TO: BOARD OF DIRECTORS

DATE: JUNE 15, 2007

EDIT WATER PROJECTS PRIORITY LISTING

AGENDA ITEM

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JUNE 20, 2007

ITEM

Receive recommended Water & Sewer Master Plan project priorities listings from Cannon and edit listings [EDIT LISTINGS & SET AUGUST 15 WORKSHOP].

BACKGROUND

Attached from Cannon Associates is a cover letter, a listing of water projects and plan sheet assuming constant flow, and a listing of water projects and plan sheet assuming variable flow. The constant flow listing/plan is based on the assumption that the supplemental water feed is provided at a fixed rate similar to that described in the Santa Maria Waterline Intertie Project MOU. The variable flow listing/plan is based on the assumption that either the feed or NCSD's plumbing allow for significant modulation of the feed volume to match system demand.

Larry Kraemer and Jeff Spannbauer from Cannon will present these materials to your Honorable Board and answer questions.

RECOMMENDATION

The intent of this item is to provide sufficient information to your Honorable Board so that you can discuss the options presented and edit the proposed listings of projects. If your Honorable Board can reach a consensus on selection of projects at this meeting, then staff recommends that your Honorable Board set a follow-up workshop for Wednesday August 15, 2007 to discuss the Draft Master Plan including the sewer projects discussed on May 16, 2007, the water projects discussed at this meeting, and the balance of the Water and Sewer Master Plan chapters.

ATTACHMENTS

- Cannon Cover Letter
- Constant Flow Projects Listing
- Constant Flow Plan Sheet
- Variable Flow Projects Listing
- Variable Flow Plan Sheet

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UNGINEERS PLANNERS SURVEYORS

Document Transmittal

June 13, 2007

To:	Bruce Buel
	Nipomo Community Services District
From:	Larry Kraemer, PE

Jeff Spannbauer, PE

Subject: Proposed Water System Improvement Projects

A computer model of the water system was developed to analyze existing supply and demand conditions, and to determine needs for supplemental supply under both existing and anticipated future demand scenarios.

To create the model, a base map was first prepared in AutoCAD. GIS data provided by NCSD was used to create the base map showing parcel lines, zoning, contours, and the existing water system itself. Separate NCSD-provided maps were used to delineate service area boundaries.

The model was based on water usage projections discussed in Tech Memo 1. Scenario 1 (see Tech Memo 1) was used as the basis for analysis of future conditions. Current observed conditions were used to calibrate the model, and to confirm appropriate duty factors for analysis of future conditions. Field measurements were taken as well, to determine physical properties and flows for model calibration.

A version of the model was also developed with the assumption that the District would be receiving supplemental water from an outside water source, as mandated. Two supply conditions were considered: variable flow and constant (or fixed) flow. Variable flow supply assumes that the District can specify the amount of water needed on a limited term basis, such as daily or weekly, so the quantity of supplemental water purchased can be adjusted to meet District needs. Constant flow assumes that the same amount of supplemental water is delivered to the District each day, regardless of need. These two supplemental supply conditions were considered for both existing and future conditions.

The water system was analyzed to review system design requirements, storage requirements, and supply requirements. District system design criteria specify that pipeline velocities must remain less than five feet per second, or that residual pressure remains at or above 20 psi. Tank storage requirements require that sufficient volume be maintained for fire flow storage, emergency storage of at least 50 gallons per day per capita, and equalization storage to maintain availability of water during peak conditions. District supply requirements specify that the supply system be capable of replenishing maximum daily demand draw on the system within 24 hours.

The model was run to determine pressures at nodes and velocities in pipelines under both maximum daily demand plus fire flow conditions and peak hour demand conditions. Storage

364 Pacific Street San Luis Obispo, CA 93401 Tel: 805-544-7407 Fax: 805-544-3863

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calculations were performed using the District's historical demand data and future usage projections. SCADA data on the existing system was reviewed to confirm adequacy of current supply; and calculations were performed to analyze the adequacy of system supply with supplemental water for existing and future conditions. If model results or calculations indicated failure of any of the District requirements for system design, storage or supply, then recommendations were determined to correct the problem.

The following scenarios were analyzed: existing conditions with existing supply; existing condition with supplemental water supply; and, future conditions with supplemental water supply. For each scenario, the model was run to evaluate flow bottlenecks and dead end mains, and production deficiencies, and to identify appropriate solutions. Anticipated future improvements were built into the model to accommodate new demands, and additional projects were identified to address current and future needs. The attached "Recommended Model System Improvements" draft figures show the recommended water systems improvements modification which were considered.

Other water system projects considered include relocation of water lines to accommodate planned County drainage structure improvements, conversion of the Eureka well from electric power to natural gas, improvements to reservoir mixing, and general system backbone improvements and maintenance.

Two "Recommended Water System Improvements" draft tables are attached: one for constant flow and one for variable flow. Both tables show the recommended water system projects and estimated costs for each project. Recommended priorities are indicated as well. These project lists are broken down by projects designed to meet existing needs, those designed to meet existing needs with supplemental water supply, and those designed to meet future needs.

