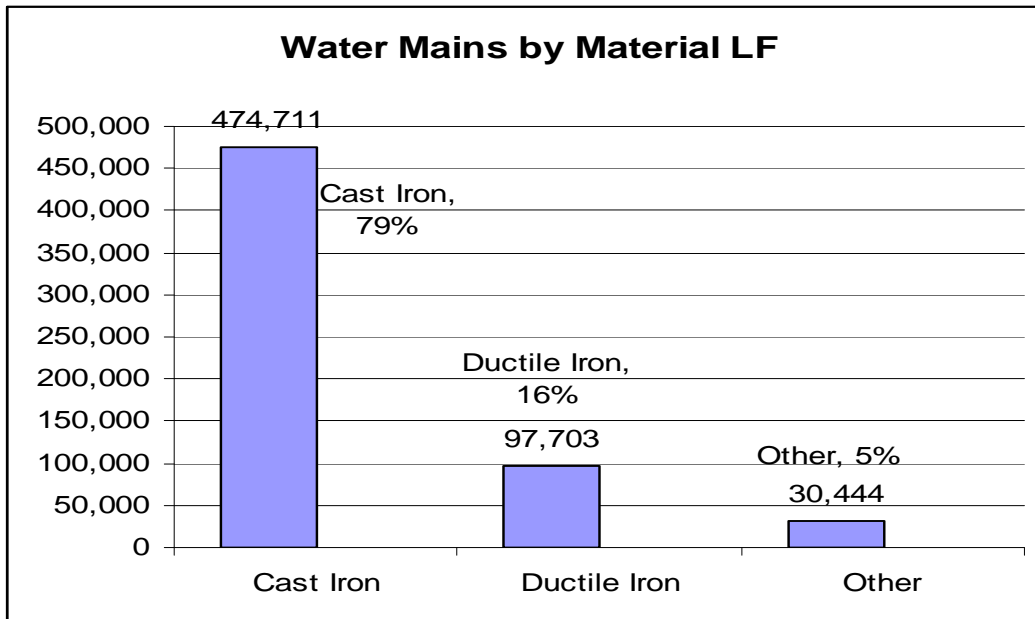
Three water sources are available to the City: 1) imported water, 2) groundwater, and, 3) Recycled Water. In 2008, the City purchased 5,278 acre-feet of imported potable water. The City owns two wells and has adjudicated rights to pump a maximum of 1,131.2 acre-feet annually. Recycled water accounts for approximately 4% of total use or approximately 260 acre-feet.

Condition Assessment

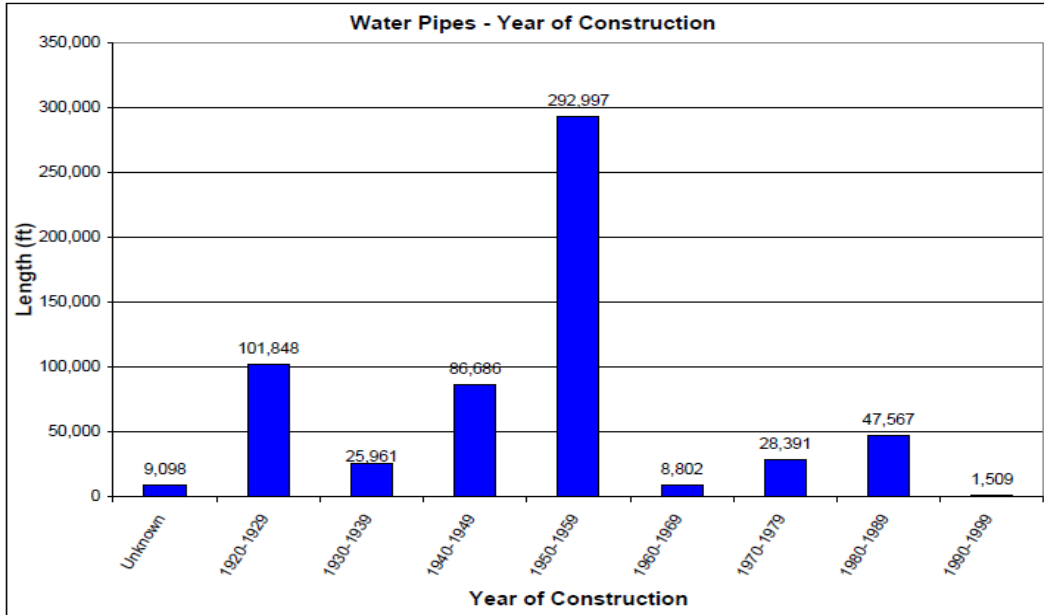
Water Mains

The condition of water mains cannot be determined through actual inspection as is the case for sewer mains. Condition must be assessed through pipe age, material and break history.

