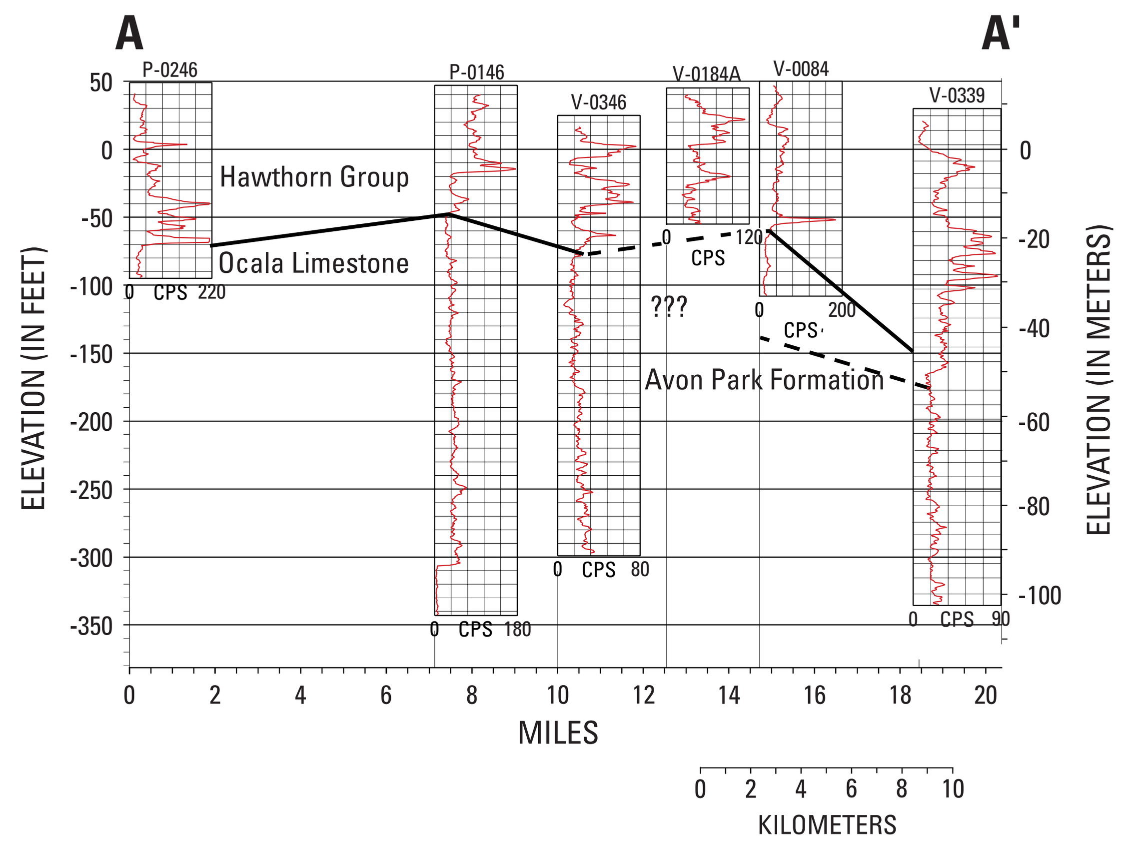
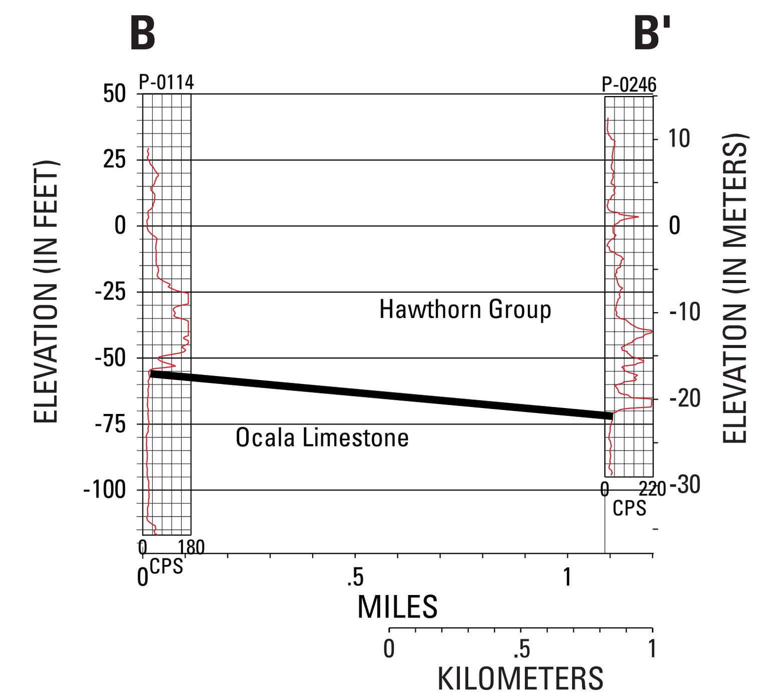
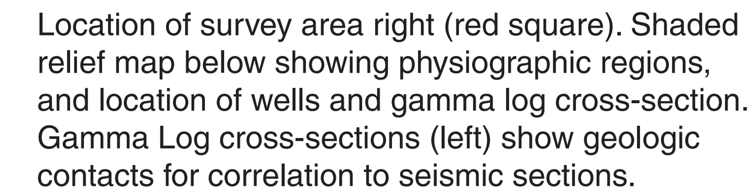
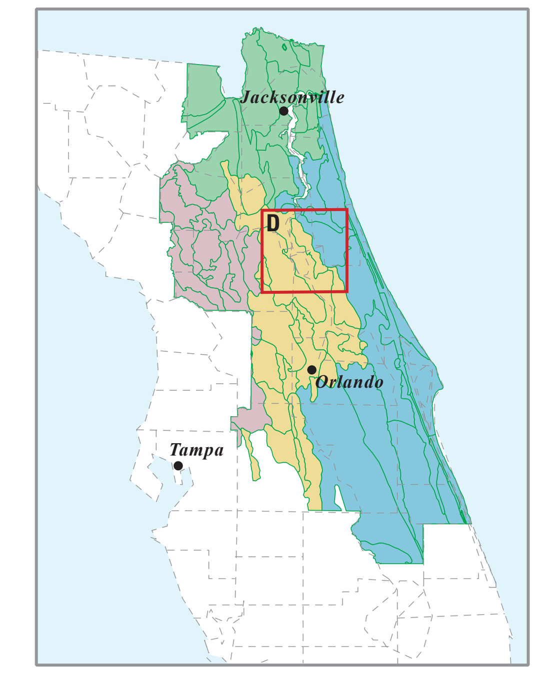
INDEX MAP AND GAMMA LOG

