CSA 6 Lower Gallinas Creek
Geomorphic Dredge Design Update

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Public Works Department
Flood Control

October 20, 2022

COUNTY OF MARIN

marinflooddistrict.org

Part I - Recap of 2018 Meeting

One sentence summary of "geomorphic" dredge channel approach

The channel shape that would be expected to form in equilibrium and thus maintain its shape (width and depth) with the available daily tidal volume (the "tidal prism")

Developed from studies of other natural marsh systems around the Bay (field data).

Why take a geomorphic approach to dredge design?

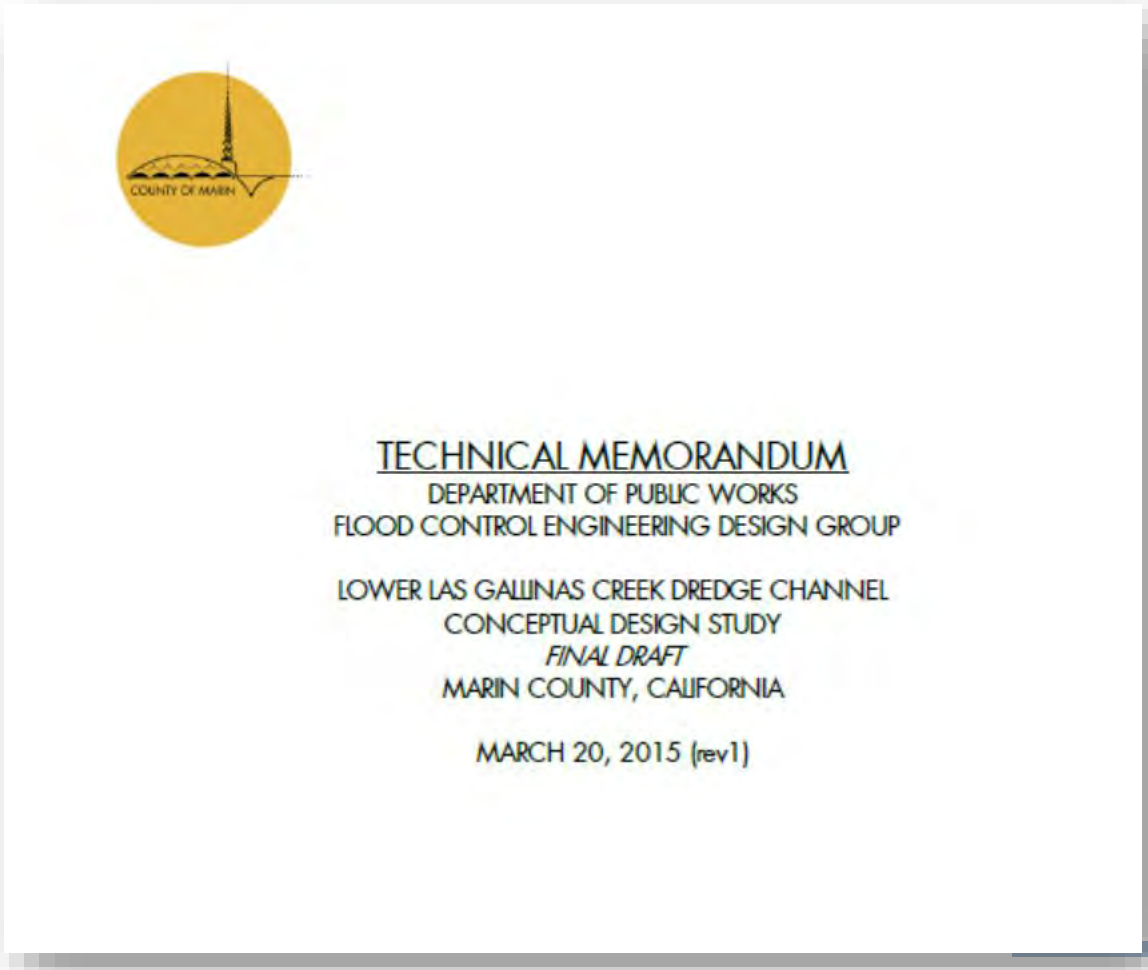
1. Channel should be more self-sustaining and require less frequent dredging

2. Easier to permit and less mitigation costs

3. Less volume = less often = less costly

However the trade-off is less depth and width

Details in 2015 Technical Report



TECHNICAL MEMORANDUM
DEPARTMENT OF PUBLIC WORKS
FLOOD CONTROL ENGINEERING DESIGN GROUP

LOWER LAS GALLINAS CREEK DREDGE CHANNEL
CONCEPTUAL DESIGN STUDY
FINAL DRAFT
MARIN COUNTY, CALIFORNIA

MARCH 20, 2015 (rev1)

Available online

Dredge Design (2015) Caveats and Cautions

- ✓In the preliminary level analysis phase. All quantities and costs are preliminary
- ✓No overdepth included
- ✓Based on single 2009 survey
- ✓Costs were provided at 2018 meeting and the CSA board decided on the add-on projects
  - ✓Add-on projects were rejected by AB board
    - ✓i.e. Dredge to docks

Dredge Quantities Changes

LOCATION	*2010 W-K ESTIMATE (cy) Historic Dredge*	*2014 GEOMORPHIC DREDGE TEMPLATE (cy)*	*Updated 2018 Geodredge Template (cy) [with 2016 survey]*
Channel dredge (11+00 to 157+28)	182,173	~ 48,000	~ 70,500 cy
Overdepth (toe and side slopes)	113,319	0	25,500 cy
TOTALS:	295,492 cy	48,000 cy	~ 97,000 cy

2014 Dredge Disposal Options and Costs

station	Clamshell dig and haul to SF-10	Local Hydraulic Disposal Site (1)	Comments
00+00 to 121+00	$28 to $40/cy (H)	$24 (L)- $30/cy	Local hydraulic disposal site likely most cost-effective option
121+00 to 157+47	$60 to $75/cy (H)	$25 (L) - $30/cy	Dredging > station 121+00 problematic without hydraulic dredge option

Notes:

(1) Assumes airport but McInnis Marsh project a possibility

(1) W-K estimate was $15.50/cy

2014 Low to High Preliminary Cost Range Round-Up ($)

Stationing	Disposal Location(s)	Costs to Construct Low	Costs to Construct High	Total Cost ($) Range (note 1)
Entire Project (11+00 to 157+67)	Either SF-10 or local hydraulic dredge site available	$810,000	$2,760,000	$1.2MD to $4.1MD
Entire Project (11+00 to 157+67)	Assumes local hydraulic dredge site available	$810,000	$1,300,000	$1.2MD to $1.95MD

Assumes original geodredge quantity of 48,000 cy – update quantity closer to $3M

Costs per cubic yard vary greatly among USACE districts, indicating that local circumstances are relevant (Table 1).