Material - Virtually all water mains in Manhattan Beach are constructed of ferrous metal. Older pipes are generally unlined cast iron pipes and the newer lines are typically lined ductile iron pipes. The cast iron pipes are more brittle and corrode more readily due to the lack of inner lining. Below is a chart showing the inventory of the different pipe materials. The majority of water mains (79%) are made of cast iron.



Age - The age of a ferrous metal pipe is critical in assessing its expected condition. This is particularly true for unlined cast iron pipes. Ferrous water mains have a typical useful life of 60 years. Presently, approximately 37% (220,000 lineal feet) of the City's water mains are older than 60 years.



Pipe Capacity and Fire Flows

A typical goal in the industry is to provide 2000 gallons per minute from hydrants at a residual pressure of 20 pounds per square inch. Water mains 4" and smaller typically cannot meet this goal. Approximately 22% of the City's water mains are 4" or less in diameter. It is recommended that 4" lines be upsized to increase fire flows.

Water System Capital Improvement Needs (See Chart Attachment A)

Water Main Replacements -

AKM recommends replacing cast iron pipes older than 60 years and recommends upsizing water mains smaller than 4" in diameter. 220,000 lineal feet of cast iron water mains are older than 60 years. This includes 130,000 lineal feet of pipe smaller than 4" diameter. AKM estimates the cost of this work at **\$95,450,000**. Over a 21-year period, this would require an average annual investment of \$4.8 million to complete 2 miles of main replacement per year. AKM recommends performing 1.5 miles of main replacement through year 2020 at the cost of 3,450,000 per year and then increasing to 2.5 miles of main replacement per year though 2030 at the annual cost \$5,750,000.

Fire Hydrant Additions -

AKM recommends installing additional fire hydrants to achieve a 450' maximum spacing. This would decrease the distance a fire truck would need to drag hose and facilitate fire emergency response. Hydrant spacing deficiencies have been located by AKM at 440 locations. AKM estimates the cost to install 440 new hydrants at **\$3,361,500**. It is recommended that 18 additional hydrants be installed annually through 2020 at the cost of \$121,500 per year and then increasing to 30 hydrants per year through 2030 at the cost of \$202,500 per year.

Pump Stations Improvements -

The City maintains 4 booster pump stations as follows:

- Peck Reservoir Pump Station
- Block 35 Pump Station
- 2nd Street Pump Station
- Larsson Street Pump Station

AKM indicates that the Peck Reservoir and Block 35 pump stations appear to be in satisfactory condition and won't require improvement within the next twenty years. Problems encountered at the 2nd Street Pump Station have been diagnosed by AKM and replacement of the engine and control systems is recommended. Installation of vibration isolators are also recommended to mitigate the impact of the station on the neighborhood. The estimated cost of these improvements is **\$405,000**.

Larsson Street Pump Station requires significant rehabilitation and capacity enhancement. The vault structure is deteriorated and maintenance space in the vault is insufficient. Additionally, all three pumps at the station must operate to provide peak domestic service. When pumps at the station are taken out of service for maintenance, the natural gas engine pump at 2nd Street must run to provide supplemental pressure to the high pressure zone. AKM recommends replacement of the station with a larger vault and with pumps of adequate capacity at the estimated cost of **\$2,025,000**.

Wells -

The City currently operates two wells in the City of Redondo Beach as follows:

- Well 11A, Manhattan Beach Boulevard at Green Lane
- Well 15, Manhattan Beach Boulevard at Vail Avenue

It is recommended that an additional well be developed at the City's old well site No. 13 at the southeast corner of Aviation Boulevard and 6th Street at the cost of **\$4,320,000**. This property is owned by the City and is available for well use. This site was previously used for a City well but was removed from service in the late 70s due to brackish water and other operational issues. It is believed that the salt plume has migrated away from the site and that the site could again be viable for well use. Doing so would decrease the City's dependency on imported water and would provide an injection site for in-ground water storage in the future.