Projects and priorities will be discussed in more detail in subsequent technical memoranda/master plan report after obtaining feedback from NCSD Board and Staff.

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				RECOMIN	ENDED WATE	RSISIEM	IWPROVEME	NTS - CONSTAN	TPLOW
OVEME	NTS TO MEET EXI	STING NEEDS				_			
		STING NEEDS							
					Diam. (in)	Unit	Quantity	Unit Cost ¹	Total Cost ²
PRIOF	RITY 1 - ELIMINATIN	G EXISTING BO	TTLENECKS		Diam. (m)	Unit	quantity	onit oost	Total Oost
	Camino Caballo - E	and the second state of th	and the second se		16	LF	1,325	\$200	\$270,000
	Willow Road - Pom				14	LF	1,500	\$180	\$270,000
	Grande from Cyclo		3		8	LF	660	\$140	\$93,000
	Frontage from Stor				8	LF	290	\$140	\$41,000
	Frontage from Hill t	o Grande			8	LF	1,180	\$140	\$170,000
							Arrienz Conten	Subtotal	\$850,000
PRIOF	RITY 1 - ELIMINATIN	G EXISTING BO	TTLENECKS - BLAC	K LAKE					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
			h to existing 8" main		8	LF	85	\$140	\$12,000
							1.111	Subtotal:	\$12,000
PRIOF	RITY 1 - SLO COUN	TY DRAINAGE PI	ROJECT - RELOCAT	ING WATER MAIN	S			Cubiolai.	\$12,000
	Tefft Street Box Cu				10	LF	150	\$160	\$24,000
-	Thompson Avenue	and and have a second and a second			8	LF	150	\$140	\$21,000
	Mallagh Arch Culve				8	LF	150	\$140	\$21,000
	Mallagh Box Culver				8	LF	150	\$140	\$21,000
	Burton Street Box (Culvert Improveme	ents		8	LF	150	\$140	\$21,000
		· · · · ·			1			Subtotal	\$110,000
PRIOF	RITY 2 - OPERATIO	NAL IMPROVEME	NTS					Gubtotur	\$770,000
	Standpipe Mixing					LS	1	\$200,000	\$200,000
		version from Electr	icity to Natural Gas			LS	1	\$70,000	\$70,000
								Subtotal	\$270,000
PRIOF	RITY 2 - LOOPING	DEAD-END MAINS	3					Gubiotai	\$270,000
11401	Brytec Ct - extend 8	and and the second data and the			8	LF	20	\$140	\$2,800
1	N. Blume - extend				8	LF	370	\$140	\$52,000
-	N. Crosby - extend				8	LF	90	\$140	\$13,000
	Eve Street - from B				8	LF	440	\$140	\$62,000
-	Colt Lane from Glo				8	LF	1,800	\$140	\$260,000
-	Grove from Oak GI				8	LF	650	\$140	\$91,000
	Branch from Wilson	The second			8	LF	730	\$140	\$110,000
	Camino Caballo fro		age		8	LF	500	\$140	\$70,000
						1000		Subtotal	\$670,000
PRIOF	RITY 3 - PIPE REPL	ACEMENT PROG	RAM					oustotur	P 010,000
	Replace 5% of Valv					EA	92	\$2,000	\$190,000
	Replace 5% of Fire					EA	33	\$4,500	\$150,000
1	Replace 5% of Air/					EA	11	\$2,000	\$22,000
	Replace 10% of Wa					EA	300	\$1,250	\$380,000
								Subtotal:	\$750,000
PRIOF	RITY 3 - SUMMIT ST	TATION PRESSU	RE/FIRE PROTECTI	ON UPGRADES				- the to turn	
			mp Station, & Valving			LS	1	\$500,000	\$500,000
								Subtotal:	\$500,000
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					TOT	AL COSTS	TO MEET EX	STING NEEDS:	\$3,200,000
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			Quantity	Unit Cost	Total Cost
			4 000	\$260	\$1 200 000
					\$1,300,000
		1000			\$1,500,000
I nompson - Menishau to High School	1.1 - 3-12-12-				\$170,000
					\$650,000
Freeway Crossing - Oak Glen to Frontage at Mehishau					\$58,000
			and the second se		\$550,000
		200			\$120,000
Freeway Crossing - Oak Glen to Frontage at Amado					\$45,000
N. Frontage - Hwy 101 Crossing to Lindon			1,250	\$200	\$250,000
N. Frontage - Lindon to Juniper	12	LF	1,600	\$170	\$280,000
Calle Fresa - Pomeroy to Camino Caballo	10	LF	1,200	\$160	\$200,000
Orchard - Tefft to Theodora	12	LF	850	\$170	\$150,000
S. Frontage - Tefft to Southland	12	LF	6,400	\$170	\$1,100,000
				Subtotal	\$6,400,000
					ANALY AND AN AND AN AN AN ANALY AND AN
epends on supplemental water supply)					
RITY 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY	EQUALIZATION STO	RAGE			
Tank Facility - 1MG		LS	1	\$1,000,000	\$1,000,000
Land for 4MG Tank Site (2-acres)					TBD