Table 1. Average Unit Cost of Dredging by Selected USACE District

(contracts >100,000 cubic yards, 2014 to 2018)

USACE District	Cubic Yards Dredged	Cost per Cubic Yard
San Francisco	5,398,939	$ 24.27
New York	11,908,916	$ 23.17
Philadelphia	6,037,757	$ 19.93
Jacksonville	22,447,059	$ 14.86
Los Angeles	1,283,153	$ 13.20
Detroit	3,064,310	$ 9.40
Alaska	5,550,057	$ 8.58
Savannah	37,140,202	$ 6.52
Portland (OR)	30,983,332	$ 5.29
Galveston	76,646,189	$ 3.80
New Orleans	105,894,803	$ 2.62

Recent Petaluma Bid

- Dredging Marina
  - $563,054/18,605cy = $30cy for an easier dredge from a local dredger (Lind)
  - 100,000 cy *$30/cy = $3,000,000
  - Inflation and diesel prices are raising rapidly

Sediment Sampling Results (2018)

- Sediment sampling and analysis completed in January 2018 – brought to DMMO in February 2018
- Results for one composite slightly elevated in two COCs; Three discrete samples from composite were then analyzed as requested by DMMO
- Results show one discreet sample slightly elevated for one COCs (approx. 9,000 cy)

Summary of Disposal Options (2018)

- All 100,000 cy can be placed at uplands disposal sites (i.e. airport or LGVSD) without constraint
- Approximately 90,000 cy can be used in a wetlands (i.e. McInnis) without constraint
- Approximately 9,000 cy (10%) needs to be covered by 5 feet of clean cover if used in a wetlands

2018 Next Steps

- McInis offers possibility for greatest cost-share but schedule is unknown
- LGVSD is easiest to permit but highest cost to-date

✓ Staff continues to explore McInnis permitting issues and recommends a special meeting in Summer 2018 to make final decision

2018 Summary of Site Disposal Options

Site	pros	Cons	Potential Construction costs ($) (1)
Airport	Closest and least cost	1. Political issues 2. Acceptance unknown and subject to negotation	$2.1M for 70,000 and extended to $2.x for 97,000 cy
McInnis Marsh Restoration	1. Relatively close 2. Willing partner 3. Beneficial reuse means potentially lower costs 4. Opportunity for cost sharing 5. Most eco-reuse option	Schedule is unknown at this time	TBD depends on several unknown factors Potential cost share
LGVSD Fields	1. Willing partner 2. Very pemittable and shortest schedule (could dredge maybe in 2019 if funded) 3. Most certainty	Highest potential cost	Approximately $3M

Thats Where We Ended in 2018…

- Staff focusing on local hydraulic disposal sites
  - McInnis
  - LGVSD Fields
  - Airport eliminated (private property, not enough space plus wetlands and bird strike issues)
- Summary of 2018 through 2022…

Part II – Recap of 2018 to October 2022

Disposal Site Design – LGVSD Fields

- Staff worked with LGVSD staff to discuss disposal options
- LGVSD staff offered potential disposal sites three different times over three years
- County prepared concept level design sketches for each site then rejected
- In April 2022- LGVSD closed out field sediment placement options – they are participating on an EPA biolsolids study


LGVSD SITE/LIMIT
ST. VINCENTS DRIVE
N
SAN PABLO
BAY

Disposal Site Design – McInnis Wetland Project

- Staff have worked closely with Parks since 2017 assisted Parks to design and permit 100,000 cy of dredged sediments into restoration design
- Summer 2022, Parks revised plan to focus on placement of dredged sediments first and to work with LGVSD on force main relocation to allow for tidal restoration of the full project

Disposal Site Design – McInnis Wetland Project #2

- DPW staff refocused on placement of dredged sediments into McInnis without tidal restoration (3 options)
- More difficult to permit sediment placement only – agencies consider it fill placement in wetlands
- Staff working with Parks went to BRRIT in May 2022

“Full-Basin Thin Lift”

Discharge slurry along south perimeter of North Basin

- Slurry fills entire North Basin (140 acres)
- +0.2 to +0.4ft (6-12cm) final solids thickness

Discharge decant water to Gallinas Creek through existing main cell tide gate. Potential secondary discharge at Pencil tide gate.

- Monitor turbidity at decant water discharge location(s)

Expected Outcomes

Majority of sands (small quantity) deposit near slurry discharge location(s)

Silts and Clays settle uniformly over entire basin allowing wetland plant regrowth

Potentially thicker layers near discharge point and in topographic low points

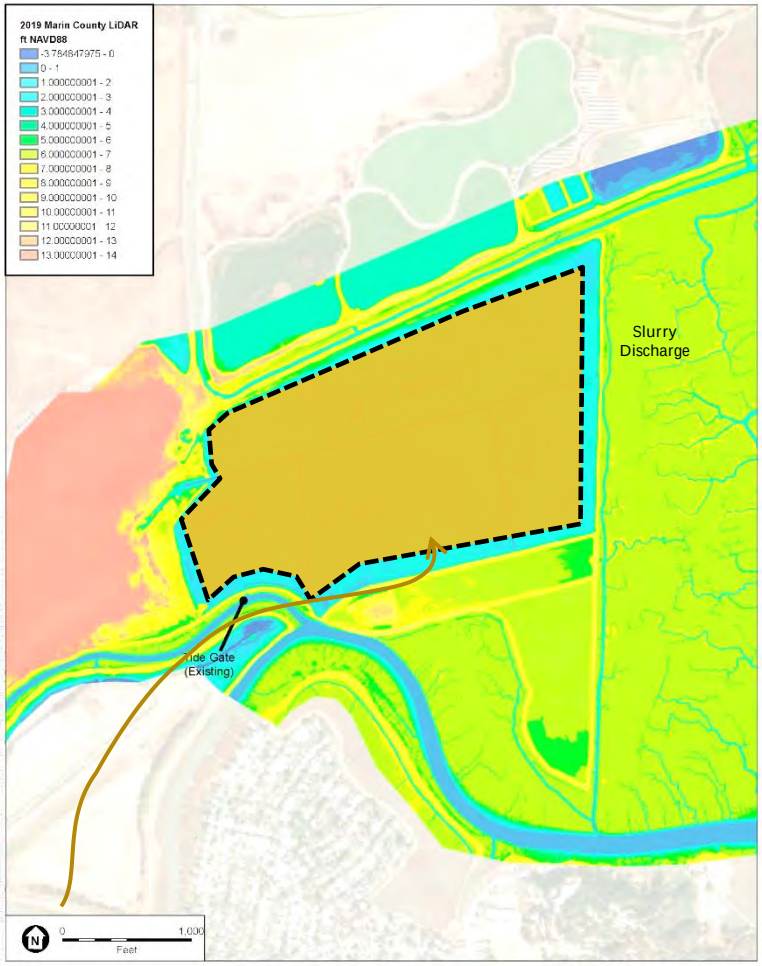


Figure 2
McInnis Marsh Restoration Study Area

"Partially Confined Thin Lift"

Discharge slurry along south and west perimeter of the main basin.

- Install semi-permeable barriers (e.g. hay bales) to partially contain slurry in one or more 15-20 acre cells
  - 0.6 to 1.5ft in hay bale cells (rough guess)
  - 0.2 to 0.6ft outside hay bales (rough guess)

Discharge decant water to Gallinas Creek through existing main cell tide gate. Potential secondary discharge at Pencil tide gate.