Well Collection Lines -

Presently the City’s two operational wells cannot operate simultaneously due to the capacity of collection lines running from the wells to the reservoirs. AKM recommends construction of additional collection lines from well 15 to well 11A and from well 11A to the Block 35 reservoir at the cost of **\$1,360,800** and **\$3,037,500** respectively.

To accommodate the proposed well at well site No. 13, AKM recommends installation of a collection line from the proposed well to a transmission main in 8th Street at the cost of **\$324,000**.

Reservoirs -

Block 35 reservoir is a circular ground-level reservoir built in 1948 with a capacity of 2 million gallons. Leaks in the reservoir require that it be filled to only half capacity to mitigate leakage. AKM recommends replacement of the reservoir with a 4-million gallon reservoir at the cost of **\$8,100,000**. This will also provide for a more balanced storage of water in the system instead of holding the bulk of the storage at the Peck Reservoir.

Peck reservoir is a partially subterranean reservoir constructed in 1957 with a capacity of 7.5 million gallons. Roof corrosion and cracking in the reservoir walls and floor will continue to cause recurring maintenance at significant cost. Additionally, the size and configuration of the reservoir creates water quality issues that can be resolved with a smaller reservoir at the site. AKM recommends replacement of this reservoir with a 4 million gallon reservoir at the cost of **\$8,100,000**.

Summary -

Summary of water system improvements recommended by AKM:

Water Main Replacements through 2030	\$95,450,000
Fire Hydrant Additions through 2020	\$3,361,500
Booster Pump Station Improvements	\$2,430,000
New Well	\$4,320,000
Well Collection Pipelines	\$4,722,300
Reservoirs	\$16,200,000
Total	<u>\$126,483,800</u>