				Subtotal	\$1,000,000
be determined)					
RITY 1 - SUPPLIMENTAL WATER FILL LINES TO THE OUAD TA	ANKS				
		IF	37,000	\$215	\$8,000,000
					\$6,700,000
	10		Statement in successive statements and		\$750,000
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				Subtotal	\$8,750,000
	TOTAL COST			WATER NEEDS	\$16,150,000
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	ON SYSTEM RITY 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE SUNTY 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE SUNTY 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY North Dana Foothill Road - Quad Tanks to Mehlshau Mehlshau - North Dana Foothill Road to Thompson Thompson - Mehlshau to High School Mehlshau - Thompson to Oak Glen Freeway Crossing - Oak Glen to Frontage at Mehlshau S. Oak Glen - Tefft to Amado Amado - S. Oak Glen to Highway 101 Freeway Crossing - Oak Glen to Frontage at Amado N. Frontage - Hwy 101 Crossing to Lindon N. Frontage - Lindon to Juniper Calle Fresa - Pomeroy to Camino Caballo Orchard - Tefft to Theodora S. Frontage - Tefft to Southland Pepends on supplemental water supply) RITY 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY Tank Facility - 1MG Land for 4MG Tank Site (2-acres) be determined)	RTY 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE SUPPLEMENTAL WATER North Dana Foothill Road - Quad Tanks to Mehishau 24 Mehishau - North Dana Foothill Road to Thompson 24 Thompson - Mehishau to High School 14 Mehishau - Thompson to Oak Glen 20 Freeway Crossing - Oak Glen to Frontage at Mehishau 20 S. Oak Glen - Tefft to Amado 14 Amado - S. Oak Glen to Highway 101 14 Freeway Crossing - Oak Glen to Frontage at Amado 14 N. Frontage - Hwy 101 Crossing to Lindon 16 N. Frontage - Lindon to Juniper 12 Calle Fresa - Pomeroy to Camino Caballo 10 Orchard - Tefft to Theodora 12 S. Frontage - Tefft to Southland 12 RTY 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY EQUALIZATION STOI Tank Facility - 1MG 14 Land for 4MG Tank Site (2-acres) 14 De determined) 18 Option 1 - 18" Fill line north of Tefft 18 Booster Station 18	DN SYSTEM Diam. (in) Unit NOTH 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE SUPPLEMENTAL WATER 24 LF North Dana Foothill Road - Quad Tanks to Mehlshau 24 LF Mehlshau - North Dana Foothill Road to Thompson 24 LF Thompson - Mehlshau to High School 14 LF Mehlshau - Thompson to Cak Glen 20 LF Freeway Crossing - Oak Glen to Frontage at Mehlshau 20 LF S. Oak Glen - Tefft to Amado 14 LF Amado - S. Oak Glen to Highway 101 14 LF Freeway Crossing - Oak Glen to Frontage at Amado 14 LF N. Frontage - Hwy 101 Crossing to Lindon 16 LF N. Frontage - Lindon to Juniper 12 LF Calle Fresa - Pomeroy to Camino Caballo 10 LF Orchard - Tefft to Theodora 12 LF S. Frontage - Tefft to Southland 12 LF RTY 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY EQUALIZATION STORAGE LS Tank Facility - 1MG LS LS Lard for 4MG Tank Site (2-acres) LS LS be determined) LS LS	DN SYSTEM Diam. (in) Unit Quantity RTY 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE SUPPLEMENTAL WATER - - - North Dana Foothill Road - Quad Tanks to Mehishau 24 LF 4,900 Mehishau - North Dana Foothill Road to Thompson 24 LF 5,650 Thompson - Mehishau to High School 14 LF 900 Mehishau - Thompson to Oak Glen 20 LF 2,800 Freeway Crossing - Oak Glen to Frontage at Mehishau 20 LF 2,800 Soak Glen - Tefft to Amado 14 LF 3,050 Amado - S. Oak Glen to Frontage at Amado 14 LF 250 N. Frontage - Hwy 101 Crossing to Lindon 16 LF 1,250 N. Frontage - Hwy 101 Crossing to Lindon 16 LF 1,200 Orchard - Tefft to Theodora 12 LF 6,400 S. Frontage - Tefft to Southland 12 LF 6,400 Verther and	DN SYSTEM Diam. (in) Unit Quantity Unit Cost ¹ RTY 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE SUPPLEMENTAL WATER </td