CROSS-SECTIONS, SECTION D









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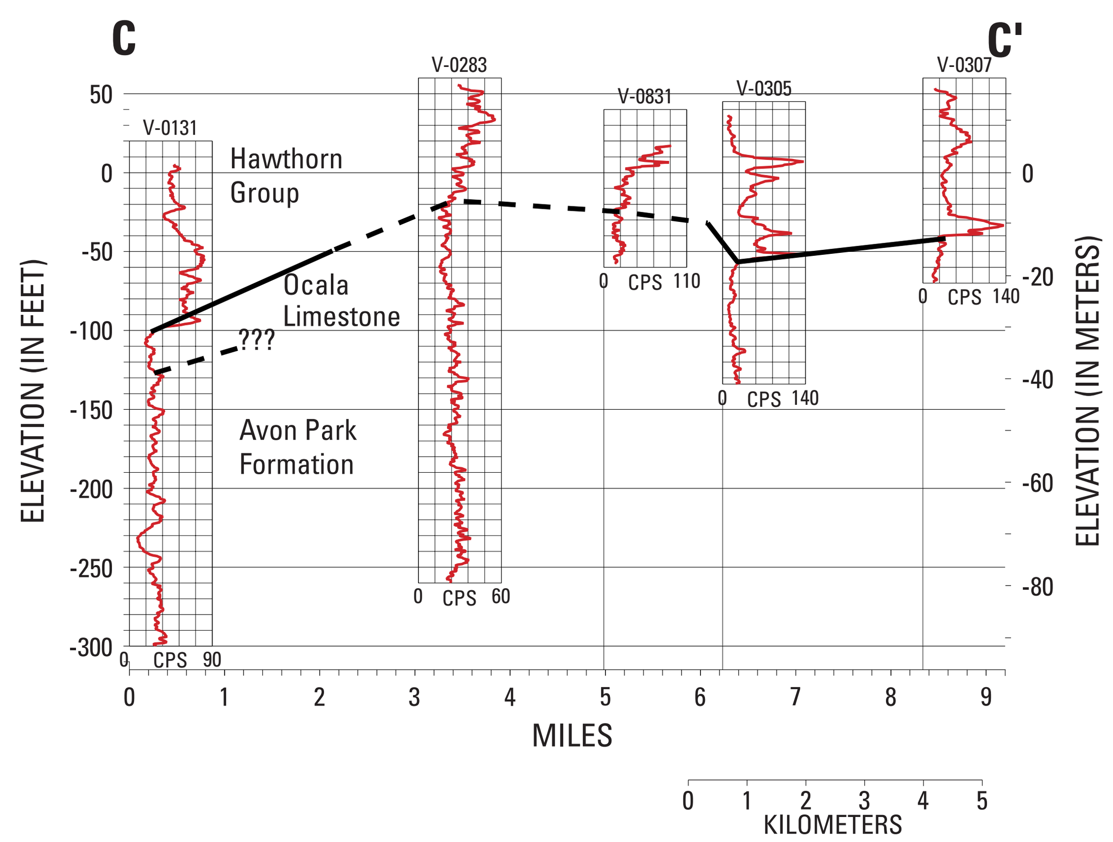