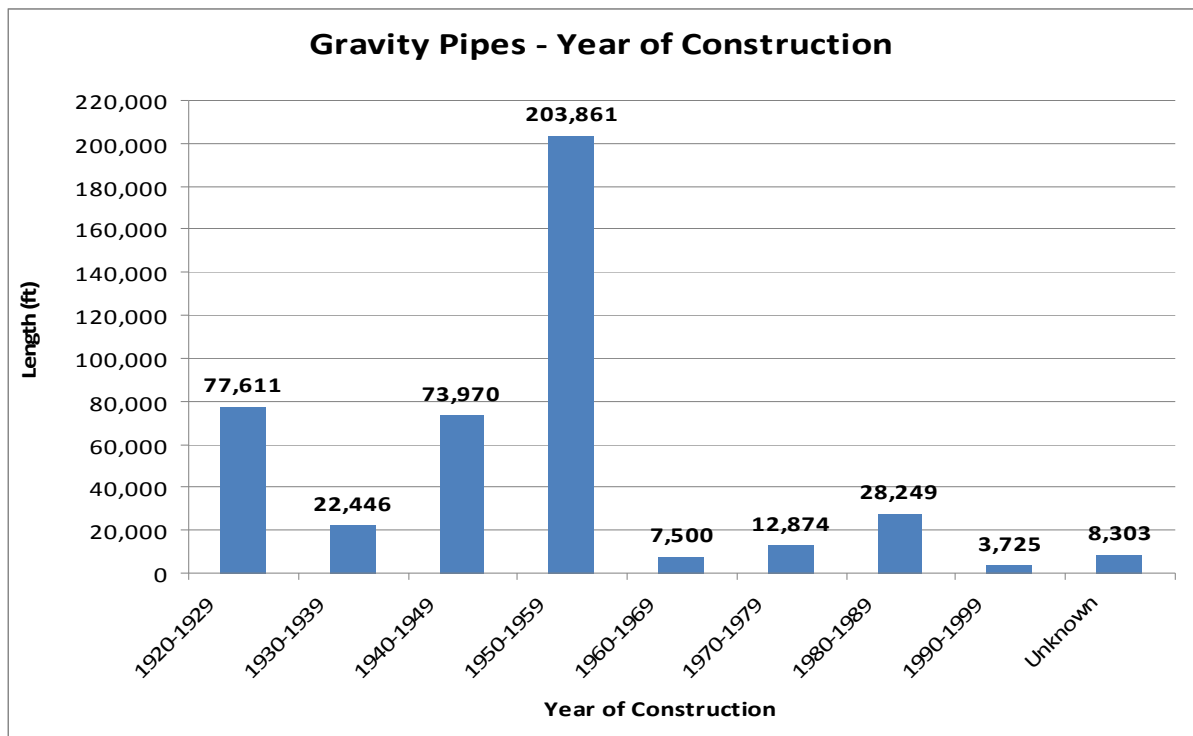
Sewer System Master Plan

The City’s wastewater collection system serves approximately 12,000 customers within a 3.9 square mile area. Wastewater is collected in the City’s collection system and conveyed to trunk sewers operated by the County Sanitation Districts of Los Angeles County (LACSD). Wastewater is ultimately treated at LACSD’s Joint Water Pollution Control Plant in the City of Carson.

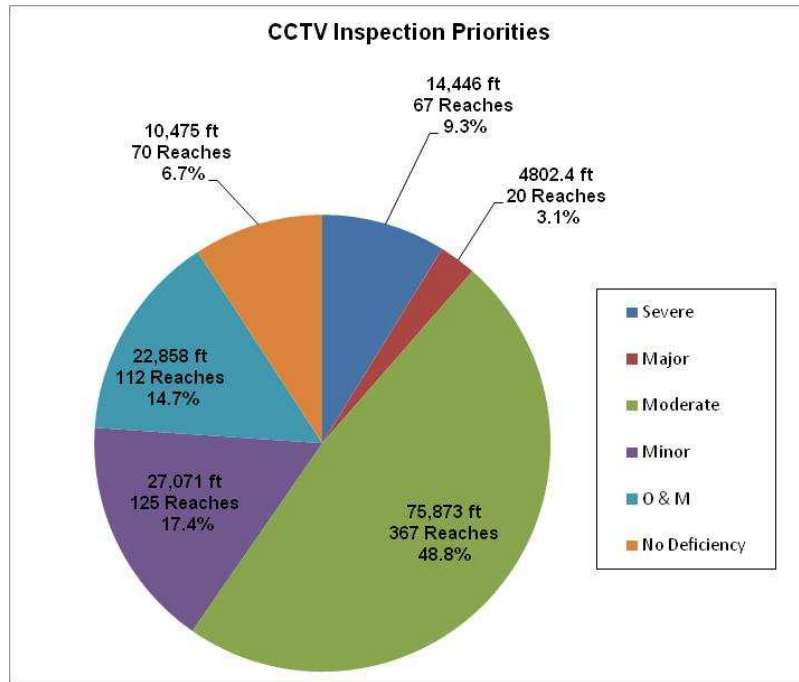
The sewer system consists of 83 miles of gravity sewer mains, 2,060 manholes, and 8 pump stations with 5,120 feet of sewer force mains.

Condition Assessment

Virtually all sewer mains in the City’s system are made of vitrified clay pipe (VCP). VCP is very long lasting and can last indefinitely if installed correctly, if the surrounding soils are stable and if inadvertent contractor damage is avoided. Over the years, shifting soils and damage caused while installing service laterals take their toll on the system. Cracked pipe and offset pipe are common place in older systems. The Manhattan Beach system is a mature system with 86% of mains older than 50 years as indicated on the chart below.



As part of the master plan development, 44 miles of the City’s sewer mains are being inspected by closed circuit television (CCTV). Of the pipe inspected, 9.8 % were identified with severe deficiencies and 3.1% were identified with major deficiencies (see Attachment B for a sample pipeline inspection report and Attachment C for a sample manhole inspection report). Major and severe deficiencies consist of broken pipe, holes in pipes, offsets or major sags. Only 6.7% of pipes were considered to be free of deficiencies. See the chart below:



Sewer System Capital Improvement Needs (See Chart Attachment D)

Sewer Main Rehabilitation -

AKM recommends rehabilitating all inspected pipe characterized as having severe or major deficiencies. The rehabilitation strategies to be used will be determined through the design process and may consist of complete removal and replacement, spot repair or slip lining. AKM recommends a rehabilitation program to rehabilitate approximately 5,000 lineal feet sewer main annually at the estimated cost of approximately \$1,796,000 per year. The total recommended investment would be **\$26,042,000** over a fifteen-year period.