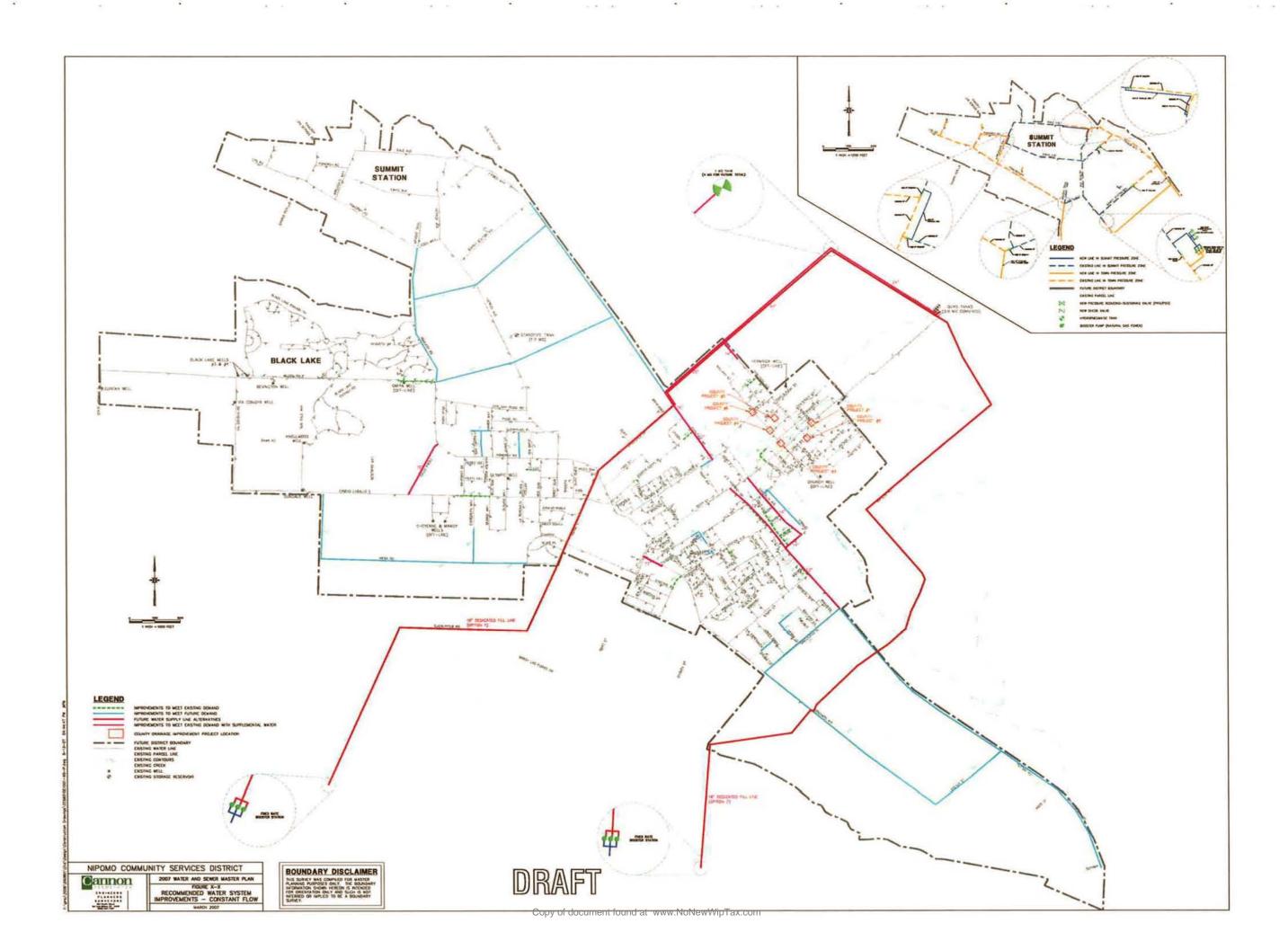
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		Diam. (in)	Unit	Quantity	Unit Cost ¹	Total Cost ²
	ITY 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE FUTU			0.400	0170	01 100 000
	N. Frontage - from Hwy 101 Crossing to Future Road	12	LF	8,100	\$170	\$1,400,000
	N. Frontage - from Future Road to Summit Station	10	LF	1,100	\$160	\$180,000
	Willow Extension - N. Frontage to Hetrick	12	LF	4,300	\$170	\$740,000
	Willow Extension - Hetrick to Pomeroy	16	LF	3,200	\$200	\$640,000
	Juniper - Frontage to Mary	8	LF	600	\$140	\$84,000
	Future Road - N. Frontage to Pomeroy	12	LF	6,200	\$170	\$1,100,000
	Pomeroy - Willow to Future Road	12	LF	3,500	\$170	\$600,000
	Pomeroy - Future Road to Summit Station	10	LF	2,050	\$160	\$330,000
_	Mesa - Charro to Viva	10	LF	6,800	\$160	\$1,100,000
	Viva - Mesa to Camino Caballo	10	LF	2,650	\$160	\$430,000
	Evergreen - Dead End to Mesa	8	LF	1,350	\$140	\$190,000
	Orchard - Southland to Joshua	12	LF	8,500	\$170	\$1,500,000
	Joshua - Orchard to S. Frontage	12	LF	3,350	\$170	\$570,000
	S. Frontage - Southland to Joshua	12	LF	8,600	\$170	\$1,500,000
	Hutton - Joshua to Cuyama	12	LF	6,300	\$170	\$1,100,000
	Southland - Frontage to Orchard	10	LF	3,900	\$160	\$630,000
					Subtotal	\$13,000,000
PRIOR	ITY 1 - ELIMINATING BOTTLENECKS - BLACK LAKE					
	Augusta Drive - extend 8" to future line in Pomeroy	8	LF	20	\$140	\$2,800
					Subtotal:	\$2,800
PRIOR	ITY 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY E	QUALIZATION STORAG	E			,
	Tank Facility - 3MG		LS	1	\$3,000,000	\$3,000,000
					Subtotal:	\$3,000,000
PRIOR	ITY 2 - PROPOSED LOOPS				Gubiolai.	ψ0,000,000
and the second s	Widow Lane / Twilight - extend 8" to loop dead-ends	8	LF	1260	\$140	\$180,000
	Tanis - extend 6" dead-end to Nellie	8	LF	500	\$140	\$70,000
	Spruce - extend 6" dead-end to Nellie	8	LF	325	\$140	\$46,000
	Bristlecone - extend 6" dead-end to Nellie	8	LF	285	and the second sec	
	Terrace - extend 6" dead-end to Souza	8	LF	1850	\$140 \$140	\$40,000 \$260,000
	Souza - Terrace to Oak Glen		COLUMN,			
		8	LF	300	\$140	\$42,000
_	Glenhaven - San Ysidro to Amber	8		820	\$140	\$120,000
	Hunter Ridge - Pomeroy to Glenhaven	8	LF	1050	\$140	\$150,000
	Future Road - Glenhaven to Pomeroy (between Jennie and Ten Oa		LF	1050	\$140	\$150,000
	Future Road - Honey Grove to Drum	8	LF	650	\$140	\$91,000
					Subtotal	\$1,200,000
_						
			TOTAL COST	TO MEET F	JTURE NEEDS:	\$18,000,000
			TOTAL	COST OF IM	PROVEMENTS:	\$37,350,000
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OVEM	NTS TO MEET EXIS	TING NEEDS							
				Diam. (in)	Unit	Quantity	Unit Cost ¹	Total Cost ²	
PRIO	RITY 1 - ELIMINATING	GEXISTING BOTTL	ENECKS						
	Camino Caballo - Blu	e Gum west to exist	ing 16" main	16	LF	1,325	\$200	\$270,000	
	Willow Road - Pomer		4" main	14	LF	1,500	\$180	\$270,000	
	Grande from Cyclone			8	LF	660	\$140	\$93,000	
	Frontage from Story	to Banyon		8	LF	290	\$140	\$41,000	
	Frontage from Hill to	Grande		8	LF	1,180	\$140	\$170,000	
							Subtotal	\$850,000	
PRIO			ENECKS - BLACK LAKE						
	Misty Glenn Place - W	Villow Road north to	existing 8" main	8	LF	85	\$140	\$12,000	
							Subtotal:	\$12,000	
PRIO	RITY 1 - SLO COUNT	Y DRAINAGE PROJ	ECT - RELOCATING WA	TER MAINS					-
	Tefft Street Box Culv			10	LF	150	\$160	\$24,000	