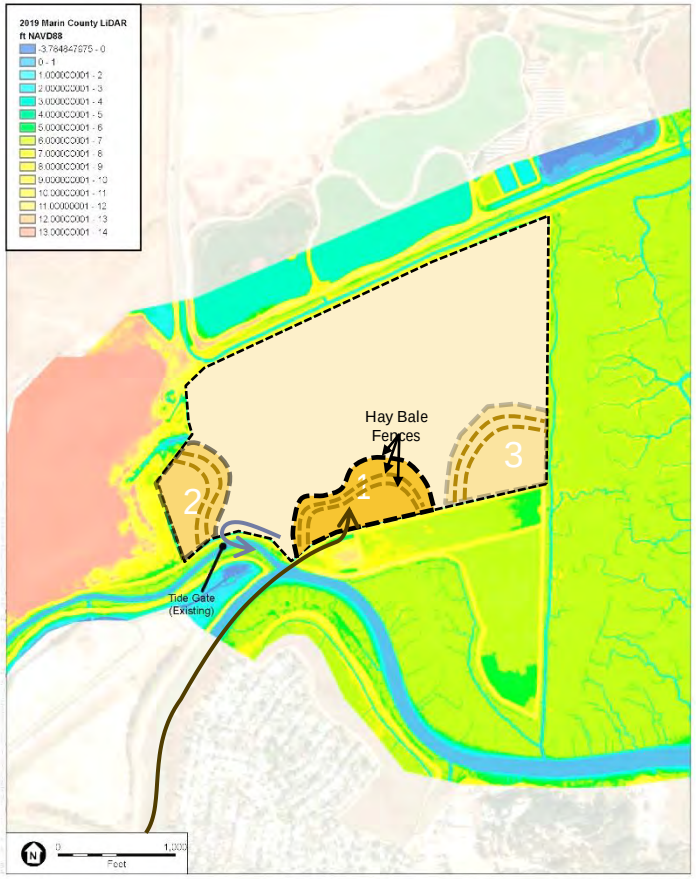
- Monitor turbidity at decant water discharge location(s)

Expected Outcomes

Large portion of the sands, silts, and clays settler within hay bale fences. Some mud settles across entire basin.

Builds up site grades in target areas to:

- Create favorable near-term inundation/drainage conditions => supporting vegetation used by SMHM and other species.



SOURCE: Marin County (2019); ESRI Aerial Imagery, 2022.

McInnis Marsh Restoration Project

Figure 2
McInnis Marsh Restoration
Study Area

“Fully Confined Placement” (aka “Thick Lift”)

Discharge slurry along south and west perimeter of the main basin.

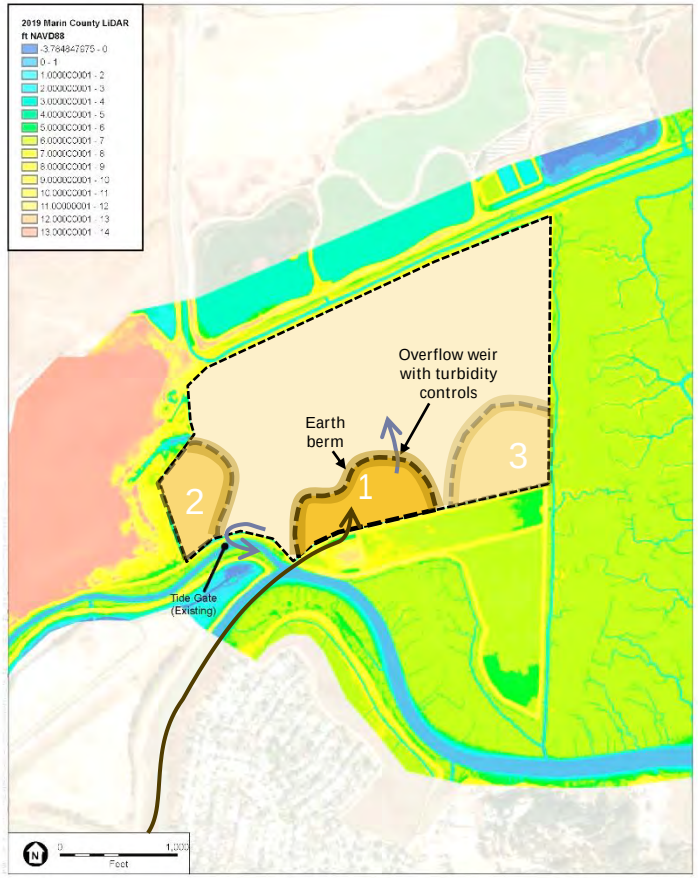
- Build impermeable barriers (e.g. earth berms) to contain slurry in one or more 5 to 20 acre cell(s)
  - Berms require heavy equipment for construction.
- Final solids thickness: 2 to 3.5ft in containment cell (rough guess)
  - Raised grades in cell to 4-5.5ft NAVD - ready for future marsh restoration.

Discharge decant water to Gallinas Creek through existing main cell tide gate. Potential secondary discharge at Pencil tide gate.

- Monitor turbidity at decant water discharge location(s) – long term monitoring required as well

Expected Outcomes

Most effective approach to raise grades in a portion of site to elevations suitable for future tidal marsh restoration.



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McInnis Marsh Restoration Project

Figure 2
McInnis Marsh Restoration Study Area

Part III – What's Ahead for 2023/2024 and Proposed Budget Adjustment

Disposal Site Design – McInnis Wetland Project 2023/24 Plans

- BRRIT Meeting Outcome - responses requires updated wetlands delineation and assessment studies – Parks has authorized ESA to conduct these studies due in Q1 2023
- Planning to go back to BRRIT in first half of 2023 with updated dredge sediment placement only options
- Hope to have more permitting clarity then- discuss next CSA 6 meeting