Manhole Rehabilitation -

AKM inspected 743 manholes and identified 74 as requiring rehabilitation due to deteriorated condition. It is recommended that 7 manholes be rehabilitated annually at the cost \$199,800 per year. The total estimated cost to rehabilitate 74 manholes over ten years is **\$1,998,000**.

Pump Station Upgrades -

The City owns and maintains 8 pump stations as follows:

Large System Stations	Original Construction	Last retrofitted
Bell Pump Station	1938	1997
Meadows Pump Station	1953	1997
Pacific Pump Station	1953	1997
Palm Pump Station	1953	1997
Poinsettia Pump Station	1949	1997
Voorhees Pump Station	1953	1997
City Building Stations		
Pier Pump Station	1935	1992
Civic Center Pump Station	1973	NA

The system stations are equipped with a sewage collection and storage well (wet well) and an adjacent well housing pumps and controls. Sewage is pumped from the stations through force mains to the nearest gravity system.

The system stations were rehabilitated in 1997 and the Pier Station was reconstructed during the Pier improvement in 1992. The City Hall station is a smaller pump facility and is in satisfactory condition.

The improvements recommended by AKM are related to preventing sewer overflows by providing additional sewage storage and increased operational redundancy. Increasing storage capacity would provide staff additional time to respond to a station failure. Construction of a redundant sewer force main at each system station will allow the stations to operate in the event that one of the force mains breaks or is damaged. The City can control inflows from City building stations; therefore, redundant force mains would not be required there. Below is a summary of pump station needs as recommended by AKM:

Pump Station Needs	Estimated Cost Through 2021	Comment
1 Pier Pump Station		
Replace forcemain	\$486,000	The existing force main is attached to the pier and is deteriorated.
2 Poinsettia Pump Station		
Replace pump station	\$2,700,000	The existing station wells are poorly designed and additional capacity is needed.
Install second forcemain	\$67,000	
3 Pacific Pump Station		
Upgrade pump station	\$540,000	Larger pumping system required to pump peak wet-weather flows
Install second forcemain	\$396,900	
Construct emergency storage	\$1,134,000	Additional storage required to store ½ hour peak wet-weather flow.

Pump Station Needs	Estimated Cost Through 2021	Comment
4 Voorhees Pump Station		
Upgrade pump station	\$540,000	Larger pumping system required to pump peak wet-weather flows
Install second forcemain	\$301,320	
Construct emergency storage	\$992,250	Additional storage required to store ½ hour peak wet-weather flow.
5 Meadows Pump Station		
Upgrade pump station	\$540,000	Larger pumping system required to pump peak wet-weather flows
Install second forcemain	\$236,520	
Construct emergency storage	\$878,850	Additional storage required to store ½ hour peak wet-weather flow.
6 Bell Pump Station		
Upgrade pump station	\$540,000	Larger pumping system required to pump peak wet-weather flows
Install second forcemain	\$291,600	
Construct emergency storage	\$793,800	Additional storage required to store ½ hour peak wet-weather flow.
7 Palm Pump Station		
Install second forcemain	\$251,100	
Construct emergency storage	\$453,600	Additional storage required to store ½ hour peak wet-weather flow.
Total pump station needs	\$11,142,940	

Summary of Sewer System Improvements recommended by AKM:

Sewer Main Rehabilitation	\$26,042,000
Manhole Rehabilitation	\$1,998,000
<u>Pump Station Improvements</u>	<u>\$11,142,940</u>
Total	<u>\$39,182,940</u>

