

SEAWALL ELEVATION ASSESSMENT OPTIONS

OPTION	TYPE	COST	TIME	PROS	CONS
Option 1	In-house <u>drone</u> photogrammetry	\$13,000 + Staff time 1-GIS, 2 Survey Staff	4-6- months (assuming 2 sunny field days per week)	<ul style="list-style-type: none"> - Private property access not needed - Accuracy is within 1.5 inches -High quality photos -Data obtained for seawalls and adjacent properties -Digital Elevation Model (DEM) can be extracted -Data will be readily available and easy to use 	<ul style="list-style-type: none"> -Staff resource time -Clear weather needed -Results will have obstruction from tree vegetation -Long post-processing time.
Option 2 *TECHNICAL STAFF RECOMMENDATION	In-house <u>drone</u> LIDAR	\$93,000 + Staff time 1-GIS, 2 Survey Staff	4-months (assuming 2 field days per week- less flight paths and sun is not needed in comparison to Option 1)	<ul style="list-style-type: none"> -Private property access not needed -City can fly areas on demand -Accuracy is within 1.5 inches -Weather and tree vegetation obstruction is not an issue. -3D High Density Point Cloud -Full DEM and DTM with multiple uses for planning and engineering -Lasers allow highest quality and reduces obstruction -Post- processing time is minimal -Compatible with GIS and CAD 	-Staff resource time
Option 3	Consultant <u>boat</u> LIDAR seawall line	\$270,000	6-months	<ul style="list-style-type: none"> - No staff resource time except for project management 	<ul style="list-style-type: none"> - Private property owners will need to allow the target being set on the sea walls (every 1000 ft or so). - Docks and boats will obstruct the seawall elevation line

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					<ul style="list-style-type: none"> - Will need personnel on the dock/ seawalls to set the targets. - Data is not usable for any other purpose other than an elevation line - Consultant boat and equipment needs- dock and space - Deliverable will not meet GIS and Engineering needs - Data will not be readily available - Hardware and software owned by consultant
Option 4	Consultant <u>airial</u> LIDAR all points near seawall	\$415,350	6-months	<ul style="list-style-type: none"> - No staff resource time except for project management -3D High Density Point Cloud - Data for top of seawalls - Accuracy is within 1.5 inches -Weather and tree vegetation obstruction is not an issue. - DEM and DTM extracted Compatible with GID and CAD 	<ul style="list-style-type: none"> - Private property owners will need to allow the target being set on the sea walls (every 1000 ft or so). - Will need personnel on the dock/ seawalls to set the targets. - Data will not be readily available and easy to use - Hardware and software owned by consultant - Staff will still need to process to extract additional the data