	Thompson Avenue A		ments	8	LF	150	\$140	\$21,000	
	Mallagh Arch Culvert			8	LF	150	\$140	\$21,000	
	Mallagh Box Culvert	Improvements		8	LF	150	\$140	\$21,000	
	Burton Street Box Cu			8	LF	150	\$140	\$21,000	
							Subtotal	\$110,000	
PRIO	RITY 2 - OPERATION	AL IMPROVEMENT	S						
	Standpipe Mixing				LS	1	\$200,000	\$200,000	
	Eureka Well - Conve	rsion from Electricity	to Natural Gas		LS	1	\$70,000	\$70,000	
					a financia di		Subtotal	\$270,000	
PRIO	RITY 2 - LOOPING DE	AD-END MAINS							_
1110	Brytec Ct - extend 8"			8	LF	20	\$140	\$2,800	
-	N. Blume - extend 8"			8	LF	370	\$140	\$52,000	
	N. Crosby - extend 8			8	LF	90	\$140	\$13,000	
	Eve Street - from Bui			8	LF	440	\$140	\$62,000	
	Colt Lane from Glory			8	LF	1,800	\$140	\$260,000	_
-	Grove from Oak Gler			8	LF	650	\$140	\$91,000	-
-	Branch from Wilson	LE LOG / / DE SAN GIO		8	LF	730	\$140	\$110,000	-
	Camino Caballo from			8	LF	500	\$140	\$70,000	
							Subtotal	\$670,000	
PRIO	RITY 3 - PIPE REPLA	CEMENT PROGRAM	M				Junioral		
1.1.0	Replace 5% of Valve				EA	92	\$2,000	\$190,000	
	Replace 5% of Fire H				EA	33	\$4,500	\$150,000	
	Replace 5% of Air/Va				EA	11	\$2,000	\$22,000	-
-	Replace 10% of Wat				EA	300	\$1,250	\$380,000	
					01 000 / all.		Subtotal:	\$750,000	
PRIO	RITY 3 - SUMMIT STA	TION PRESSURE	FIRE PROTECTION UPG	BADES		-	Custotal.	\$100,000	
1110	Hydro-pneumatic Ta				LS	1	\$500,000	\$500,000	
	, yaro priournato ra						Subtotal:	\$500,000	
							Subiolal.	\$500,000	
				TO	TAL COST	TO MEET EY	STING NEEDS:	\$3,200,000	_
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th Dana Foothill Ilshau - North D Impson - Mehlsh Ilshau - Thomps Ilshau - Thomps Ilshau - Thomps Dak Glen - Tefft	Road - Quad Tanks to ana Foothill Road to T	o Mehlshau				1		
nlshau - North D mpson - Mehlsh nlshau - Thomps eway Crossing - Dak Glen - Tefft	ana Foothill Road to T			24	LF	4,900	\$260	\$1,300,000
mpson - Mehlsh Ilshau - Thomps eway Crossing - Dak Glen - Tefft		hompson		24	LF	5,650	\$260	\$1,500,000
llshau - Thomps eway Crossing - Dak Glen - Tefft				14	LF	900	\$180	\$170,000
eway Crossing - Dak Glen - Tefft				18	LF	2,800	\$215	\$610,000
oak Glen - Tefft	Oak Glen to Frontage	at Mehlshau		18	LF	250	\$215	\$54,000
	to Amado			14	LF	3,050	\$180	\$550,000
ado - S. Oak Gle	en to Highway 101			14	LF	650	\$180	\$120,000
	Oak Glen to Frontage	e at Amado		14	LF	250	\$180	\$45,000
rontage - Hwy	01 Crossing to Sandy	dale		16	LF	650	\$200	\$130,000
rontage - Sand	dale to Lindon			14	LF	650	\$180	\$120,000
rontage - Lindor	to Juniper			12	LF	2,050	\$170	\$350,000
e Fresa - Pome	roy to Camino Caballo			10	LF	1,200	\$160	\$200,000
hard - Tefft to T	heodora			12	LF	850	\$170	\$150,000
				12	LF	6,400	\$170	\$1,100,000
nino Caballo - B	lue Gum to Osage			16	LF	3,800	\$200	\$760,000
							Subtotal	\$7,200,000
nds on suppler	mental water supply)							
1 - FIXED FLO	W RATE SUPPLEME	NTAL WATER S	UPPLY EQUALIZATI	ON STORAGE	A CONTRACT OF A			
					LS	1	\$1,000,000	\$1,000,000
d for 4MG Tank	Site (2-acres)							TBD
							Subtotal	\$1,000,000
	o Flaco to intersect of	Viva and Camin	o Caballo	18	LF	11,350	\$215	\$2,400,000
ster Station					LS	1	\$750,000	\$750,000
							Subtotal	\$3,200,000
			TOT	AL COST TO	MEET SUI	PPLIMENTAL	NATER NEEDS	\$11,400,000