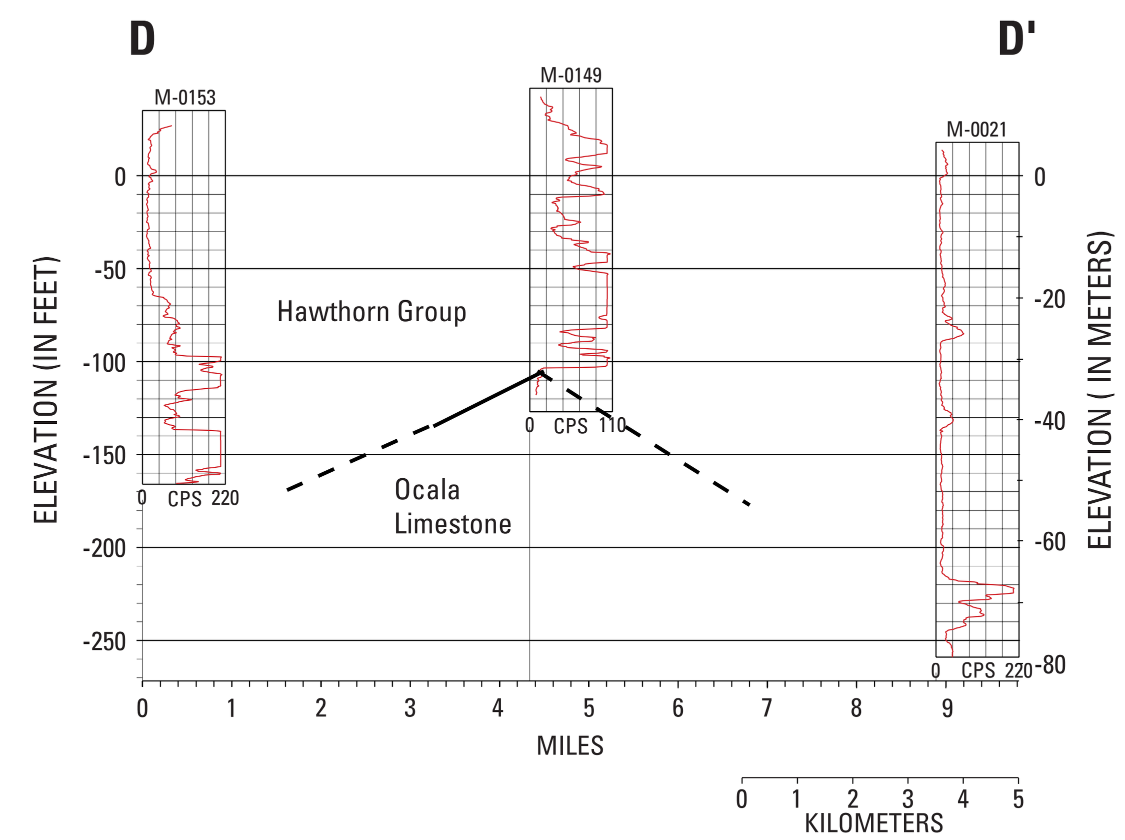

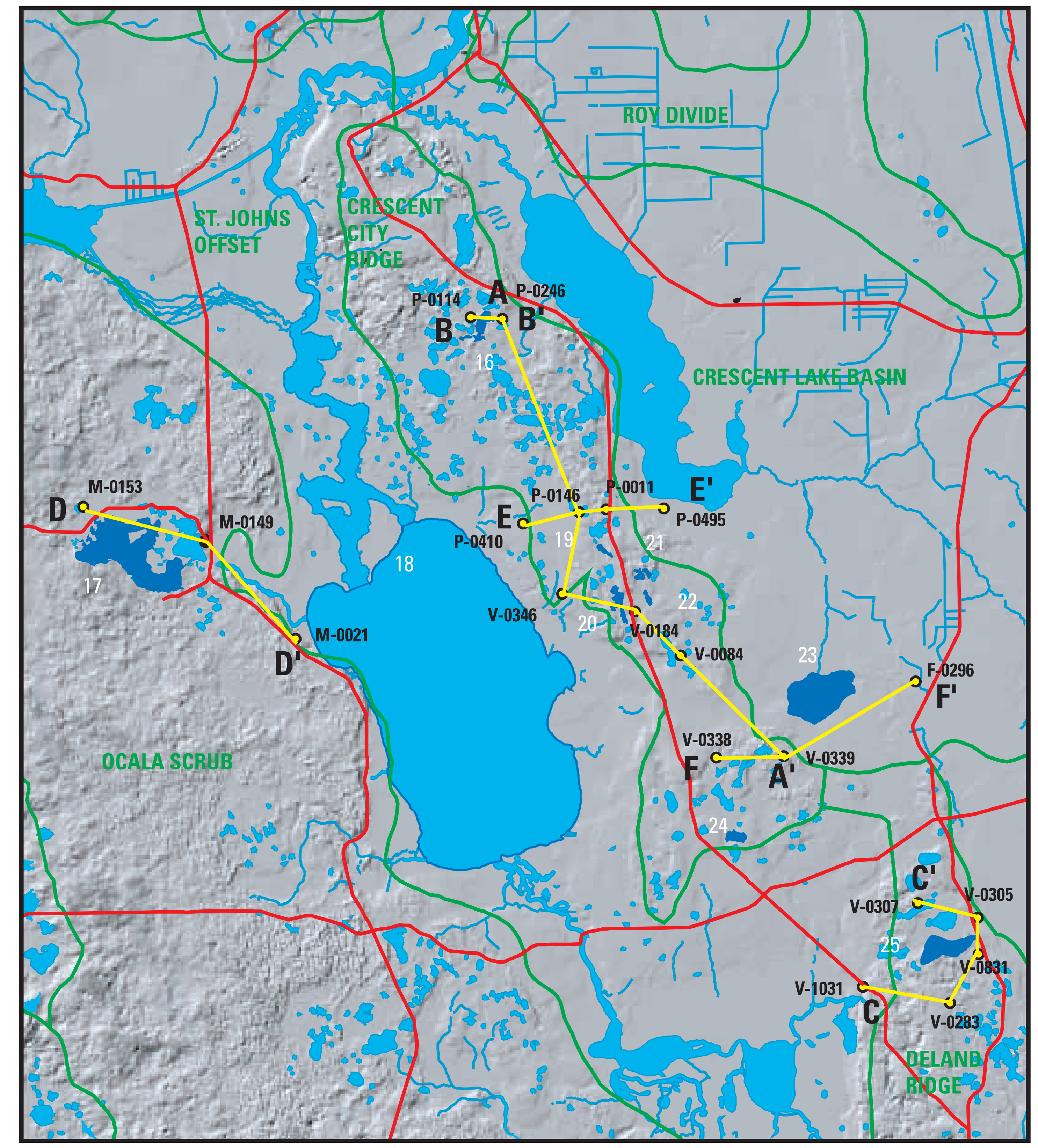

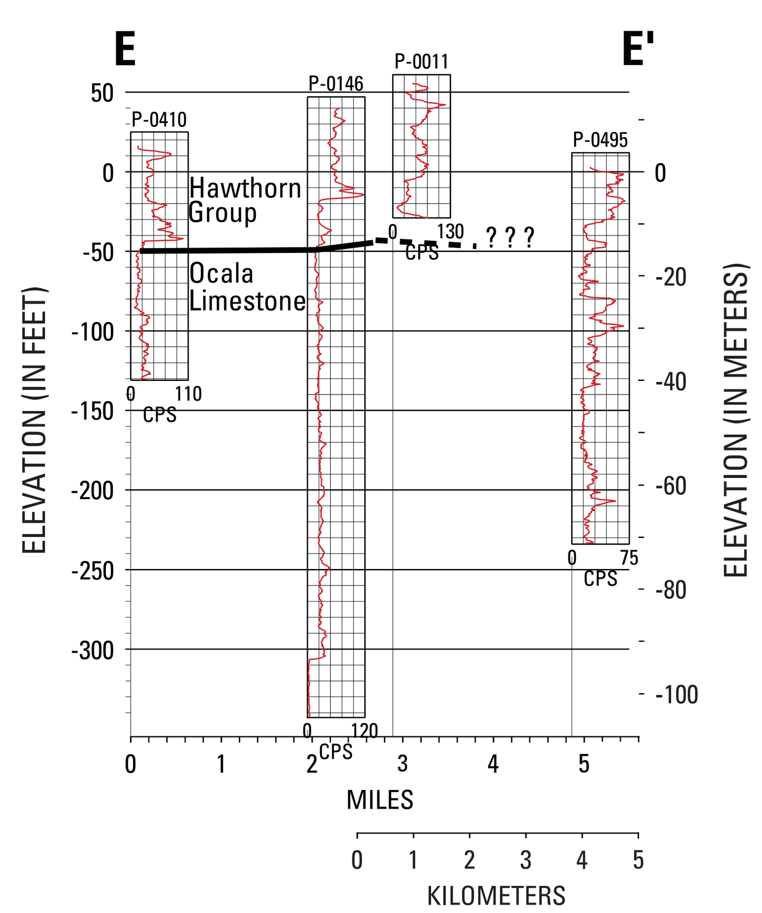

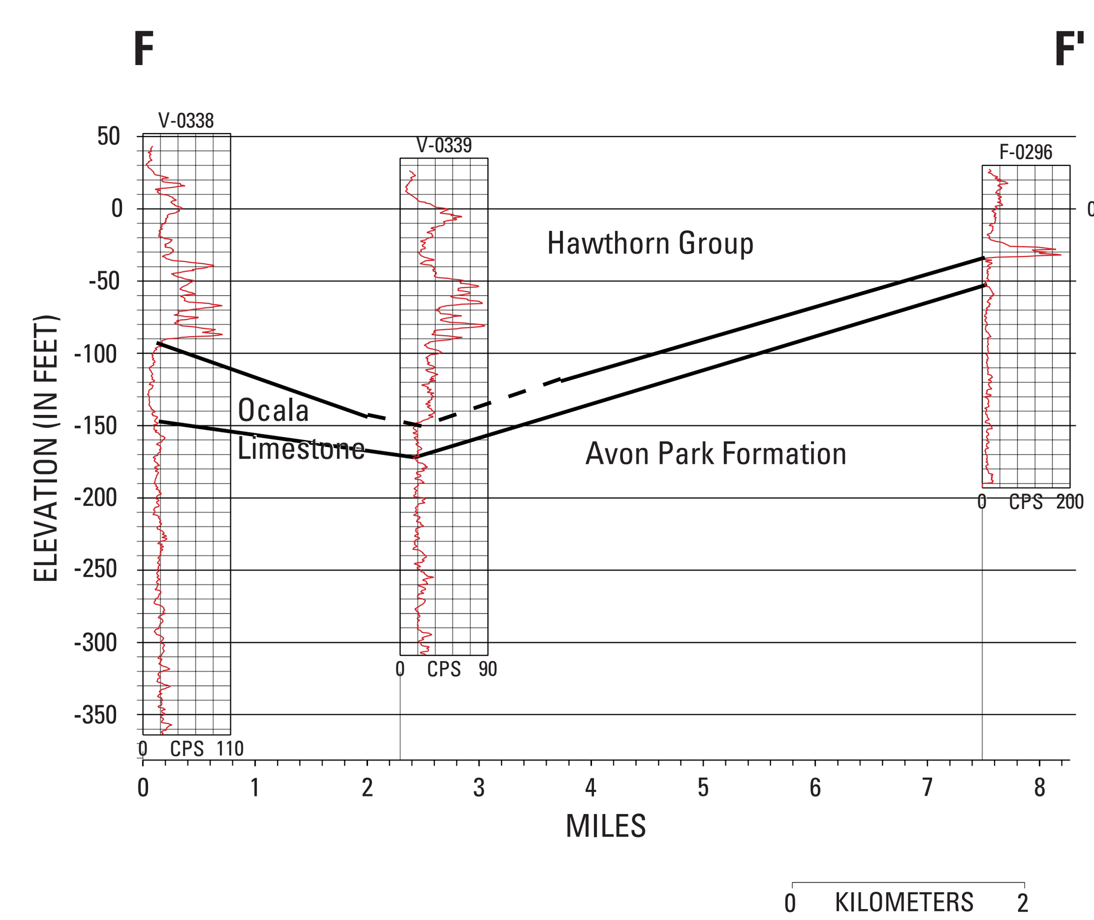

LEGEND

- Wells, Cross-Sections
- Streams/Rivers
- Major Roads
- Provinces
- Lakes
- Lakes in Atlas

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1 0 1 MILES — 1 0 1 KILOMETERS

