USLE LAYOU	T AND PRACTICE ALTERNATIVES							
FOR:	Lands of Butler	Precipitation	(inches)	1.95	(2)			
Block:	1 (Area A)	(Existing)	(IIICIICS)	2.2	acres			
USER:	Omar Reveles	Latitude:		38.316623				
DATE:	1/8/2021	Longitude:		-122.17044				
DATE.	1/0/2021	Longitude.		-122.17044	uegrees			
Soil Type	Hambright Loam							
Т	Natural Soil Loss Factor (tons/acre)	1	(1)	1	(1)	1	(1)	
K	Soil Erodibilty Factor	0.20	(1)	0.20	(1)	0.20	(1)	
			(); ()		()		1	
Transect		1	(site plan)	2	(site plan)	3	(site plan)	
FACTOR:	DESCRIPTION							
R	Rainfall and Runoff Factor	70.0	(3)	70.0	(3)	70.0	(3)	
	Slope length (ft)	186	(site plan)	265	(site plan)	386	(site plan)	
S	Slope Gradient (%)	26	(site plan)	20	(site plan)	19	(site plan)	
LS	Calculated LS	6.68	(Sice plair)	5.66	(Site plair)	6.38	(Site plan)	
C	Crop/Vegetation Management Factor	0.038	(4)	0.038	(4)	0.038	(4)	
P	Support Practice Factor	1	(5)	1	(5)	1	(5)	
-	Support Fractice Factor	 	(3)		(3)		Average	
Α	Soil loss, tons/acre	3.55		3.01		3.40	3.32	
	Soil loss, tons	7.82		6.63		7.47	7.30	
	3011 1033, 10113	7.02		0.05		7.77	7.50	
Equations:				A = Average	annual soil lo	ss (tons per a	acre)	
	Loss Equation (USLE)		R = Rainfall and Runoff Factor					
	, ,		K = Soil Erodibility Factor					
$A = R \times K \times L$	SxCxP		LS = Slope Length-Gradient Factor					
				C = Crop/Vegetation and Management Factor				
					Practice Facto			
	9% or flatter	-(-)))	C! (k (->> . 0 065>				
	5 x cos(arctan(s))^m) x ((65.41 x (sin(arcta	in(s)))^2)+4.50	o x sin(arctan(s))+0.065)				
where:	L = length in feet along slope		0.0	5 40/				
	adient in %/100			for s<1%	F0/			
m= slope exp	ponent			for 1% <s<3< td=""><td></td><td></td><td></td></s<3<>				
				for 3.6% <s<< td=""><td>4.5%</td><td></td><td></td></s<<>	4.5%			
			m = 0.5	for s>4.5%				
for slopes ste	eeper than 9%							
	5 x cos(arctan(s)))^.5) x ((sin(arctan(s))/(s	in5 143radians`	1)^1 4					
where:	L = length in feet along slope	ins.1 isradians,	1) 1.1					
	adient in %/100							
5 – Slope gra	MICHE III 70/ 100							
References:								
	Survey (https://websoilsurvey.sc.egov.usda	a.gov/Apn/Hom	ePage.htm)					
	as 14, Volume 6, Version 2 Isopluvials for 2							
	"Guides for Erosion and Sediment Control			vis CA 1996	na A-3			
4) Table 10:	"Predicting Rainfall Erosion Losses", USDA	A Handhook No	537 (No Ann	reciable Can	ony 75% Grad	ss/Weeds Co	ver)	
.,	"Guides for Erosion and Sediment Control						. 5. /.	