Attachments: Attachment A – Capital Improvement Needs - Water System
 Attachment B – Sample sewer pipeline inspection report
 Attachment C – Sample sewer manhole inspection report
 Attachment D – Capital Improvement Needs - Sewer System

xc: Henry Mitzner, Controller

Attachment A – Capital Improvement Needs - Water System

City of Manhattan Beach
Water Capital Improvement Program
2010-2021

CIP No.	Project Description	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Pipe replacement program (annual- small diameter cast iron pipe, 1.5 miles/yr through 2021, 2.5 miles/yr thereafter)	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000	\$3,450,000
2	New Fire Hydrants (18 per year through 2021, 30 per year thereafter)	\$121,500	\$121,500	\$121,500	\$121,500	\$121,500	\$121,500	\$121,500	\$121,500	\$121,500	\$121,500	\$121,500
3	Second Street Booster Pump Station- Install Solid State Controller	\$270,000										
4	Second Street Booster Pump Station- Install engine vibration isolators	\$135,000										
5	Replace or parallel well collection line from Well 15 to Well 11A	\$1,360,800										
6	Replace Larsson Pump Station		\$2,025,000									
7	Construct Well at Aviation and 6th Street (Well Site 13)			\$4,320,000								
8	Construct well collection line from Well 11A to Block 35				\$3,037,500							
9	Construct well collection line on Aviation from Well Site 13 to 8th St				\$324,000							
10	Replace Block 35 Reservoir (4 mg)								\$8,100,000			
11	Replace Peck Reservoir (4 mg)											\$8,100,000
	Total	\$5,337,300	\$5,596,500	\$7,891,500	\$6,933,000	\$3,571,500	\$3,571,500	\$3,571,500	\$11,671,500	\$3,571,500	\$3,571,500	\$11,671,500