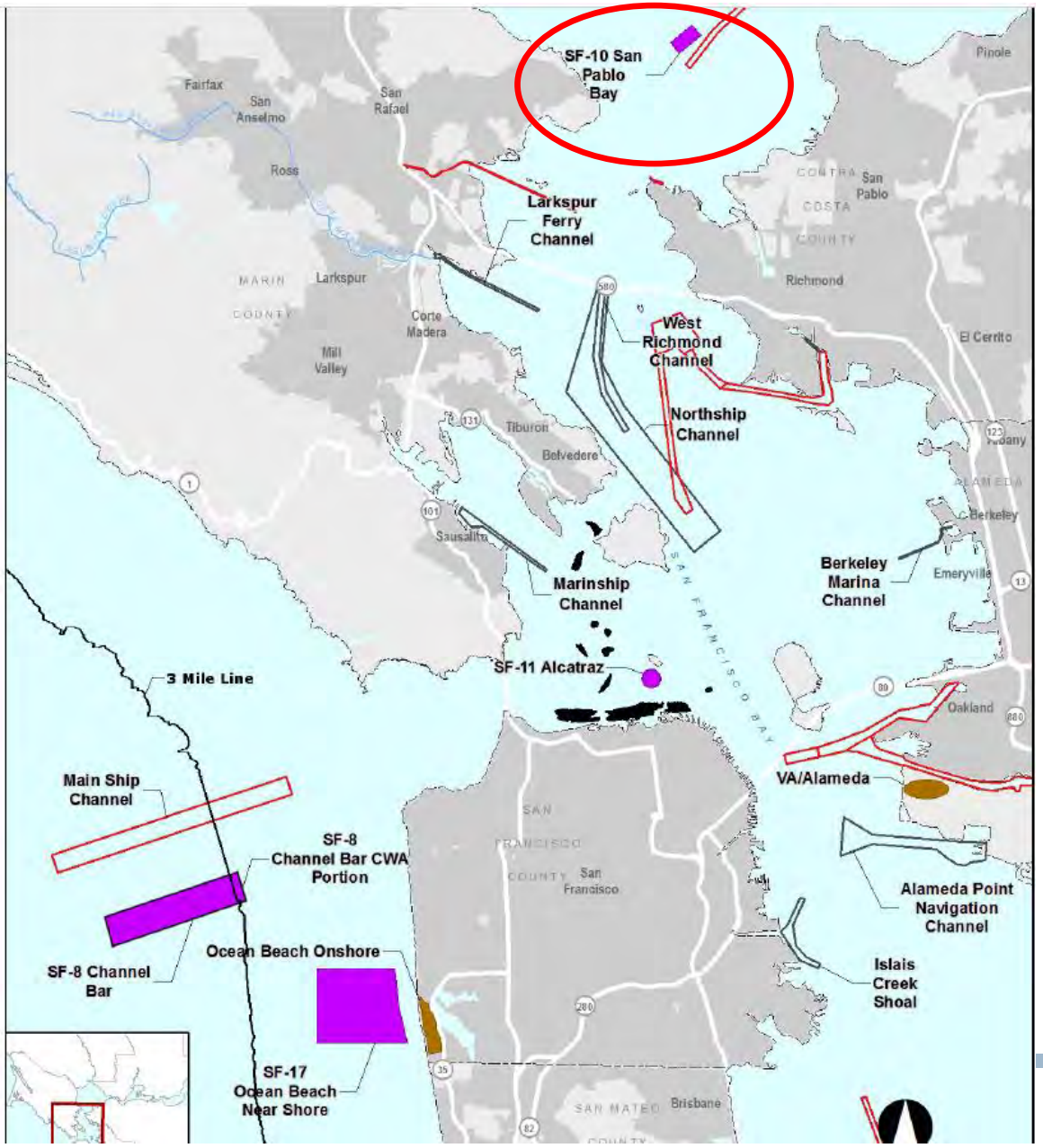
Disposal Site Design – McInnis Wetland Project 23/24 Update (#2)

- Although local hydraulic placement has lowest dredging cost – the dredge only placement option will require minimum 5 to 10 years monitoring costs
- and possibly costs for mitigation if veg regrowth doesn't meet requirements
- Then need to work with Parks on CEQA etc.
- Also, need to resample to greatly reduce volume of NC sediments – no place for NC with sediment only project

New - In-Bay Sediment Disposal

- DPW staff re-looking at in-bay disposal (SF-10)
- More expensive upfront costs for sampling ($300k)
- Dredging may be more expensive – has to be clam shell dredged into scows barges and transported by tugs into the Bay – but no monitoring costs
- Requires DMMO and agency approval for in-bay (permitting issues)

Permitted San Francisco In-Bay Disposal Sites



Current Budget Status (Sept 2022)

Task	*Project Budget ($)*	*Amount Remaining ($)*
Site investigations	31,608.00	24,567.78
Permitting	42,648.00	40,765.50
PSE Uplands Beneficial	36,750.00	32,576.50
PSE Dredging	42,760.00	36,171.00
CEQA support	19,520.00	6,742.00
As-Needed	13,000.00	9,395.40
Total Remaining	186,.286.00	150,218.68

Spent $36.067.82 in three years

CSA 6 Proposed Budget

Propose to Add $300k to Task 2: Permitting

PROPOSED ADJUSTMENT to County Service Area 6 Baseline Budget

Line Item	Description	Fiscal Year 2022-2023 Baseline Budget
1	Property Tax - Current Unsecured	$ (4,000.00)
2	Property Tax - Current Secured	$ (200,000.00)
3	Property Tax - Current Secured - Uni	$ (1,000.00)
4	Property Tax - Prior Unsecured	$ (150.00)
5	Supplemental Property Tax - Current	$ (4,500.00)
6	Supplemental Property Tax - Current Unsecur	$ (50.00)
7	Supplemental Property Tax - PR Redm	$ (125.00)
8	Current Educational Revenue Augmentation F	$ (600.00)
9	Excess ERAF	$ (9,500.00)
10	Investment income - interest pooled	$ (25,000.00)
11	investment income - ERAF interest	$ -
12	Investment income - unrealized gains	$ -
14	State Homeowner Property Tax Relief	$ (1,000.00)
15	SB 2557 Admin Fee	$ 2,491.00
16	Transfers In	$ -
	Total Revenue Budget/Actuals:	**$ (243,434.00)**
Line Item	**Description**	**Proposed Baseline Budget**
18	Miscellaneous Expenses	$ 1,000.00
19	Professional Services	$ 200,000.00
19.1	*Dredge Sediment Sampling and Analysis*	*$ 300,000.00*
20	Construction	$ -
24	Staff Cost	$ 70,000.00
25	Engineering Staff Costs	$ -
31	A87 Indirect Cost allocation	$ 4,417.00
33	Transfers Out	$ -
	Total Expenditure Budget/Actuals:	**$ 575,417.00**
	Projected/Actual Year End Fund Balance:	***$ 2,644,208.07***

Line item 25 being phased out of use and costs charged under line 24 g

*Currently the revised budget for this fiscal year is the baseline budget

Professional Services Costs (to $300k)

McInnis

- $190k for full creek sediment resampling and survey
- Or alternatively $85k for limited resampling of NC and survey
- Plus final design and permitting support

In-Bay

- $217k for resample and add'l chemical and biological test for in-bay disposal
- Additional $75k for support for permitting and design and as-needed task

Proposed Budget Adjustment

- Staff Asking for Add'l $300k in Professional Service Budget to Cover Highest Cost Option for PS – In-Bay Disposal

Proposed Budget Adjustment (approx.)

Task	*Project Budget ($) as of sept 2022*	*Proposed Additional Task Budget ($)*	*Proposed New Task Budget ($)*
Site investigations	24,567.00	216,624.00	241,191.00
Permitting	40,765.00	0.00	40,765.00
PSE Uplands Beneficial	32,576.00	15,000.00	47,576.00
PSE Dredging	36,171.00	0.00	36,171.00
CEQA support	6,742.00	10,000.00	16,742.00
As-Needed	9,395.00	50,000.00	59,395.00
Total Remaining	150,216.00	292,000.00	442,216.00

Final numbers to be adjusted slightly with Oct balances

Q&A and Board Vote on Budget Adjustment

- ***Recommended Action:*** *Recommend the Board of Supervisors increase the CSA 6 professional services budget by up to $300,000 for updated sediment surveying, testing, and analysis, and if needed analysis of additional disposal options.*

Accretion and Scour Plot

SURVEY NOTES:

1. Bathymetric soundings collected on 11/14/2016, 11/15/2016 and 11/16/2016 and represent conditions on those dates.
2. Soundings are reported in feet and tenths and refer to depths below Mean Lower-Low Water (MLLW).
3. Horizontal coordinates are based on the NAD 83 California State Plane Grid System (Zone 3).
4. Horizontal and Vertical control are based on National Geodetic Survey Tide BM Point ID# AE7862:
   N: 2,197,945.42
   E: 5,984,937.14
   Z: 6.712 MLLW
5. Hydrographic survey gear consisted of a dual-transducer singlebeam sweep system integrated with a *Hemisphere VS111* heading and roll sensor and *Trimble R8* RTK GPS.
6. Survey conducted by James Kulpa (ACSM Certified Hydrographer 288) and Mark Tennyson, Survey Technician.

