IRRIGATION NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK. PROVIDE WRITTEN DOCUMENTATION OF SITE WATER PRESSURE TO LANDSCAPE ARCHITECT. IF ANY DISCREPANCY EXISTS BETWEEN CONTRACT DOCUMENTS AND ACTUAL FIELD CONDITIONS, NOTIFY THE CITY INSPECTOR AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF IRRIGATION EQUIPMENT.

2. THIS IRRIGAITON SYSTEM IS DESIGN TO PROVIDE SUPPLEMENTAL IRRIGATION WATER TO NATIVE PLANT RESTORATION AREAS DURING THE FIRST THREE (3) YEARS OF ESTABLISHMENT. ONCE ESTABLISHMENT IS VERIFIED, THE IRRIGATION SHALL BE REMOVED BY OTHERS FOR REUSE ON FUTURE PROJECTS. IRRIGATION PLANS, SPECIFICATIONS AND DETAILS TAKE INTO ACCOUNT THE EASE OF REMOVAL AND THE ABILITY TO REUSE EXISTING MATERIALS IN FUTURE APPLICATIONS.

3. THIS DRAWING IS DIAGRAMMATIC. IRRIGATION COMPONENTS SHOWN BENEATH PLANT MATERIAL, PAVEMENT, PATHS, ETC. (EXPECT WHERE PIPES CROSS BENEATH PAVEMENT OR PATHS) ARE SHOWN FOR GRAPHIC CLARITY. INSTALL PIPES, VALVES, AND OTHER IRRIGATION COMPONENTS TO PREVENT DISTURBANCE OF PLANT MATERIAL WHEN IRRIGATION SYSTEM REMOVAL IS REQUIRED. REFER TO PLANTING AND CONSTRUCTION PLANS.

4. THE IRRIGATION SYSTEM IS DESIGNED FOR A MAXIMUM DEMAND OF 20 GPM. AVERAGE STATIC PRESSURE IS APPROXIMATELY 57 PSI DOWNSTREAM OF CWS WATER METER. THE SYSTEM REQUIRES A MINIMUM OF 30 PSI AT THE FARTHEST EMISSION DEVICE. CONTACT THE LANDSCAPE ARCHITECT IN THE EVENT THAT FIELD TESTED PRESSURE IS LESS THAN STATED, PRIOR TO CONSTRUCTION.

5. THE INTENT OF THE IRRIGATION DESIGN IS TO PROVID THE MINIMUM AMOUNT OF WATER NECESSARY TO ESTABLISH NATIVE PLANT MATERIAL BUT NOT SO MUCH AS TO BECOME DEPENDENT UPON SUPPLEMENTAL WATER FOR GOOD HEALTH. THE DESIGN DIVIDES THE PLANT MATERIAL INTO HYDROZONES BASE ON PLANT WATER USE REQUIREMENTS, SOIL TYPES AND IRRIGATION APPLICATION METHOD. TREES ARE ZONED SEPERATELY.

6. EACH HYDROZONE SHALL BE CONTROLLERD BY A SOIL MOISTURE SENSOR. CONTACT IRROMETER COMPANY, INC. AT (951) 689-1701 FOR PRODUCT INSTALLATION AND OPERATING SPECIFICATIONS.

7. POTABLE WATER MAIN LINE SHALL HAVE 24" MINIMUM COVER. INSTALL 2" DETECTABLE TAPE LABELED POTABLE WATER T.CHRISTY MODEL DT-02-B-PW ALONG ENTIRE LENGTH OF POTABLE WATER MAIN LINE 12" BELOW GRADE. POTABLE WATER MAIN LINE SHALL BE BACKFILLED WITH 4" SAND BELOW AND 4" OF SAND ABOVE PIPE. BACKFILL REMAINDER OF TRENCH WITH APPROVED ON-SITE MATERIALS.

8. PERMANENT IRRIGATION MAIN LINE SHALL HAVE 18" MINIMUM COVER. INSTALL 2" DETECTABLE TAPE LABELED IRRIGATION T.CHRISTY MODEL DT-02-G-I 12" BELOW GRADE. IRRIGATION MAIN LINE SHALL BE BACKFILLED WITH 4" SAND BELOW AND 4" OF SAND ABOVE PIPE. BACKFILL REMAINDER OF TRENCH WITH APPROVED ON-SITE MATERIALS.