USLE LAYOUT	AND PRACTICE ALTERNATIVES						
FOR:	Lands of Butler	Precipitation	(inches)	1.95	(2)		
Block:	1 (Area A)	(Temporary)	` '	2.2	acres		
USER:	Omar Reveles	Latitude:		38.316623			
DATE:	1/8/2021	Longitude:		-122.17044	3		
DITTE.	1,0,2021	Lorigitadei		122117011	ucgrees		
Soil Type	Hambright Loam						
T	Natural Soil Loss Factor (tons/acre)	1	(1)	1	(1)	1	(1)
K	Soil Erodibilty Factor	0.20	(1)	0.20	(1)	0.20	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)
FACTOR:	DESCRIPTION	+					
R	Rainfall and Runoff Factor	70.0	(3)	70.0	(3)	70.0	(3)
K	Slope length (ft)	93	(6)	156	(6)	146	(6)
S	Slope Gradient (%)	26	(site plan)	20	(site plan)	19	(site plan)
LS	Calculated LS	4,72	(Site plair)	4.34	(Site plair)	3.92	(Site plair)
C	Crop/Vegetation Management Factor	0.043	(4)	0.034	(4)	0.043	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)
г	Support Fractice Factor	1	(3)		(3)	1	Average
Α	Soil loss, tons/acre	2.84		2.07		2.36	2.42
^	Soil loss, tons	6.26		4.55		5.20	5.33
	3011 10337 10113	0.20		1.55		3.20	3.33
Universal Soil A = R x K x L	Loss Equation (USLE) S x C x P			K = Soil Eroc LS = Slope L C = Crop/Ve	and Runoff Fa dibility Factor ength-Gradier getation and N Practice Facto	nt Factor Management	Factor
for slopes of 9 LS = ((L/72.6	9% or flatter x cos(arctan(s))^m) x ((65.41 x (sin(arcta	n(s)))^2)+4.5	6 x sin(arctan	(s))+0.065)			
where:	L = length in feet along slope						
	dient in %/100			for s<1%			
m= slope exp	onent		m = 0.3 for 1% <s<3.5%< td=""><td></td><td></td></s<3.5%<>				
				4 for 3.6% <s<4.5%< td=""><td></td><td></td></s<4.5%<>			
			m = 0.5	for s>4.5%			
for slopes ste	eper than 9%						
	x cos(arctan(s)))^.5) x ((sin(arctan(s))/(si	n5.143radians))^1.4				
where:	L = length in feet along slope		,,				
	dient in %/100						
Defense							
References:	Survey (latter of the sale of	//	- D I-t \				
	Survey (https://websoilsurvey.sc.egov.usda						
	is 14, Volume 6, Version 2 Isopluvials for 2y			- CA 1001	4.2		
3) Table A-1	"Guides for Erosion and Sediment Control in	n California", L	ISDA-SCS, Da	vis CA, 1996,	pg. A-3		
	'Guides for Erosion and Sediment Control in).
	'Guides for Erosion and Sediment Control in	California", U	SDA-SCS, Dav	ıs CA, 1991 p	g. 11. (Up/Do	wn Hill).	
	of straw roll(s).	<u> </u>	<u> </u>		<u> </u>	L	1
The calcul	ated soil loss values are conservative as the	ey don't accour	nt for upslope	avenues on e	each transect b	eing grassed	/strawed.