CONSULTANT

Las Gallinas Channel Design
Contours Generated from the Survey

January 2017

REVISIONS

DRAFT

GEODETIC INFORMATION
DATUM: NAD 83
PROJECTION: CALIF. STATE PLANE ZONE 3
VERTICAL DATUM: MLLW Feet

HORIZONTAL SCALE 1" = 40'
40 20 0 40
FEET

VERTICAL SCALE : N/A

COUNTY OF MARIN

LEGEND

- Index Contour - 5 Ft.
- Intermediate Contour - 1 Ft.
- TOB — Top of Bank / Edge of Vegetation
- Centerline of Channel
- Proposed Top of Slope
- Proposed Toe of Slope
- 1.0 — Spot Depth of Channel
- Pipe Outfall

SHEET TITLE
BATHYMETRIC SURVEY
STA 0+00 - 23+50

DRAWN BY	MSK
CHECKED BY	JK
PROJECT NO	15219.100
DATE	4/27/2018

CHART NUMBER
3

SHEET 3 of 17

DWG: site comparison exhibits2.dwg CHART:3 DATE: Jun 05, 2018 - 10:28:47am

MATCHLINE STA. 35+00 - SEE BELOW

MATCHLINE STA. 23+50 - SEE SHEET 3

MATCHLINE STA. 47+00 - SEE SHEET 5

MATCHLINE STA. 35+00 - SEE ABOVE

43+00
END OPTIONAL DREDGING 40' WIDE CHANNEL (-4' MLLW)

35+00
BEGIN OPTIONAL DREDGING 40' WIDE CHANNEL (-4' MLLW)

2009 vs 2017 SURVEY COLOR BAND LEGEND

ELEVATION/SEDIMENT SCOUR AFTER 2009

4'–5'
3'–4'
2'–3'
1'–2'
0–1'

ELEVATION/SEDIMENT ACCRETION AFTER 2009

0–1'
1'–2'
2'–3'
3'–4'
4'–5'

SURVEY NOTES:

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January 2017

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VERTICAL DATUM: MLLW Feet

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40 20 0 40
FEET

VERTICAL SCALE : N/A

COUNTY OF MARIN

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SHEET TITLE

BATHYMETRIC SURVEY
STA 23+50 - 47+00

DRAWN BY	WSK
CHECKED BY	JK
PROJECT NO	15219.100
DATE	4/27/2018

CHART NUMBER **4**

SHEET 4 of 17

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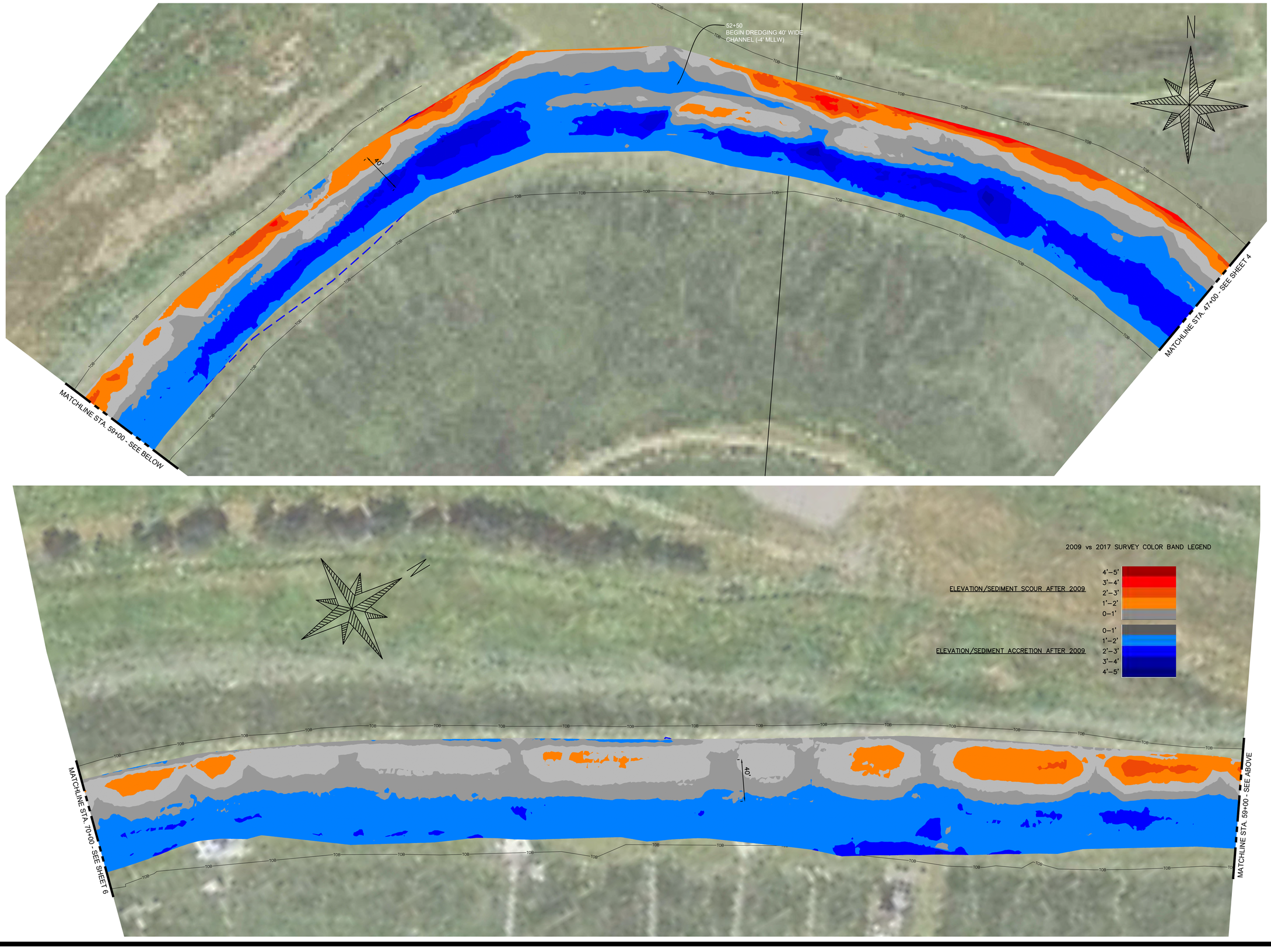

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Las Gallinas
Channel Design
Contours Generated from the Survey

January 2017

REVISIONS

DRAFT

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VERTICAL DATUM: MLLW Feet

HORIZONTAL SCALE 1" = 40'
40 20 0 40
FEET

VERTICAL SCALE : N/A

COUNTY OF MARIN

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SHEET TITLE
BATHYMETRIC SURVEY
STA 47+00 - 70+00

DRAWN BY: MSK	CHART NUMBER: 5
CHECKED BY: JK	
PROJECT NO: 15219.100	
DATE: 4/27/2018	SHEET 5 of 17

DWG: site comparison exhibits2.dwg CHART:5 DATE: Jun 05, 2018 - 10:29:56am

MATCHLINE STA. 81+50 - SEE BELOW

81+50
END DREDGING 40' WIDE
CHANNEL (-4' MLLW)

TOB

40'