9. CONTRACTOR SHALL MAINTAIN A 4" MINIMUM HORIZONTAL SEPERATION BETWEEN IRRIGATION AND POTABLE WATER MAIN LINES.

10. PE SUPPLY LINE SHALL HAVE 6" MINIMUM COVER AND SHALL BE BACKFILLED USING APPROVED ON-SITE MATERIALS.

11. 1/2" DRIP TUBING SHALL SHALL HAVE 2" MINIMUM COVER AND SHALL BE BACKFILLED USING APPROVED ON-SITE MATERIALS.

12. SUBSURFACE CAPPILLARY TUBING SHALL BE BURIED AS PER DETAILS AND MANUFACTURER'S SPECIFICATIONS. BACKFILL SHALL BE FROM APPROVED ON-SITE MATERIALS.

13. IRRIGATION COMPONENTS INCLUDING BATTERY OPERATED CONTROLLERS, REMOTE CONTROL VALVE ASSEMBLIES, SOIL MOISTURE SENSORS AND DRIP EMITTER ASSEMBLIES SHALL BE INSTALLED PER PLANS, DETAILS, SPECIFICATIONS AND MANUFACTURER'S INSTALLATION GUIDELINES. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE BATTERIES FOR CONTROLLERS AND SOIL MOISTURE SENSORS.

14. SOIL MOISTURE SENSORS SHALL BE LOCATED IN THE ACTIVE ROOT ZONE OF THE MOST REPRESENTATIVE PLANT MATERIAL WITHIN THE HYDROZONE. SENSORS SHALL HAVE TWO (2) 18GA AWG-UF DIRECT BURIAL WIRE THAT RUNS FROM THE SENSOR LOCATIONS TO THE MONITOR LOCATION. THE MONITOR SHALL BE INSTALLED IN A 6" PLASTIC VALVE BOX AND LOCATED A MINIMUM OF THREE (3) FEET FROM SENSOR LOCATIONS. WIRE CONNECTIONS SHALL BE MADE WITHIN THE VALVE BOX USING WATERPROOF WIRE CONNECTORS WITH A MECHANICAL CRIMP. EACH SOIL MOISTURE SENSOR SHALL BE INDEPENDENTLY ADJUSTABLE FROM 0-200 CENTIBARS. THE CONTRACTOR SHALL

15. THE CONTRACTOR SHALL FLUSH THE SYSTEM CLEAR FROM ALL DEBRIS PRIOR TO INSTALLING EMISSION DEVICES AND SUBSURFACE CAPILLARY TUBING..

16. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADEQUETE SOIL MOISTURE AT TIME OF PLANTING EITHER BY INSTALLED IRRIGATION COMPONENTS, TRUCK WATER OR HAND WATER. CONTRACTOR IS RESPONSIBLE FOR COMPLETE WATER COVERAGE OF PLANT MATERIAL AND SHALL INSTALL ADDITIONAL EMITTERS ASSEMBLIES, DRIP TUBING AND DRIPPERLINE AS NEEDED AT NO ADDITIONAL COST TO THE OWNER.

17. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING EQUIPMENT TO THE OWNER AT THE END OF THE MAINTENANCE PERIOD: ONE (1) BATTERY OPERATED CONTROLLER, ONE (1) WATERMARK BATTERY MODULE WITH TWO (2) SOIL MOISTURE SENSORS, TEN (10) EMITTER ASSEMBLIES, ONE-HUNDRED (100) FEET 1/2 DRIP TUBING, FOUR (4) BATTERIES FOR CONTROLLER, FOUR (4) BATTERIES FOR SOIL MOISTURE UNITS

18. THE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS TO OWNER AT COMPLETION OF PROJECT. RECORD DRAWINGS SHALL INCLUDE IRRIGATION WATER METER, BACKFLOW PREVENTERS, IRRIGATION AND POTABLE WATER MAIN LINES, POLY SUPPLY LINES, CONTROLLERS, ISOLATION VALVES, QUICK COUPLER VALVES, REMOTE CONTROL VALVES, SOIL MOISTURE SENSORS AND DRIP TRANSITIONS. MAIN LINES AND SUPPLY LINES SHALL BE NOTED AT 100' INTERVALS. MATERIALS LISTED ABOVE SHAL BE DIMENSION FROM TWO (2) PERMANENT POINTS OF REFERENCE.

19. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A FIELD TRAINING WORKSHOP FOR CITY STAFF INCLUDING A COMPREHENSIVE WALK-THROUGH OF SITE FACILITIES, LOCATION OF IRRIGATION EQUIPMENT AND INSTRUCTION OF OPERATION AND MAINTENANCE REQUIREMETNS FOR VALVES, CONTROLLERS, SOIL MOISTURE SENSORS AND EMISSION DEVICES.

20. THERE SHALL BE NO WATER AUDIT REQUIREMENTS FOR THIS PROJECT.

21. SEE PLANS, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

IRRIGATION NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT SOIL SAMPLES TO KISSS MANUFACTURER FOR ANALYSIS 4 WEEKS PRIOR TO ORDERING PRODUCT. CONTACT JASON HAYES AT (800) 376-7161 FOR SOIL SAMPLING PACKAGE AND ORDERING INFORMATION.

2. SOIL SAMPLES SHALL BE COLLECTED AFTER ROUGH GRADE IS ESTABLISH AREA OF SOIL SAMPLE.

3. PROVIDE SAMPLES FOR THE FOLLOWING AREAS:
   a. RIPARIAN BIOSWALE AFTER SOIL AMENDEMNTS ARE ADDED AND TILLED
   b. SOUTH BIOSWALE AFTER SOIL AMENDMENTS ARE ADDED AND TILLED
   b. LIVE POLE PLANTINGS AT TREE PROTECTION ISLANDS
   c. BRUSH LAYERING AT BANK IN FLOOD PLAIN

Water Use Calculations

Total Landscape Area (LA)

19,678	Square Feet	
0.45	Acres	

Maximum Applied Water Allowance (MAWA)

MAWA = (LA) (ETO) (.8) (0.62)

MAWA =	509,487	Gallons per Year
	1.56	Acre-Foot per Year

Estimated Water Use (EWU)

EWU = (52.2) (.80) (PF) (HA) (0.62) / (IE)

EWU =	119,879	Gallons per Year
	0.37	Acre-Foot per Year

Where:

LA	= Total Landscape area (Square Feet)
HA	= Hydrozone Landscape Area (Square Feet)
52.2	= Reference Evapotranspiration (ET_O) (Ref: AB325, Section495)
0.8	= ET_OAdjustment (Ref: CUWCC AB2717 Task Force Recommendation 13)
0.62	= Conversion factor from inches to gallons
0.2	= Plant Factor (KL) - Low
0.5	= Plant Factor (KL) - Medium
0.8	= Plant Factor (KL) - High, Turf
0.75	= Irrigation Efficiency - Rotors, Rotators, Spray
0.85	= Irrigation Efficiency - Bubblers, Surface Drip
0.90	= Irrigation Efficiency - Sub-surface Drip

Hydrozone 1; Low water use trees, shrubs and ground cover; drip.

PF =	0.2			
HA =	19,678	(square feet)	0.451745	Acres
IE =	0.9			
EWU =	119,879	(gallons per year)	0.367896	Acre-Feet

Total Estimated Water Use, EWU.

EWU =	**119,879**	(gallons per year)	0.367896	Acre-Feet per Year
	160	(100 cubic feet per year)	0.003679	Acres

IRRIGATION SCHEDULE
CAPILLARY SUBSURFACE IRRIGATION TUBE

Irrigation Schedule

Hydrozone 1; Low water use trees, shrubs and ground cover; drip.

Precipitation Rate = 0.21 inches per hour

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MIN / WEEK	18	27	43	70	90	110	126	108	80	55	24	15
DAYS / WEEK	3	3	3	4	4	4	5	5	5	4	3	3
MIN / WATER DAY	6	9	14	17	23	27	25	22	16	14	8	5
CYCLE / DAY	1	1	1	1	1	1	1	1	1	1	1	1
MIN / CYCLE	6	9	14	17	23	27	25	22	16	14	8	5
GAL / MONTH	134	201	323	524	680	825	948	814	602	413	178	112
C.F. / MONTH	18	27	43	70	91	110	127	109	80	55	24	15

Notes.
1. Calculations contain 0.005 percent margin of error.
2. Irrigation time shall be divided betw een multiple start times so as not to exceed infiltration rate.