FOR:	Lands of Butler	Precipitation	(inches)	1.95	(2)		
Block:	1 (Area A)	(Proposed)		2.2	acres		
USER:	Omar Reveles	Latitude:		38.316623			
DATE:	1/8/2021	Longitude:		-122.17044	degrees		
Soil Type	Hambright Loam						
T	Natural Soil Loss Factor (tons/acre)	1	(1)	1	(1)	1	(1)
K	Soil Erodibilty Factor	0.20	(1)	0.20	(1)	0.20	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan
FACTOR:	DESCRIPTION						
R	Rainfall and Runoff Factor	70.0	(3)	70.0	(3)	70.0	(3)
	Slope length (ft)	186	(site plan)	265	(site plan)	386	(site plan
S	Slope Gradient (%)	26	(site plan)	20	(site plan)	19	(site plan
LS	Calculated LS	6.68		5.66		6.38	1
С	Crop/Vegetation Management Factor	0.034	(4)	0.034	(4)	0.034	(4)
Р	Support Practice Factor	1	(5)	1	(5)	1	(5)
			` '				Average
Α	Soil loss, tons/acre	3.18		2.69		3.04	2.97
	Soil loss, tons	6.99		5.93		6.68	6.54
Equations: Universal Soil	.oss Equation (USLE)			A = Average annual soil loss (tons per a R = Rainfall and Runoff Factor K = Soil Erodibility Factor			cre)
$A = R \times K \times LS$	x C x P			LS = Slope L	ength-Gradient	Factor	
				C = Crop/Vegetation and Management			Factor
				P = Support	Practice Factor		
for slopes of 9	% or flatter						
LS = ((L/72.6)	x cos(arctan(s))^m) x ((65.41 x (sin(arcta	n(s)))^2)+4.56	x sin(arctan(s	s))+0.065)			
where:	L = length in feet along slope						
s = slope grad				for s<1%			
m= slope expo	nent			for 1% <s<3.< td=""><td></td><td></td><td></td></s<3.<>			
				for 3.6% <s<< td=""><td>4.5%</td><td></td><td></td></s<<>	4.5%		
			m = 0.5	for s>4.5%			
for slopes stee							
LS = ((L/72.6)	$x \cos(\arctan(s)))^{.5} x ((\sin(\arctan(s)))/(\sin(\arctan(s))))$	n5.143radians))^1.4				
where:	L = length in feet along slope						
s = slope grad	ient in %/100						
References:							
	urvey (https://websoilsurvey.sc.egov.usda						
	14, Volume 6, Version 2 Isopluvials for 2						
	Guides for Erosion and Sediment Control i						
 Table 8: " 	Guides for Erosion and Sediment Control in		DA-SCS, Davis).
	Guides for Erosion and Sediment Control in	0.00	D . COC -		44 (11 '-		

FOR:	Lands of Butler	Precipitation	(inches)	1.95	(2)		
Block:	2 (Area B)	(Existing)	(menes)	2.9	acres		
USER:	Omar Reveles	Latitude:		38.316623			
DATE:	1/8/2021	Longitude:		-122.17044			
DATE.	1,0,2021	Lorigitude:		122.17011	acgrees		
Soil Type	Hambright Loam						
T	Natural Soil Loss Factor (tons/acre)	1	(1)	1	(1)	1	(1)
K	Soil Erodibilty Factor	0.20	(1)	0.20	(1)	0.20	(1)
Transect		1	(site plan)	2	(site plan)	3	(site pla
-10705	PEGGPANTION						
ACTOR:	DESCRIPTION	70.0	(2)	70.0	(2)	70.0	(2)
R	Rainfall and Runoff Factor	70.0	(3)	70.0	(3)	70.0	(3)
	Slope length (ft)	299	(site plan)	89 13	(site plan)	236	(site pla
S LS	Slope Gradient (%) Calculated LS	6.41	(site plan)	1.83	(site plan)	19 4.99	(site pla
C	Crop/Vegetation Management Factor	0.064	(4)	0.067	(5)	0.064	(4)
C	Support Practice Factor	1	(6)	1	(6)	1	(6)
Р	Support Practice Factor	1 1	(6)	1	(6)	1	Averag
A	Soil loss, tons/acre	5.75		1.72	+ +	4.47	3.98
^	Soil loss, tons	16.67		4.99	t	12.97	11.54
A = R x K x L	SxCxP			K = Soil Erodibility Factor LS = Slope Length-Gradient Factor C = Crop/Vegetation and Managemen		Factor anagement	Factor
				P = Support	Practice Factor		
for slopes of	9% or flatter						
	x cos(arctan(s))^m) x ((65.41 x (sin(arcta	n(s)))^2)+4.56	x sin(arctan(s	s))+0.065)			
vhere:	L = length in feet along slope			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
s = slope gra	dient in %/100		m = 0.2	for s<1%			
n= slope exp			m = 0.3	for 1% <s<3.< td=""><td>.5%</td><td></td><td></td></s<3.<>	.5%		
			m = 0.4	for 3.6% <s<< td=""><td>4.5%</td><td></td><td></td></s<<>	4.5%		
			m = 0.5	for s>4.5%			
or slopes ste	eper than 9%						
LS = ((L/72.6	x cos(arctan(s)))^.5) x ((sin(arctan(s))/(s	in5.143radians))^1.4				
where:	L = length in feet along slope						
s = slope gra	dient in %/100						
, - J							
References:							
L) Web Soil :	Survey (https://websoilsurvey.sc.egov.usda	.gov/App/Home	Page.htm)				
2) NOAA Atla	as 14, Volume 6, Version 2 Isopluvials for 2	r - 6hr storm e	vent				
3) Table A-1	"Guides for Erosion and Sediment Control i	n California", US	SDA-SCS, Davi	is CA, 1996, p	g. A-3		
1) Table 10:	"Predicting Rainfall Erosion Losses", USDA	Handbook No	537 (50% Tr	ee Canony, 60)% Grass/Weed	ls Cover).	
	"Predicting Rainfall Erosion Losses", USDA						