Attachment C – Sample sewer manhole inspection report

Table 4
Manhole Condition Inspection Summary

DVD No.	Session ID	Street	Manhole	Inspection Date	Surface Condition	Manhole Cover	Frame	Cone	Barrel / Wall	Runge	Bench	Channel	Debris	Debris Depth (in)	Grease	Vermin	Odor	Priority Score	Condition Ranking	Comment	Recommendation	Project Cost (\$)
4	25	Highland Ave	19-015	1/12/09	Pavement - Concrete Collar	Good	Good	Falling	Falling	Good	Good	Good	No	0	No	No	No	20	1	Fractures in cone and barrel. Fracture seen in street pavement surrounding manhole cover.	Replace	30,000
1	26	1st St	01-080	11/21/08	Pavement - Concrete Collar	Good	Good	Poor	Poor	Falling	Poor	Poor	No	0	No	No	No	23	2	Missing mortar.	Repair mortar	6,000
2	51	Curtis Ave	05-052	12/2/08	Pavement - Concrete Collar	Broken	Good	Good	Good	Poor	Poor	Poor	No	0	No	No	No	22	3	Broken manhole cover. Corrosion at bench and channel.	Replace manhole cover and line	13,500
1	90	Gates Ave	01-072	11/20/08	Pavement - Concrete Collar	Good	Good	Poor	Fair	Poor	Poor	Poor	No	0	Yes	No	Yes	20	4	Corrosion at bench and channel.	Line manhole	10,000
1	36	2nd St	01-086	11/24/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	Yes	2	No	No	No	13	5	Corrosion at bench and channel.	Line manhole	10,000
3	74	Duncan Ave	10-039	12/19/08	Pavement - Concrete Collar	Good	Good	Good	Good	Falling	Poor	Poor	No	0	No	No	No	13	6	Corrosion at bench and channel.	Line manhole	10,000
2	109	18th St	06-244	12/5/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Good	Good	No	0	No	No	No	12	7	Corrosion at bench and channel.	Line manhole	10,000
2	23	8th St	04-054	12/1/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	No	0	No	No	No	12	8	Corrosion at bench and channel.	Line manhole	10,000
2	50	Meadows Ave	05-023	12/2/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	No	0	No	No	No	12	9	Corrosion at bench and channel. Not a smooth transition.	Line manhole	10,000
2	130	14th St	06-191	12/8/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	No	0	No	No	No	12	10	Corrosion at bench and channel.	Line manhole	10,000
4	291	Cedar Way	25-012	1/22/09	Pavement - Concrete Collar	Good	Good	Poor	Poor	Poor	Good	Good	No	0	No	No	No	12	11	Corrosion and cracking in cone and wall.	Line manhole	10,000
4	293	Village Dr	25-025	1/22/09	Pavement - Concrete Collar	Good	Good	Poor	Poor	Poor	Good	Good	No	0	No	No	No	12	12	Corrosion in cone and barrel.	Line manhole	10,000
3	46	11th St	09-028	12/18/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	0	No	Yes	No	11	13	Corrosion at bench and channel.	Line manhole	10,000
2	53	Rowell Ave	05-055	12/2/08	Pavement - Concrete Collar	Broken	Good	Good	Good	Fair	Good	Good	No	0	No	No	No	11	14	Broken manhole cover.	Replace manhole cover	3,500
4	181	Flourmoy Rd	17-057	1/8/09	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Poor	Poor	No	0	No	No	No	11	15	Corrosion at bench and channel.	Line manhole	10,000
2	80	14th St	06-050	12/4/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	0	No	No	No	10	16	Corrosion at bench and channel.	Line manhole	10,000
2	131	14th St	06-077	12/8/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	0	No	No	No	10	17	Corrosion at bench and channel.	Line manhole	10,000
4	176	31st St	17-053	1/8/09	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	0	No	No	No	10	18	Corrosion at channel.	Line manhole	10,000
2	47	Tennyson St	05-020	12/2/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Fair	Poor	No	0	No	No	No	8	19	Corrosion at channel.	Line manhole	10,000
2	60	Voorhass Ave	05-005	12/2/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Fair	No	0	No	No	No	8	20	Corrosion at channel.	Line manhole	10,000
4	284	The Strand	14-084	1/21/09	Pavement - Concrete Collar	Cracked	Good	Good	Good	N/A	Good	Good	No	0	No	No	No	8	21	Cracked manhole cover.	Replace manhole cover	3,500
3	99	Manhattan Ave	11-116A	12/22/08	Pavement - Concrete Collar	Good	Good	Poor	Good	Poor	Good	Good	No	0	No	No	No	7	22	Cracks in cone.	Line manhole	10,000
2	119	19th St	06-030	12/5/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Fair	Good	No	0	No	No	No	6	23	Corrosion at channel.	Line manhole	10,000
4	205	Blanche Rd	17-040	1/8/09	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Good	Poor	No	0	No	No	No	6	24	Corrosion at channel.	Line manhole	10,000
1	26	1st St	01-061	11/21/08	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Good	Poor	No	0	No	No	No	6	25	Corrosion at channel.	Line manhole	10,000
4	143	Marine Ave	15-053	1/7/09	Pavement - Concrete Collar	Good	Good	Poor	Good	Fair	Good	Good	No	0	No	No	No	6	26	Missing mortar and possibly bricks.	Repair mortar	6,000
3	100	Manhattan Ave	11-117	12/22/08	Pavement - Concrete Collar	Good	Good	Poor	Good	Good	Good	Good	No	0	No	No	No	5	27	Cracks in cone.	Line manhole	10,000
1	89	Gates Ave	01-073	11/20/08	Pavement - Concrete Collar	Good	Fair	Fair	Fair	Poor	Good	Good	No	0	No	No	No	5	28			
1	29	Gates Ave	01-076	11/21/08	Pavement - Concrete Collar	Good	Good	Fair	Fair	Falling	Good	Good	No	0	No	No	No	5	29			
1	53	Marine Ave	01-234	11/24/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Fair	Fair	No	0	No	Yes	No	5	30			
1	17	Peck Ave	03-072	11/26/08	Pavement - Concrete Collar	Good	Good	Fair	Fair	Falling	Good	Good	No	0	No	No	No	5	31			
3	107	The Strand	11-135A	12/22/08	Pavement - Concrete Collar	Good	Good	Fair	Good	Falling	Good	Good	Yes	1	No	No	No	5	32			
1	95	Nelson Ave	01-027	11/20/08	Pavement - Concrete Collar	Good	Fair	Good	Fair	Fair	Good	Fair	No	0	No	No	No	4	33			
1	94	Nelson Ave	01-028	11/20/08	Pavement - Concrete Collar	Good	Fair	Good	Fair	Fair	Good	Fair	No	0	No	No	No	4	34			
1	93	Nelson Ave	01-029	11/20/08	Pavement - Concrete Collar	Good	Fair	Good	Fair	Fair	Good	Fair	No	0	No	No	No	4	35			
1	92	Nelson Ave	01-030	11/20/08	Pavement - Concrete Collar	Good	Fair	Good	Fair	Fair	Good	Fair	No	0	No	No	No	4	36			
1	30	2nd St	01-069	11/21/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Fair	Fair	No	0	No	No	No	4	37			
2	33	Gates Ave	04-002	12/2/08	Pavement - Concrete Collar	Good	Good	Fair	Fair	Poor	Good	Good	No	0	No	No	No	4	38			
3	92	9th St	11-094	12/22/08	Pavement - Concrete Collar	Good	Good	Fair	Good	Falling	Good	Good	No	0	No	No	No	4	39			
3	108	Ocean Dr	11-129	12/22/08	Pavement - Concrete Collar	Good	Good	Good	Good	Falling	Good	Fair	No	0	No	No	No	4	40			
4	190	Blanche Rd	17-466	1/8/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Falling	Good	Good	No	0	No	No	No	4	41			
4	234	38th Pl	18-051	1/19/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Poor	Good	Good	No	0	No	Yes	No	4	42			
4	229	Ocean Dr	18-053	1/19/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Poor	Good	Good	No	0	No	Yes	No	4	43			
4	235	38th Pl	23-003	1/19/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Poor	Good	Good	No	0	No	Yes	No	4	44			
4	230	The Strand	23-022	1/19/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Poor	Good	Good	No	0	No	Yes	No	4	45			
4	231	The Strand	23-025	1/19/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Poor	Good	Good	No	0	No	Yes	No	4	46			
4	233	The Strand	23-046	1/19/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Poor	Good	Good	No	0	No	Yes	No	4	47			
4	232	The Strand	23-050	1/19/09	Pavement - Concrete Collar	Good	Good	Fair	Good	Poor	Good	Good	No	0	No	Yes	No	4	48			
4	292	Carlotta Way	25-014	1/22/09	Pavement - Concrete Collar	Good	Good	Fair	Fair	Poor	Good	Good	No	0	No	No	No	4	49			
1	27	1st St	01-059	11/21/08	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Fair	Fair	No	0	No	No	No	3	50			
1	34	2nd St	01-082	11/24/08	Pavement - Concrete Collar	Good	Good	Good	Good	Falling	Good	Good	No	0	No	No	No	3	51			
1	37	2nd St	01-087	11/24/08	Pavement - Concrete Collar	Good	Good	Good	Good	Falling	Good	Good	No	0	No	No	No	3	52			
1	44	9th St	01-166	11/24/08	Pavement - Concrete Collar	Good	Good	Good	Good	Falling	Good	Good	No	0	No	No	No	3	53			