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	rontage - Lindor le Fresa - Pome chard - Tefft to Ti Frontage - Tefft t mino Caballo - B ends on suppler (1 - FIXED FLO) hk Facility - 1MG hd for 4MG Tank (1 - SUPPLIMEN Fill line from Os poster Station	rontage - Lindon to Juniper le Fresa - Pomeroy to Camino Caballo chard - Tefft to Theodora Frontage - Tefft to Southland mino Caballo - Blue Gum to Osage ands on supplemental water supply) 1 - FIXED FLOW RATE SUPPLEMEInk Facility - 1MG and for 4MG Tank Site (2-acres) determined) 1 - SUPPLIMENTAL WATER FILL LI Fill line from Oso Flaco to intersect of oster Station	terived from adjusting 2001 Master Plan Estimate April	frontage - Lindon to Juniper le Fresa - Pomeroy to Camino Caballo shard - Tefft to Theodora Frontage - Tefft to Southland mino Caballo - Blue Gum to Osage 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY EQUALIZATI hk Facility - 1MG do for 4MG Tank Site (2-acres) 4 determined) 1 - SUPPLIMENTAL WATER FILL LINES Fill line from Oso Flaco to intersect of Viva and Camino Caballo ster Station 707 1 - SUPPLIMENTAL WATER FILL LINES Fill line from Oso Flaco to intersect of Viva and Camino Caballo ster Station 707 1 - SUPPLIMENTAL WATER FILL LINES Fill line from Oso Flaco to intersect of Viva and Camino Caballo ster Station 707 1 - SUPPLIMENTAL WATER FILL LINES Fill line from Oso Flaco to intersect of Viva and Camino Caballo ster Station 1	irontage - Lindon to Juniper 12 le Fresa - Pomercy to Camino Caballo 10 hard - Tefft to Theodora 12 irontage - Tefft to Southland 12 mino Caballo - Blue Gum to Osage 16 inds on supplemental water supply) 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY EQUALIZATION STORAGE in A Facility - 1MG ind for 4MG Tank Site (2-acres) ind for 4MG Tank Site (2-acres) indextra fill line from Oso Flaco to intersect of Viva and Camino Caballo 18 Station intersect of Viva and Camino Caballo 18 intersect of Viva and Camino Caballo 18 oster Station intersect of Viva and Camino Caballo 18 intersect of Viva and Camino Caballo 19<	riontage - Lindon to Juniper le Fresa - Pomeroy to Camino Caballo hard - Tefft to Theodora Tornage - Tefft to Southland into Caballo - Blue Gum to Osage inds on supplemental water supply) 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY EQUALIZATION STORAGE is Facility - 1MG id for 4MG Tank Site (2-acres) determined) 1 - SUPPLIMENTAL WATER FILL LINES Fill line from Oso Flaco to intersect of Viva and Camino Caballo 18 LF Ster Station COTAL COST TO MEET SUP COST TO	irontage - Lindon to Juniper 12 LF 2,050 le Fresa - Pomeroy to Camino Caballo 10 LF 1,200 htrad - Tefft to Theodora 112 LF 850 Frontage - Tefft to Southland 12 LF 6,400 mino Caballo - Blue Gum to Osage 16 LF 3,800 indon of supplemental water supply)	irontage - Lindon to Juniperi 12 LF 2,050 \$170 le Fresa - Pomeroy to Camino Caballo 10 LF 1,200 \$160 irnon caballo - Blue Gum to Osage 12 LF 850 \$170 irnon caballo - Blue Gum to Osage 16 LF 3,800 \$200 inds on supplemental water supply) 1 - - Subtotal inds on supplemental water supply) - - - Subtotal inds on supplemental water supply) - - - Subtotal ind for 4MG Tank Site (2-acres) LS 1 \$1,000,000 Subtotal idetermined) - Subtotal - Subtotal idetermined) - Subtotal Subtotal - if Illine from Oso Flaco to intersect of Viva and Camino Caballo 18 LF 11,350 \$215 ister Station LS 1 \$750,000 - - - ister Station LS 1 - - - -