FOR: Block:	Lands of Butler						
Block:		Precipitation	(inches)	1.95	(2)		
	2 (Area B)	(Temporary)	` '	2.9	acres		
USER:	Omar Reveles	Latitude:		38.316623			
DATE:	1/8/2021	Longitude:		-122.17044	J		
DATE.	1,0,2021	Longitude.		122.17011	ucgrees		
Soil Type	Hambright Loam						
T	Natural Soil Loss Factor (tons/acre)	1	(1)	1	(1)	1	(1)
K	Soil Erodibilty Factor	0.20	(1)	0.20	(1)	0.20	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan)
FACTOD:	DECCRIPTION						
FACTOR:	DESCRIPTION	70.0	(2)	70.0	(2)	70.0	(2)
R	Rainfall and Runoff Factor	70.0	(3)	70.0	(3)	70.0	(3)
	Slope length (ft)	150	(6)	89	(site plan)	111	(6)
S	Slope Gradient (%)	21	(site plan)	13	(site plan)	19	(site plan)
LS	Calculated LS	4.54	(4)	1.83	(4)	3.42	(4)
C	Crop/Vegetation Management Factor	0.043	(4)	0.043	(4)	0.043	(4)
Р	Support Practice Factor	1	(5)	1	(5)	1	(5)
							Average
Α	Soil loss, tons/acre	2.74		1.10		2.06	1.97
	Soil loss, tons	7.93		3.20		5.97	5.70
Universal Soil Lo A = R x K x LS x	oss Equation (USLE)			K = Soil Eroc LS = Slope L C = Crop/Ve	and Runoff Fac libility Factor ength-Gradien getation and M Practice Facto	t Factor Ianagement I	-actor
for slopes of 9% LS = ((L/72.6 x	o or flatter cos(arctan(s))^m) x ((65.41 x (sin(arctan	n(s)))^2)+4.5	6 x sin(arctan	(s))+0.065)			
where:	L = length in feet along slope						
s = slope gradie				for s<1%			
m= slope expon	ent			for 1% <s<3< td=""><td></td><td></td><td></td></s<3<>			
				for 3.6% <s<4.5%< td=""><td></td><td></td></s<4.5%<>			
			m = 0.5	for s>4.5%			
for slopes steepe	er than 9%						
	cos(arctan(s)))^.5) x ((sin(arctan(s))/(sir	5.143radians)^1.4				
	L = length in feet along slope		,,				
s = slope gradie							
Doforoncoci							
References:	and the setting of th		aDa wa htms				
	vey (https://websoilsurvey.sc.egov.usda.						
	14, Volume 6, Version 2 Isopluvials for 2yr			io CA 100C	na A 2		
a) Table A-1 "G	Guides for Erosion and Sediment Control in	California", U	SDA CCC D	VIS CA, 1996,	pg. A-3	Carran T:U1	
+) Table 8: "GL	uides for Erosion and Sediment Control in	California", US	SDA-SCS, Dav	is CA, 1991, p	og. C-9. (/5%	cover, Tilled)	/ . T
	uides for Erosion and Sediment Control in	California", US	DDA-SCS, Dav	is CA, 1991 p	g. 11. (Up/Dov	wn Hill).	
Inclusion of s	straw roll(s). ed soil loss values are conservative as the						(-t