MATCHLINE STA. 70+00 - SEE SHEET 5

PIPE OUTFALL
(MCO-0451)

PIPE OUTFALL
(SANTA VENETIA #1)

MATCHLINE STA. 93+50 - SEE SHEET 7

30'

MATCHLINE STA. 81+50 - SEE ABOVE

82+00
BEGIN DREDGING 30'
WIDE CHANNEL (-4' MLLW)

PIPE OUTFALL
(MCO-0449)

PIPE OUTFALL
(MCO-0450)

2009 vs 2017 SURVEY COLOR BAND LEGEND

ELEVATION/SEDIMENT SCOUR AFTER 2009

4'–5'
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2'–3'
1'–2'
0–1'

ELEVATION/SEDIMENT ACCRETION AFTER 2009

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Las Gallinas Valley Sanitary District
Channel Design
Contours Generated from the Survey

January 2017

REVISIONS

DRAFT

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BATHYMETRIC SURVEY
STA 70+00 - 93+50

DRAWN BY	MSK
CHECKED BY	JK
PROJECT NO	15219.100
DATE	4/27/2018

CHART NUMBER **6**

SHEET 6 of 17

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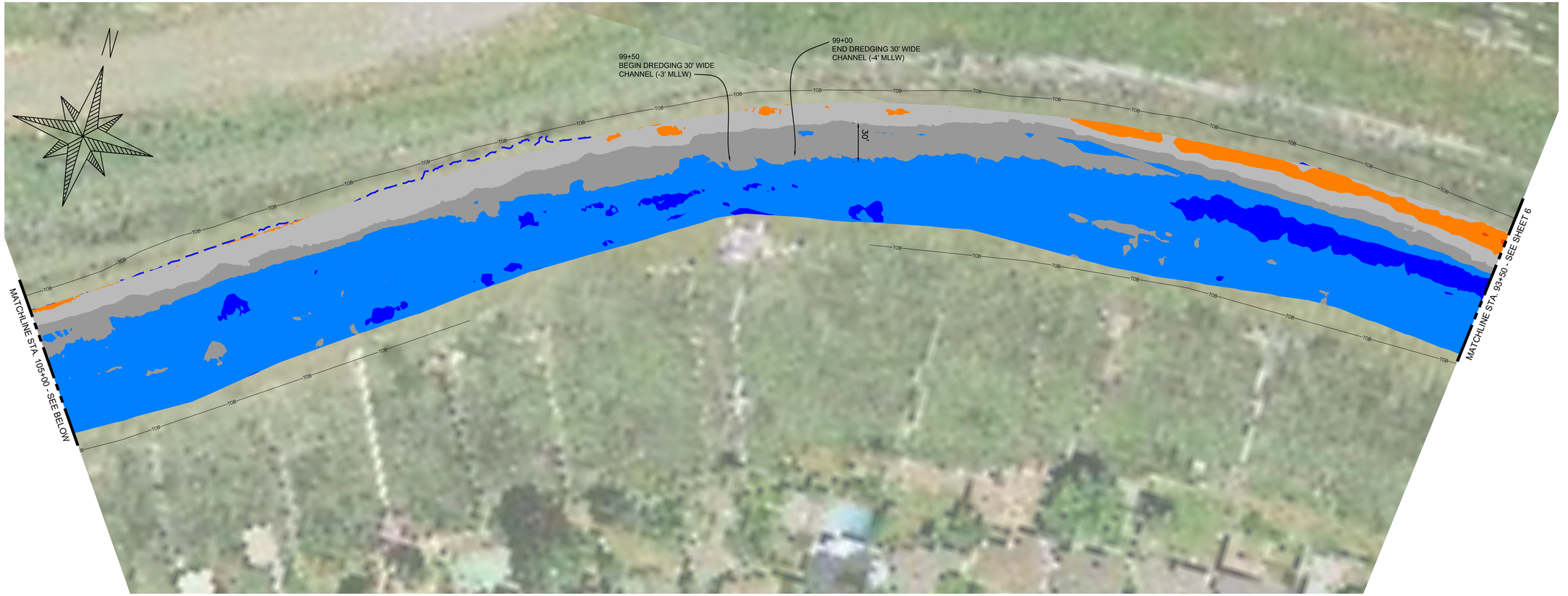

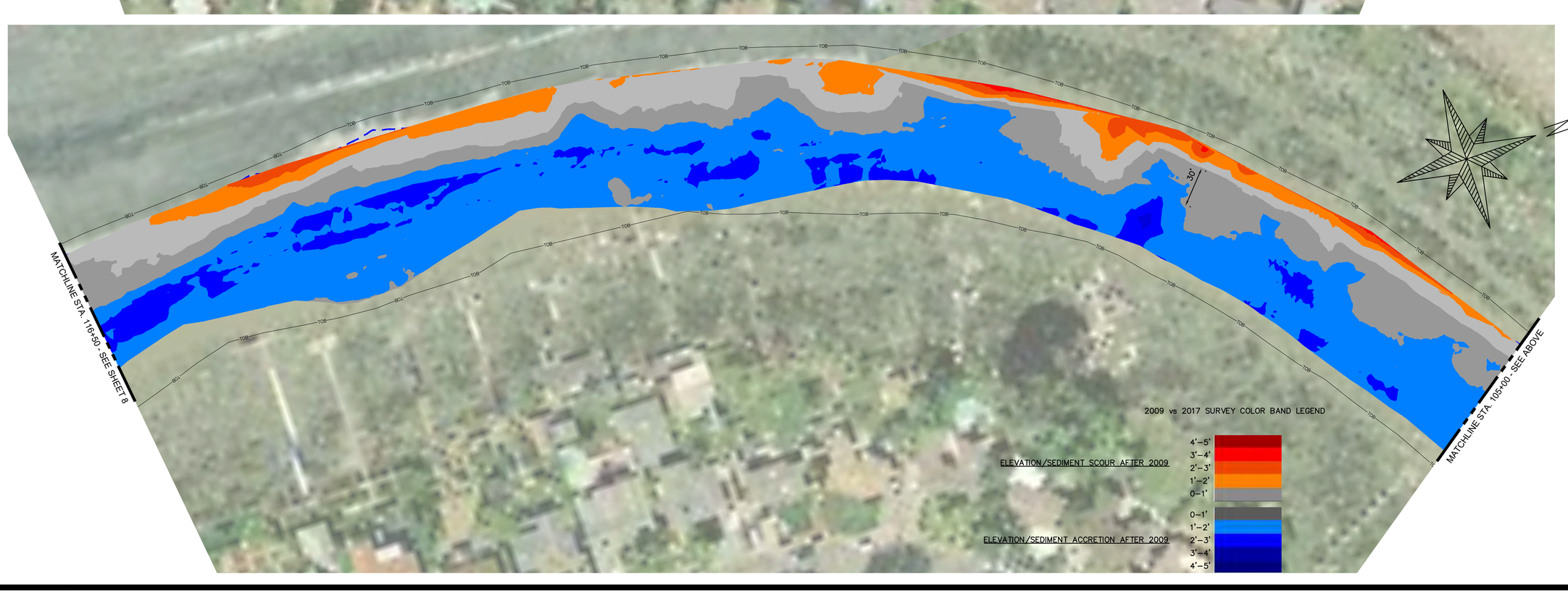

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January 2017

REVISIONS

DRAFT

GEODETIC INFORMATION
DATUM: NAD 83
PROJECTION: CALIF. STATE PLANE ZONE 3
VERTICAL DATUM: MLLW Feet

HORIZONTAL SCALE 1" = 40'
40 20 0 40
FEET

VERTICAL SCALE : N/A

COUNTY OF MARIN

LEGEND

- Index Contour - 5 Ft.
- Intermediate Contour - 1 Ft.
- TOB — Top of Bank / Edge of Vegetation
- Centerline of Channel
- Proposed Top of Slope
- Proposed Toe of Slope
- 1.0 — Spot Depth of Channel
- Pipe Outfall