IRRIGATION SCHEDULE
DIRECT BURIAL EMITTER MANIFOLD

Irrigation Schedule

Hydrozone 2; Low water use trees, shrubs and ground cover; spray

Precipitation Rate = 0.51 inches per hour

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MIN / WEEK	7	11	18	29	37	45	52	45	33	23	10	6
DAYS / WEEK	3	3	3	4	4	4	5	5	5	4	3	3
MIN / WATER DAY	2	4	6	7	9	11	10	9	7	6	3	2
CYCLE / DAY	1	1	1	1	1	1	1	1	1	1	1	1
MIN / CYCLE	2	4	6	7	9	11	10	9	7	6	3	2
GAL / MONTH	669	1,004	1,617	2,620	3,401	4,126	4,739	4,070	3,011	2,063	892	558
C.F. / MONTH	89	134	216	350	455	552	634	544	402	276	119	75

Notes.
1. Calculations contain 0.005 percent margin of error.
2. Irrigation time shall be divided betw een multiple start times so as not to exceed infiltration rate.

VALVE SCHEDULE

VALVE STATION	PLANTING AREA DESCRIPTION	IRRIGATION METHOD	VALVE FLOW RATE (GPM)	APPLICATION RATE (IN/HR)
1	PARK PERIMETER - SHRUBS	DRIP	5.8	0.51
2	PARK PERIMETER - TREES	DRIP	1.1	0.51
3	RIPARIAN BIOSWALE - GRASSES AND SEDGES	KISSS	1.8	0.21
4	RIPARIAN BIOSWALE - WILLOWS	KISSS	7.1	0.21
5	PARK PERIMETER - SHRUBS	DRIP	1.6	0.51
6	BRUSH LAYERING ON FLOOD PLAIN	KISSS	13.9	0.21
7	BRUSH LAYERING ON SLOPED BANK	KISSS	10.8	0.21
8	BRUSH LAYERING ON SLOPED BANK	KISSS	10.8	0.21
9	HIGH TERRACE - TREES	DRIP	--	0.51
10	TREE PROTECTION ISLANDS - LIVE POLE PLANTING	KISSS	7.1	0.21
11	BRUSH LAYERING ON SLOPED BANK	KISSS	10.8	0.21
12	BRUSH LAYERING ON SLOPED BANK	KISSS	10.8	0.21
13	BRUSH LAYERING ON FLOOD PLAIN	KISSS	8.3	0.21
14	PARK PERIMETER - TREES	DRIP	1.7	0.51
15	PARK PERIMETER - SHRUBS	DRIP	6.1	0.51
16	PARK PERIMETER - TREES	DRIP	1.7	0.51
17	PARK PERIMETER - SHRUBS	DRIP	0.8	0.51
18	BIOSWALE SOUTH	KISSS	2.5	0.21
19	SLOPED BANK NORTH OF WETLANDS - SHRUBS	DRIP	1.8	0.51
20	SLOPED BANK NORTH OF WETLANDS - TREES	DRIP	1.4	0.51
21	WETLANDS - GRASSES AND SHRUBS	DRIP	6.1	0.51

UNDERGROUND SERVICE ALERT of Northern California
Call: TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG

REGISTERED LANDSCAPE ARCHITECT GREG MELTON #4217 SIGNATURE EXP. 11-08 DATE STATE OF CALIFORNIA

Title: VERBENA FIELDS

Drawing Number L-11

Plan Status: ☐ Conceptual, ☐ Approved Final, ☐ Record

Designed: PLG	Approved:	Revision	Date	By
Drawn By: PLG				
Checked: GVM	Date: JUNE 2008			

LAND IMAGE
LANDSCAPE ARCHITECTS & PLANNERS
627 BROADWAY, CHICO, CALIFORNIA 95928
PHONE: (530) 899-1913 / FAX: (530) 899-1920

CITY OF CHICO
GENERAL SERVICES DEPARTMENT

CITY OF CHICO INC 1872

VERBENA FIELDS
IRRIGATION NOTES, WATER USE AND SCHEDULE

0 1 2 INCHES

Project Number: 16030-300-4150
Scale: N.T.S.
Drawing Number L-11
Sheet 11 of 17