FOR:	Lands of Butler	Precipitation	(inches)	1.95	(2)		
Block:	2 (Area B)	(Proposed)		2.9	acres		
USER:	Omar Reveles	Latitude:		38.316623			
DATE:	1/8/2021	Longitude:		-122.17044	degrees		
Soil Type	Hambright Loam						
Т	Natural Soil Loss Factor (tons/acre)	1	(1)	1	(1)	1	(1)
K	Soil Erodibilty Factor	0.20	(1)	0.20	(1)	0.20	(1)
Transect		1	(site plan)	2	(site plan)	3	(site plan
ACTOR:	DESCRIPTION						
R	Rainfall and Runoff Factor	70.0	(3)	70.0	(3)	70.0	(3)
	Slope length (ft)	299	(site plan)	89	(site plan)	236	(site plan
S	Slope Gradient (%)	21	(site plan)	13	(site plan)	19	(site plan
LS	Calculated LS	6.41	(==== p)	1.83	1	4.99	(2.20 p.an
C	Crop/Vegetation Management Factor	0.034	(4)	0.034	(4)	0.034	(4)
P	Support Practice Factor	1	(5)	1	(5)	1	(5)
			` ′				Average
Α	Soil loss, tons/acre	3.05		0.87		2.38	2.10
	Soil loss, tons	8.85		2.53		6.89	6.09
Equations: Jniversal Soil I	oss Equation (USLE)			A = Average annual soil loss (tons per ac R = Rainfall and Runoff Factor K = Soil Erodibility Factor			cre)
D K I C						F	
$A = R \times K \times LS$	XCXP			LS = Slope Length-Gradient Factor C = Crop/Vegetation and Management P = Support Practice Factor			Factor
							ractor
for slopes of 9	% or flatter						
	x cos(arctan(s))^m) x ((65.41 x (sin(arcta	n(s)))^2)+4 56	x sin(arctan(s))+0.065)			
vhere:	L = length in feet along slope	11(3))) 2) 1130	y x sintarecant.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	ient in %/100		m = 0.2	for s<1%			
n= slope expo				for 1% <s<3.< td=""><td>.5%</td><td></td><td></td></s<3.<>	.5%		
			m = 0.4	for 3.6% <s<< td=""><td>4.5%</td><td></td><td></td></s<<>	4.5%		
			m = 0.5	for s>4.5%			
or slopes stee	per than 9%						
	x cos(arctan(s)))^.5) x ((sin(arctan(s))/(si	n5.143radians))^1.4				
where:	L = length in feet along slope						
s = slope grad	ient in %/100						
References:	(1) (1) 1	/* "	<u> </u>				
	urvey (https://websoilsurvey.sc.egov.usda						
	14, Volume 6, Version 2 Isopluvials for 2			- 64 1006	- 4.2		
	Guides for Erosion and Sediment Control i					N- T''	\
r) lable 8: "(Guides for Erosion and Sediment Control in	ı calitornia", US	DA-SCS, Davis	s CA, 1991, pg	j. C-9. (75% Ci	over, No-Hill).
	Guides for Erosion and Sediment Control in	California" LIC	DA CCC David	- CA 1001	11 (Un/Dave	- Hill\	

NAPA COUNTY RESOURCE CONSERVATION DISTRICT USLE LAYOUT AND PRACTICE ALTERNATIVES

FOR: Lands of Butler

Block: 1 and 2 (Areas A and B)

USER: Omar Reveles DATE: 1/8/2021

Soil Loss Summary Table (based on USLE calculations)								
Block	Pre-development	Temporary	Permanent					
Brock	Soil Loss (tons)	Soil Loss (tons)	Soil Loss (tons)					
1	7.30	5.33	6.54					
2	11.54	5.70	6.09					
Total	18.84	11.03	12.63					

Anticipated post-development soil shall not exceed pre-development soil loss; therefore,