SHEET TITLE
BATHYMETRIC SURVEY
STA 93+50 - 116+50

DRAWN BY	CHART NUMBER
MSK	7
CHECKED BY	
JK	
PROJECT NO	
15219.100	
DATE	
4/27/2018	SHEET 7 of 17

DWG: site comparison exhibits2.dwg CHART:7 DATE: Jun 05, 2018 - 10:30:59am

MATCHLINE - SEE SHEET 9

MATCHLINE STA. 116+50 - SEE SHEET 7

MATCHLINE STA. 133+50 - SEE SHEET 9

PIPE OUTFALL (MCO-0449)

PIPE OUTFALL (SANTA VENETIA #3)

30'

25'

126+50
END DREDGING 30' WIDE CHANNEL (-3' MLLW)

127+00
BEGIN DREDGING 30' WIDE CHANNEL (-2.5' MLLW)

2009 vs 2017 SURVEY COLOR BAND LEGEND

ELEVATION/SEDIMENT SCOUR AFTER 2009

4'–5'
3'–4'
2'–3'
1'–2'
0–1'

ELEVATION/SEDIMENT ACCRETION AFTER 2009

0–1'
1'–2'
2'–3'
3'–4'
4'–5'

SURVEY NOTES:

1. Bathymetric soundings collected on 11/14/2016, 11/15/2016 and 11/16/2016 and represent conditions on those dates.
2. Soundings are reported in feet and tenths and refer to depths below Mean Lower-Low Water (MLLW).
3. Horizontal coordinates are based on the NAD 83 California State Plane Grid System (Zone 3).
4. Horizontal and Vertical control are based on National Geodetic Survey Tide BM Point ID# AE7862:
   N: 2,197,945.42
   E: 5,984,937.14
   Z: 6.712 MLLW
5. Hydrographic survey gear consisted of a dual-transducer singlebeam sweep system integrated with a *Hemisphere VS111* heading and roll sensor and *Trimble R8* RTK GPS.
6. Survey conducted by James Kulpa (ACSM Certified Hydrographer 288) and Mark Tennyson, Survey Technician.

CONSULTANT

Las Gallinas Channel Design
Contours Generated from the Survey

January 2017

REVISIONS

DRAFT

GEODETIC INFORMATION
DATUM: NAD 83
PROJECTION: CALIF. STATE PLANE ZONE 3
VERTICAL DATUM: MLLW Feet

HORIZONTAL SCALE 1" = 40'
40 20 0 40
FEET

VERTICAL SCALE : N/A

COUNTY OF MARIN

LEGEND

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- Intermediate Contour - 1 Ft.
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- Proposed Toe of Slope
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SHEET TITLE

BATHYMETRIC SURVEY
STA 116+50 - 133+50

DRAWN BY	MSK
CHECKED BY	JK
PROJECT NO	15219.100
DATE	4/27/2018

CHART NUMBER **8**

SHEET 8 of 17

DWG: site comparison exhibits2.dwg CHART:8 DATE: Jun 05, 2018 - 10:31:42am

MATCHLINE STA. 148+00 - SEE SHEET 10

145+00

PIPE OUTFALL (CSA6)

-20'

-25'

141+00
BEGIN DREDGING 20' WIDE CHANNEL (-2.5' MLLW)

PIPE OUTFALL (CSA6)

140+50 END DREDGING 25' WIDE CHANNEL (-2.5' MLLW)

MATCHLINE - SEE SHEET 8

PIPE OUTFALL (CSA6)

PIPE OUTFALL (PS707)

PIPE OUTFALL (CSA6)

PIPE OUTFALL (MCO-0447)

137+00

MATCHLINE STA. 133+50 - SEE SHEET 8

2009 vs 2017 SURVEY COLOR BAND LEGEND

ELEVATION/SEDIMENT SCOUR AFTER 2009

4'–5'
3'–4'
2'–3'
1'–2'
0–1'

ELEVATION/SEDIMENT ACCRETION AFTER 2009

0–1'
1'–2'
2'–3'
3'–4'
4'–5'

SURVEY NOTES:

1. Bathymetric soundings collected on 11/14/2016, 11/15/2016 and 11/16/2016 and represent conditions on those dates.
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CONSULTANT

Las Gallinas
Channel Design
Contours Generated from the Survey

January 2017

REVISIONS

DRAFT

GEODETIC INFORMATION
DATUM: NAD 83
PROJECTION: CALIF. STATE PLANE ZONE 3
VERTICAL DATUM: MLLW Feet

HORIZONTAL SCALE 1" = 40'
40 20 0 40
FEET

VERTICAL SCALE : N/A

COUNTY OF MARIN

LEGEND

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- Intermediate Contour - 1 Ft.
- TOB — Top of Bank / Edge of Vegetation
- Centerline of Channel
- Proposed Top of Slope
- Proposed Toe of Slope
- 1.0 — Spot Depth of Channel
- Pipe Outfall

SHEET TITLE

BATHYMETRIC SURVEY
STA 133+50 - 148+00

DRAWN BY: MSK	CHART NUMBER: 9
CHECKED BY: JK	
PROJECT NO: 15219.100	
DATE: 4/27/2018	SHEET 9 of 17

DWG: site comparison exhibits2.dwg CHART:9 DATE: Jun 05, 2018 - 10:32:11am

SURVEY NOTES:

1. Bathymetric soundings collected on 11/14/2016, 11/15/2016 and 11/16/2016 and represent conditions on those dates.
2. Soundings are reported in feet and tenths and refer to depths below Mean Lower-Low Water (MLLW).
3. Horizontal coordinates are based on the NAD 83 California State Plane Grid System (Zone 3).
4. Horizontal and Vertical control are based on National Geodetic Survey Tide BM Point ID# AE7862:
   N: 2,197,945.42
   E: 5,984,937.14
   Z: 6.712 MLLW
5. Hydrographic survey gear consisted of a dual-transducer singlebeam sweep system integrated with a *Hemisphere VS111* heading and roll sensor and *Trimble R8* RTK GPS.
6. Survey conducted by James Kulpa (ACSM Certified Hydrographer 288) and Mark Tennyson, Survey Technician.