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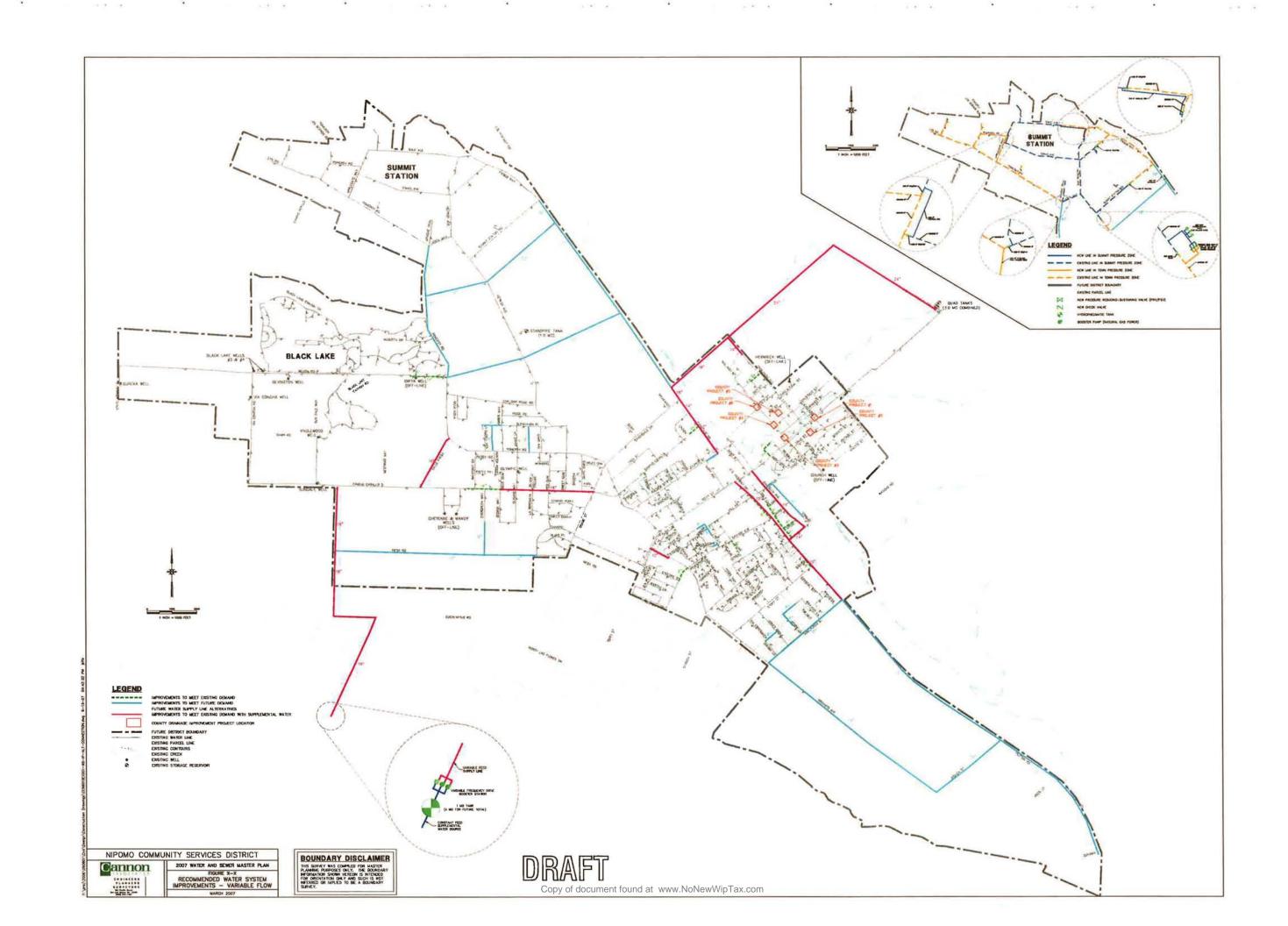
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BUTIC	DN SYSTEM	Diam. (in)	Unit	Quantity	Unit Cost ¹	Total Cost ²
a stand all and the state of the state	RITY 1 - BACKBONE IMPROVEMENTS TO ACCOMMODATE FUTUR		0	Quantity	Child Cold	
	N. Frontage - from Hwy 101 Crossing to Future Road	12	LF	8,100	\$170	\$1,400,000
	N. Frontage - from Future Road to Summit Station	10	LF	1,100	\$160	\$180,000
	Willow Extension - N. Frontage to Hetrick	12	LF	4,300	\$170	\$740,000
	Willow Extension - Hetrick to Pomeroy	12	LF	3,200	\$170	\$550,000
	Future Road - N. Frontage to Pomeroy	12	LF	6,200	\$170	\$1,100,000
	Pomeroy - Willow to Future Road	12	LF	3,500	\$170	\$600,000
	Pomeroy - Future Road to Summit Station	10	LF	2,050	\$160	\$330,000
	Mesa - Charro to Viva	10	LF	6,800	\$160	\$1,100,000
	Evergreen - Dead End to Mesa	8	LF	1,350	\$140	\$190,000
	Orchard - Southland to Joshua	12	LF	8,500	\$170	\$1,500,000
	Joshua - Orchard to S. Frontage	12	LF	3,350	\$170	\$570,000
	S. Frontage - Southland to Joshua	12	LF	8,600	\$170	\$1,500,000
1	Hutton - Joshua to Cuyama	12	LF	6,300	\$170	\$1,100,000
	Southland - Frontage to Orchard	10	LF	3,900	\$160	\$630,000
					Subtotal	\$12,000,000
PRIOR	RITY 1 - ELIMINATING BOTTLENECKS - BLACK LAKE				- united and	,,