Attachment D – Capital Improvement Needs - Sewer System

City of Manhattan Beach
Wastewater Capital Improvement Program
2010-2020

CIP No.	Project Description	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Replace Pier Pump Station Forcemain	\$486,000										
2	Replace Poinsettia Pump Station Forcemain	\$405,000	\$2,295,000									
3	Replace/Rehabilitate Severe and Major Condition Pipes	\$898,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000
4	Replace/Rehabilitate Sewer Manholes		\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800
5	Upgrade Pacific Pump Station			\$540,000								
	Replace Pacific Pump Station Forcemain			\$396,900								
6	Upgrade Voorhees Pump Station				\$540,000							
	Replace Voorhees Pump Station Forcemain				\$301,320							
7	Upgrade Meadows Pump Station					\$540,000						
	Replace Meadows Pump Station Forcemain					\$236,520						
8	Upgrade Bell Pump Station						\$540,000					
	Replace Bell Pump Station Forcemain						\$291,600					
9	Replace Palm Pump Station Forcemain							\$251,100				
10	Construct Emergency Storage for Pacific PS								\$1,134,000			
11	Construct Emergency Storage for Voorhees PS									\$992,250		
12	Construct Emergency Storage for Meadows PS										\$878,850	
13	Construct Emergency Storage for Bell PS											\$793,800
14	Construct Emergency Storage for Palm PS											\$453,600
	Total	\$1,789,000	\$4,357,800	\$2,932,700	\$2,637,120	\$2,772,320	\$2,827,400	\$2,246,900	\$3,129,800	\$2,988,050	\$2,874,650	\$3,243,200