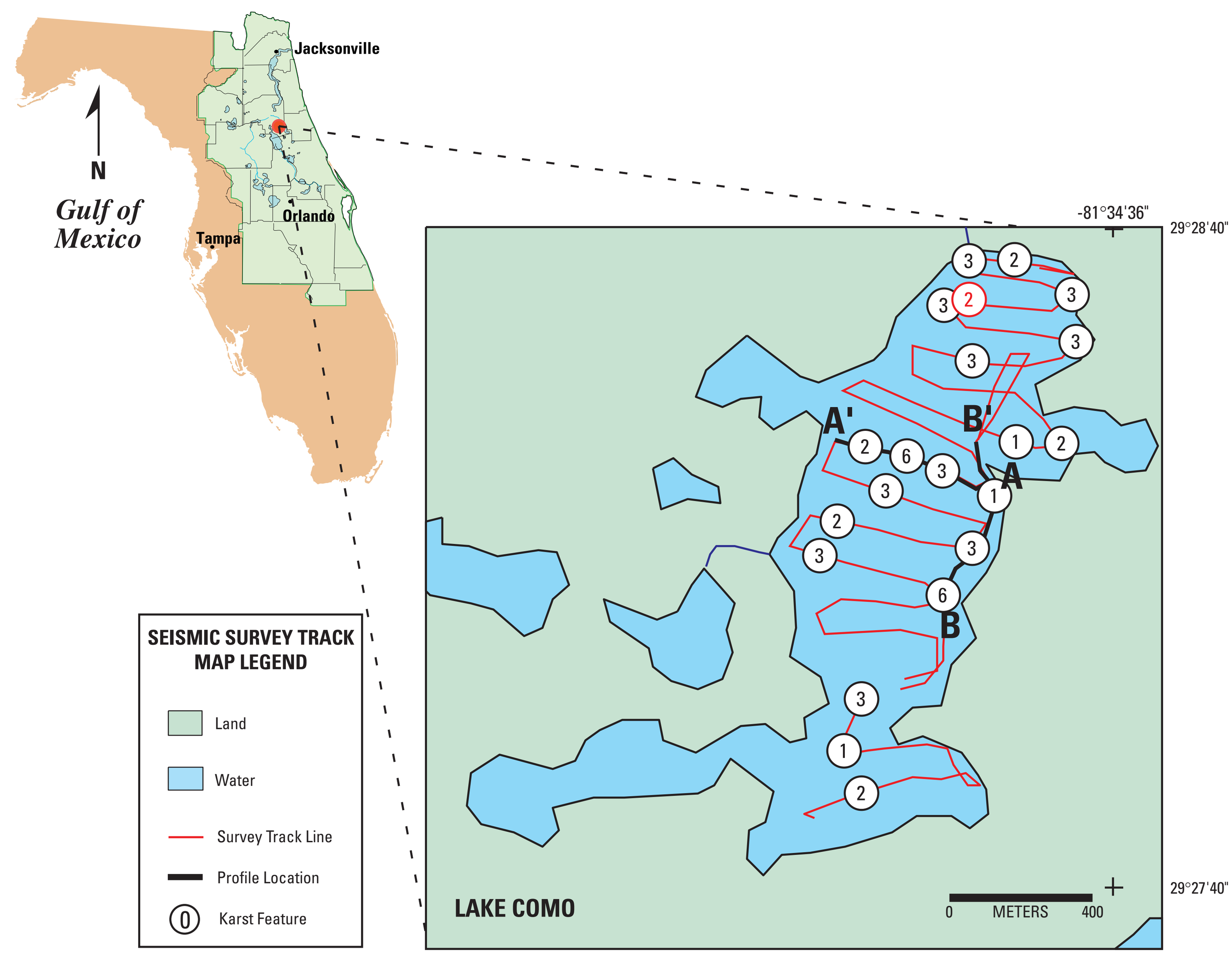
LAKE COMO
PUTNAM COUNTY, FLORIDA

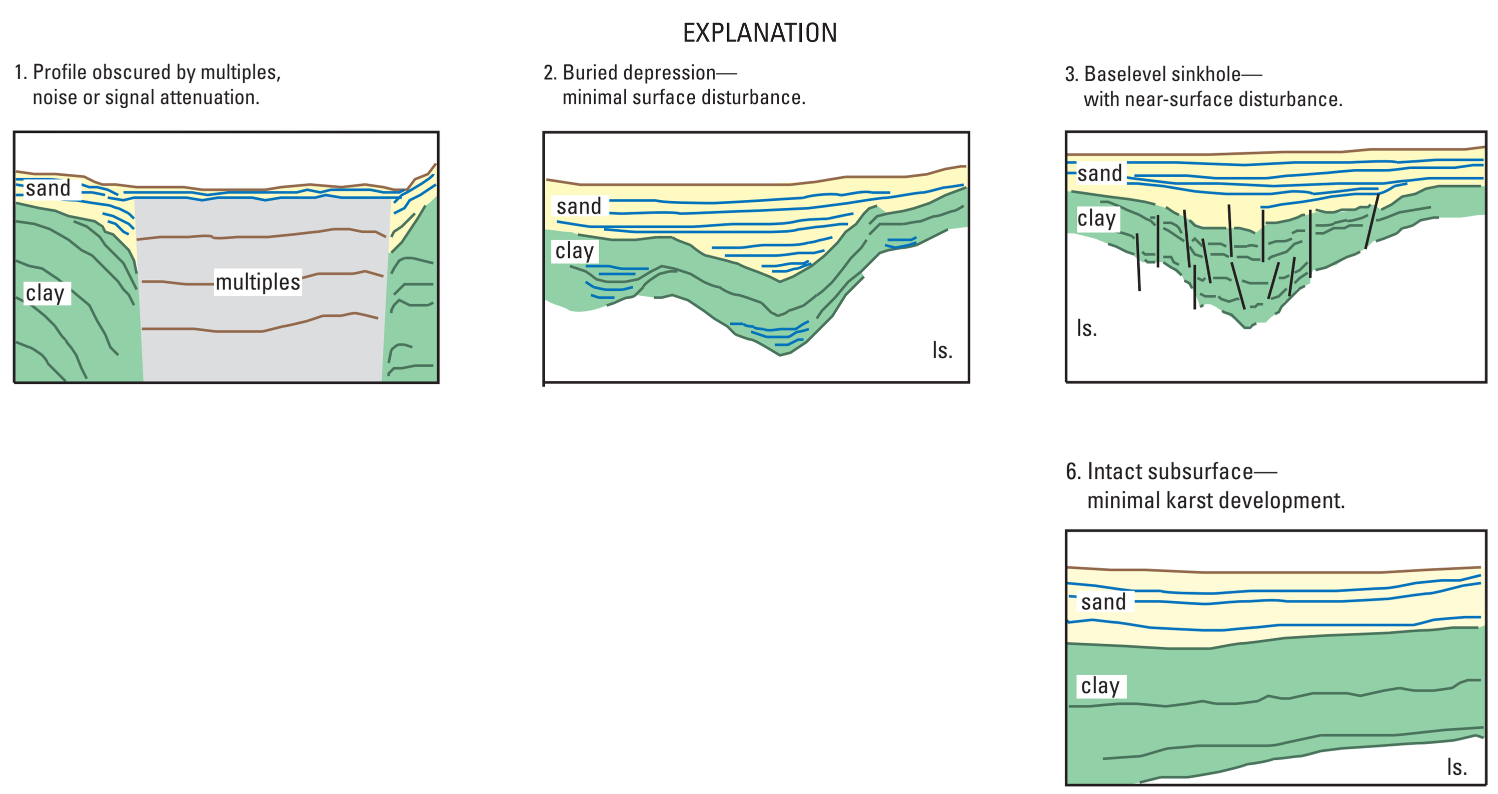
Introduction

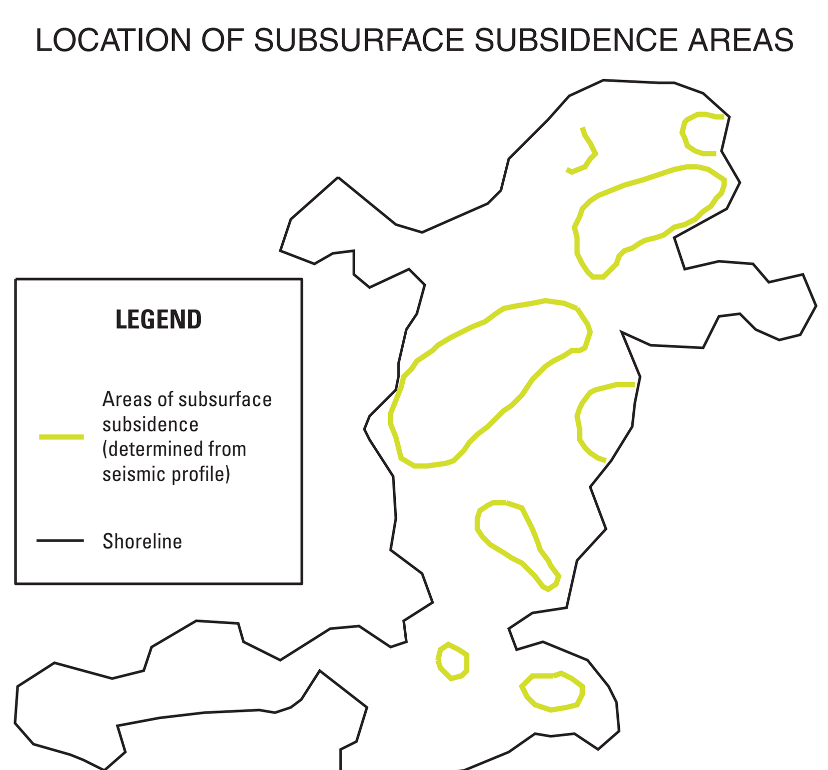
Lake Como is located on the Crescent City Ridge in south central Putnam County, Florida. The area consists of sand hills with peak elevations between 24 to 30 m (80 to 100 ft) NGVD that are bordered on the west by the floodplain of the St. Johns River and Lake George and Crescent Lake basin on the east. Lakes within the ridge system are smaller (< 1 km) and irregular in shape as they occupy troughs within the sand hills. Lake Como is a good example of this irregular shoreline, with a perimeter of just under 8 km (5 mi) yet covering an area of only 1.4 sq km. Lake level is about 12.2 m (40 ft) NGVD. In the immediate vicinity around the lake are numerous smaller lakes. Several are connected via surface flow to Lake Como.