CONSULTANT

Las Gallinas Channel Design
Contours Generated from the Survey

January 2017

REVISIONS

DRAFT

GEODETIC INFORMATION
DATUM: NAD 83
PROJECTION: CALIF. STATE PLANE ZONE 3
VERTICAL DATUM: MLLW Feet

HORIZONTAL SCALE 1" = 40'
40 20 0 40
FEET

VERTICAL SCALE : N/A

COUNTY OF MARIN

LEGEND

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- Intermediate Contour - 1 Ft.
- TOB — Top of Bank / Edge of Vegetation
- Centerline of Channel
- Proposed Top of Slope
- Proposed Toe of Slope
- 1.0 — Spot Depth of Channel
- Pipe Outfall

SHEET TITLE
BATHYMETRIC SURVEY
STA 148+00 - 157+38

DRAWN BY	MSK
CHECKED BY	JK
PROJECT NO	15219.100
DATE	4/27/2018

CHART NUMBER
10
SHEET 10of 17

DWG: site comparison exhibits2.dwg CHART:10 DATE: Jun 05, 2018 - 10:32:29am

PROPOSED ADJUSTMENT to County Service Area 6 Baseline Budget

NOTE: REVENUES ARE REPRESENTED AS NEGATIVE NUMBERS AND EXPENDITURES AS POSITIVE, BUT A POSITIVE FUND BALANCE IS POSITIVE

		Fiscal Year 2022-2023	Fiscal Year 2021-2022				Fiscal Year 2020-2021			Fiscal Year 2010-2020		
Line Item	Description	Baseline Budget	Revised* Budget	Actual**	Encumbrances carried to FY23	Original Budget	Revised Budget	Actual	Original Budget	Revised Budget	Actual	Original Budget
1	Property Tax - Current Unsecured	$ (4,000.00)	$ (4,000.00)	$ (4,272.57)	$ -	$ (4,000.00)	$ (3,500.00)	$ (4,198.95)	$ (3,500.00)	$ (3,500.00)	$ (4,096.63)	$ (3,500.00)
2	Property Tax - Current Secured	$ (200,000.00)	$ (200,000.00)	$ (232,750.84)	$ -	$ (200,000.00)	$ (198,000.00)	$ (221,299.52)	$ (198,000.00)	$ (198,000.00)	$ (213,418.82)	$ (198,000.00)
3	Property Tax - Current Secured - Uni	$ (1,000.00)	$ (1,000.00)	$ (1,559.21)	$ -	$ (1,000.00)	$ (600.00)	$ (1,291.79)	$ (600.00)	$ (600.00)	$ (1,241.19)	$ (600.00)
4	Property Tax - Prior Unsecured	$ (150.00)	$ (150.00)	$ (244.18)	$ -	$ (150.00)	$ (200.00)	$ (125.68)	$ (200.00)	$ (200.00)	$ (161.35)	$ (200.00)
5	Supplemental Property Tax - Current	$ (4,500.00)	$ (4,500.00)	$ (7,735.61)	$ -	$ (4,500.00)	$ (500.00)	$ (4,449.30)	$ (500.00)	$ (500.00)	$ (4,654.57)	$ (500.00)
6	Supplemental Property Tax - Current Unsecure	$ (50.00)	$ (50.00)	$ (168.73)	$ -	$ (50.00)	$ (25.00)	$ (86.26)	$ (25.00)	$ (25.00)	$ (182.82)	$ (25.00)
7	Supplemental Property Tax - PR Redm	$ (125.00)	$ (125.00)	$ (126.49)	$ -	$ (125.00)	$ (150.00)	$ (148.17)	$ (150.00)	$ (150.00)	$ (156.06)	$ (150.00)
8	Current Educational Revenue Augmentation F	$ (600.00)	$ (600.00)	$ (1,761.25)	$ -	$ (600.00)	$ -	$ (610.03)	$ -	$ -	$ (1,056.29)	$ -
9	Excess ERAF	$ (9,500.00)	$ (9,500.00)	$ (13,038.87)	$ -	$ (9,500.00)	$ (9,500.00)	$ (11,414.66)	$ (9,500.00)	$ (9,500.00)	$ (10,900.04)	$ (9,500.00)
10	Investment income - interest pooled	$ (25,000.00)	$ (25,000.00)	$ (2,211.14)	$ -	$ (25,000.00)	$ (1,500.00)	$ (21,172.82)	$ (1,500.00)	$ (1,500.00)	$ (59,994.61)	$ (1,500.00)
11	investment income - ERAF interest	$ -	$ -	$ (3.71)	$ -	$ -	$ -	$ (4.29)	$ -	$ -	$ (20.18)	$ -
12	Investment income - unrealized gains	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,592.02	$ -
14	State Homeowner Property Tax Relief	$ (1,000.00)	$ (1,000.00)	$ (940.80)	$ -	$ (1,000.00)	$ (1,000.00)	$ (939.54)	$ (1,000.00)	$ (1,000.00)	$ (964.12)	$ (1,000.00)
15	SB 2557 Admin Fee	$ 2,491.00	$ 2,491.00	$ 3,047.42	$ -	$ 2,491.00	$ 2,491.00	$ 3,156.84	$ 2,491.00	$ 2,491.00	$ 2,866.02	$ 2,491.00
16	Transfers In	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Revenue Budget/Actuals:	**$ (243,434.00)**	**$ (243,434.00)**	**$ (261,765.98)**	**$ -**	**$ (243,434.00)**	**$ (212,484.00)**	**$ (262,584.17)**	**$ (212,484.00)**	**$ (212,484.00)**	**$ (290,388.64)**	**$ (212,484.00)**
Line Item	**Description**	**Proposed Baseline Budget**	**Revised* Budget**	**Actual****	**Encumbrances**	**Original Budget**	**Revised Budget**	**Actual**	**Original Budget**	**Revised Budget**	**Actual**	**Original Budget**
18	Miscellaneous Expenses	$ 1,000.00	$ 1,000.00	$ -	$ -	$ 1,000.00	$ 1,000.00	$ -	$ 1,000.00	$ -	$ -	$ -
19	Professional Services	$ 200,000.00	$ 354,292.78	$ 1,231.50	$ 153,061.28	$ 200,000.00	$ 245,843.00	$ 6,843.00	$ 239,000.00	$ 265,150.22	$ 25,150.22	$ 240,000.00
19.1	*Dredge Sediment Sampling and Analysis*	*$ 300,000.00*										
20	Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Staff Cost	$ 70,000.00	$ 55,000.00	$ 9,057.62	$ -	$ 55,000.00	$ 55,000.00	$ 17,589.31	$ 55,000.00	$ 55,812.00	$ 23,450.65	$ 55,812.00
25	Engineering Staff Costs	$ -	$ 15,000.00	$ -	$ -	$ 15,000.00	$ 15,000.00	$ -	$ 15,000.00	$ 15,000.00	$ -	$ 15,000.00
31	A87 Indirect Cost allocation	$ 4,417.00	$ -	$ -	$ -	$ -	$ 293.00	$ 292.00	$ 293.00	$ 4,417.00	$ 4,417.00	$ 2,691.00
33	Transfers Out	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Expenditure Budget/Actuals:	**$ 575,417.00**	**$ 425,292.78**	**$ 10,289.12**	**$ 153,061.28**	**$ 271,000.00**	**$ 317,136.00**	**$ 24,724.31**	**$ 310,293.00**	**$ 340,379.22**	**$ 53,017.87**	**$ 313,503.00**
	Projected/Actual Year End Fund Balance:	***$ 2,644,208.07***	***$ 2,976,191.07***					***$ 3,158,049.85***				

Line item 25 being phased out of use and costs charged under line 24 going forward.

*Currently the revised budget for this fiscal year is the baseline budget plus encumbered contracts from prior fiscal years carried forward.

**Actual as of 10/10/2022