Part and the second second	Augusta Drive - extend 8" to future line in Pomeroy	8	LF	20	\$140	\$2,800
					Subtotal:	\$2,800
PRIOR	RITY 1 - FIXED FLOW RATE SUPPLEMENTAL WATER SUPPLY EQ	UALIZATION STORAG	F		Gabiotal.	Ψ2,000
TRION	Tank Facility - 3MG		LS	1	\$3,000,000	\$3,000,000
			LU		Subtotal:	\$3,000,000
DDIOE	RITY 2 - PROPOSED LOOPS				Subiolai.	\$5,000,000
PRIOR	Widow Lane / Twilight - extend 8" to loop dead-ends	8	LF	1260	\$140	\$180,000
	Tanis - extend 6" dead-end to Nellie	8	LF	500	\$140	\$70,000
	Spruce - extend 6" dead-end to Nellie	8	LF	325	\$140	\$46,000
	Bristlecone - extend 6" dead-end to Nellie	8	LF	285	\$140	\$40,000
	Terrace - extend 6" dead-end to Neille	8	LF	1850	\$140	\$260,000
	Souza - Terrace to Oak Glen	8	LF	300	\$140	
	Glenhaven - San Ysidro to Amber		LF	820		\$42,000
		8	LF		\$140	\$120,000
	Hunter Ridge - Pomeroy to Glenhaven	8 s) 8	LF	1050 1050	\$140 \$140	\$150,000
	Future Road - Glenhaven to Pomeroy (between Jennie and Ten Oak Future Road - Honey Grove to Drum	s) o 8	LF	650	\$140	\$150,000
	Future Road - Horley Grove to Druffi	0	LF	050		\$91,000
					Subtotal	\$1,200,000
			TOTAL COS	T TO MEET F	TUDE NEEDO	647.000.000
			IOTAL COS	TIOMEETE	JTURE NEEDS:	\$17,000,000
			TOTA	0007.05 //		601 000 000
			TOTAL	COST OF IM	PROVEMENTS:	\$31,600,000
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