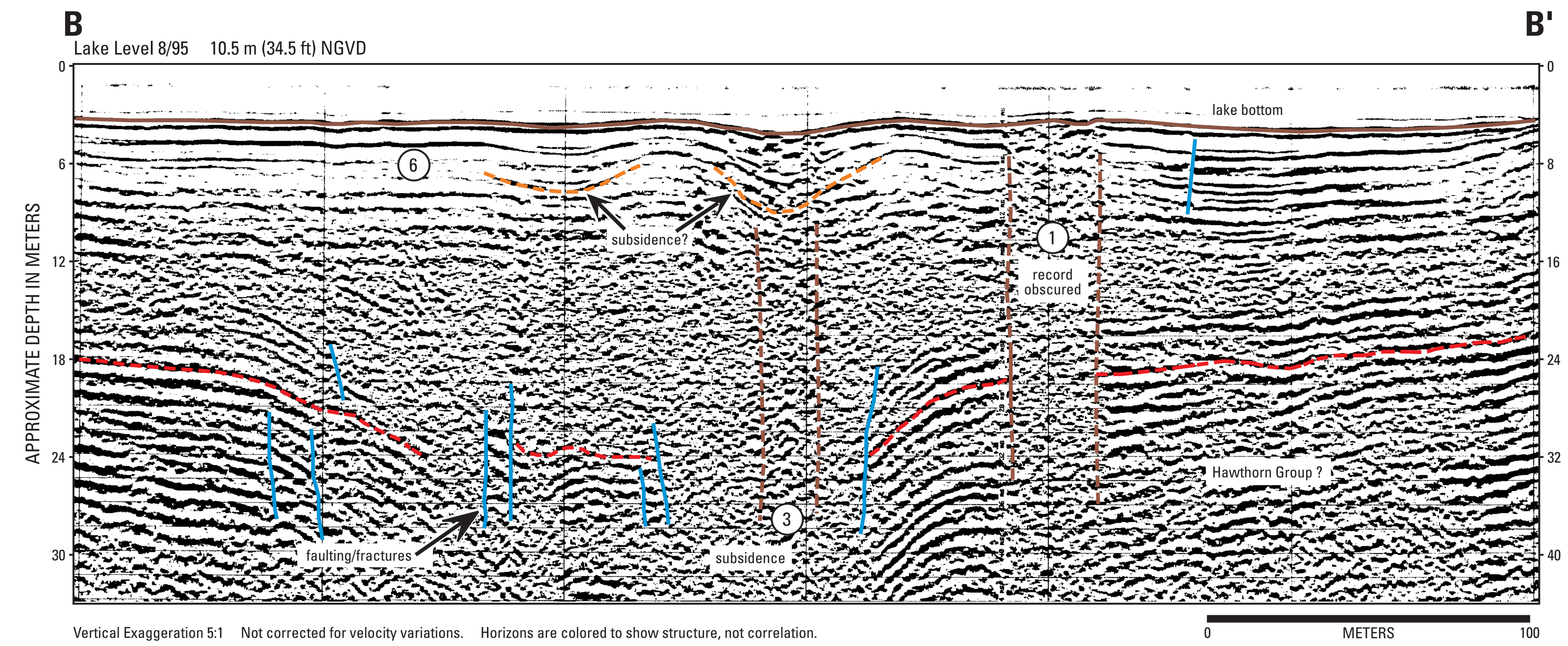
Subsurface Characterization

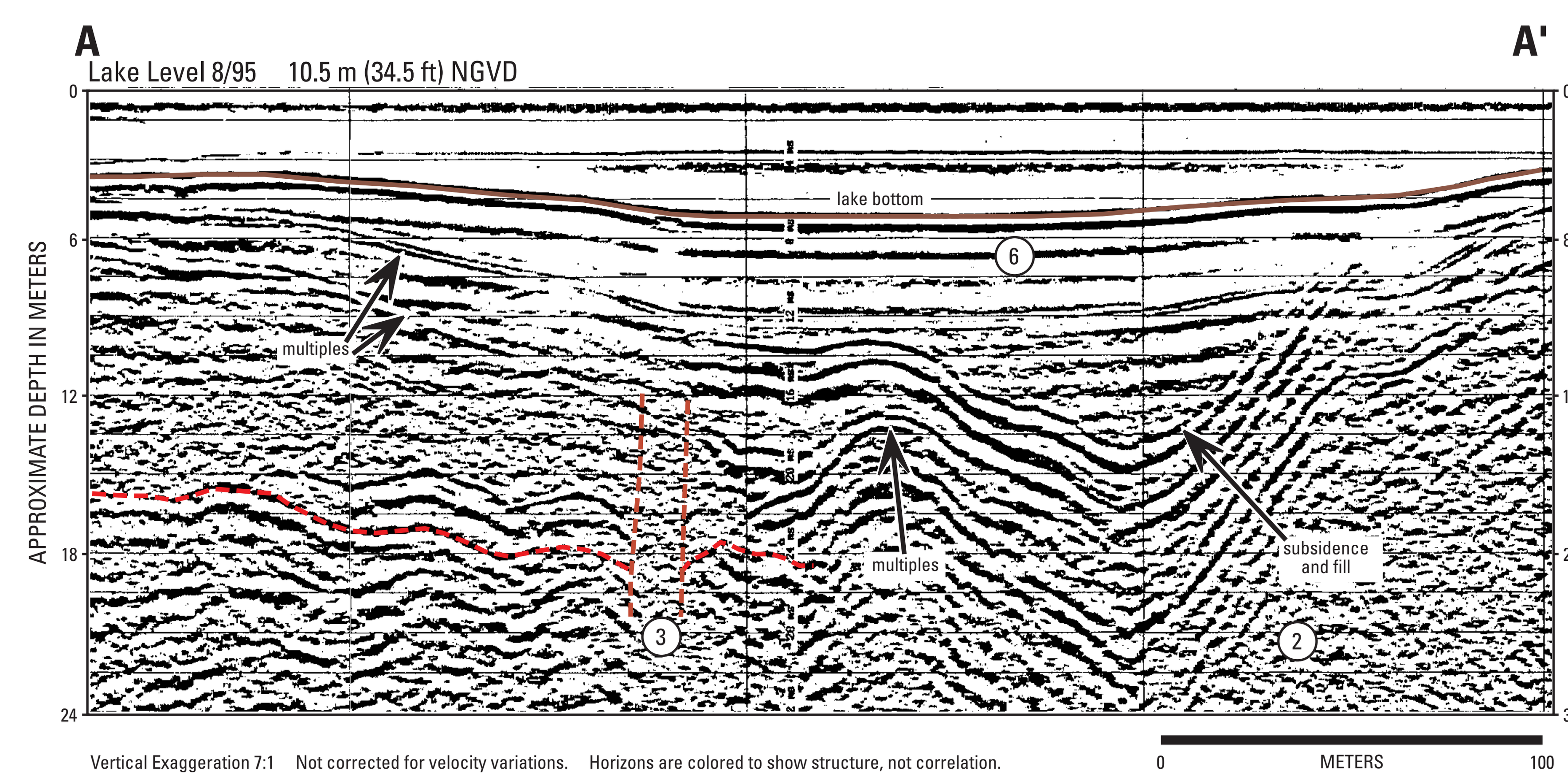
Seismic profiles in Lake Como show many small (>100 m, 328 ft), low angle reflectors overlain and onlapped by horizontal reflectors (profiles A-A' and B-B'). These features represent small-scale subsidence with subsequent infilling. The areas of localized subsidence have been mapped out in the figure showing areas of subsidence. The subsidence features appear to be controlled at depth by collapse in the underlying structure. This is shown in profile B-B' with downwarped reflectors and subsidence-related faulting (type 3). The near surface fill is nearly acoustically transparent and is possibly homogeneous sands from the surrounding sand ridges infilling the depressions. In places the overburden appears to be displaced and rotated as it slumps into the depression (north shore red number 2, Seismic Survey Track Map). Gamma counts from wells in the vicinity place the top of the Hawthorn Group at about -9 m (-30 ft) NGVD and the top of the Ocala Limestone at about -20 m (-65 ft) NGVD (wells P-0114, P-0246, Index Map D, page 22). The reflector shown as a red dashed line in the seismic profiles may represent a horizon near the top of the Hawthorn Group. Subsidence in the Hawthorn Group sediments, as a result of structural collapse in the underlying Ocala Limestone, would provide recharge pathways to the aquifer. The near surface undifferentiated fill appears to be relatively intact, although some subsidence or breaches may be present as shown in profile B-B'.











Subsurface Characterizations of Selected Water Bodies in the St. Johns River Water Management District, Northeast Florida

Jack L. Kindinger[1], Jeffrey B. Davis[2], and James G. Flocks[1]
2000

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U.S. Geological Survey
St.. Petersburg, Florida 33701

[2] St. Johns River Water Management District
Palatka, Florida 32178

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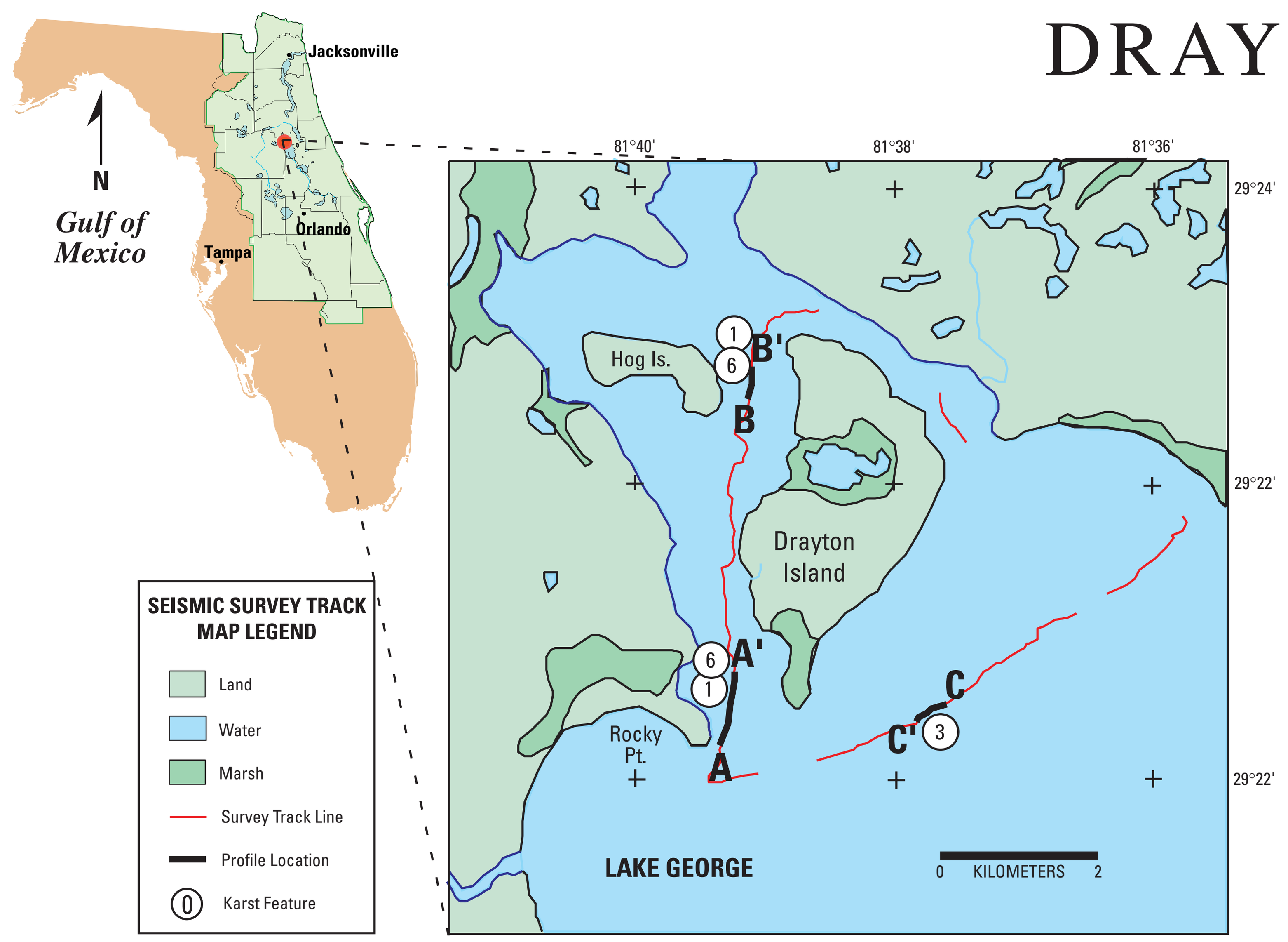
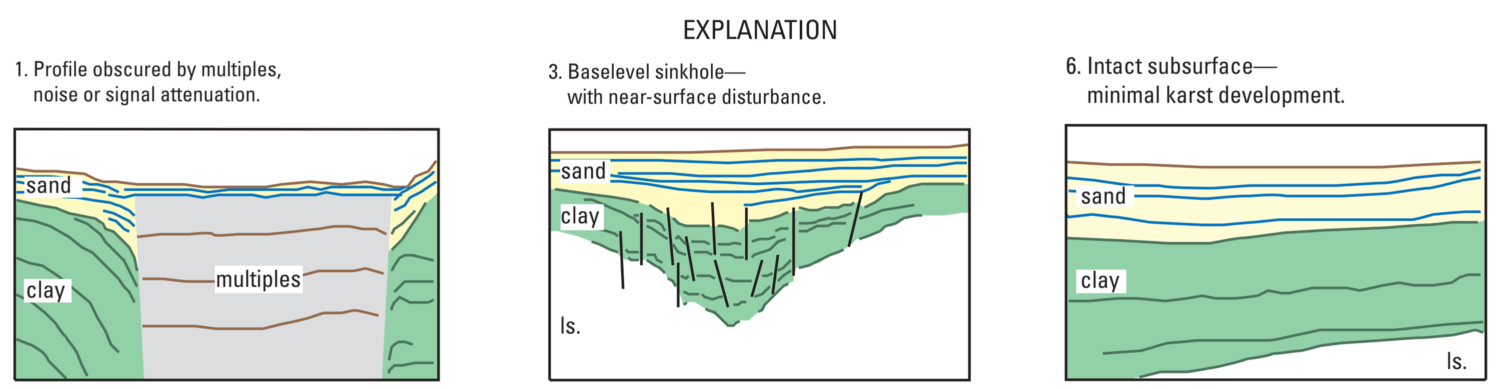
DRAYTON ISLAND, LAKE GEORGE

PUTNAM COUNTY, FLORIDA





Introduction

The area surveyed near Drayton Island in Lake George occupies southernmost Putnam County. The lake is part of the St. John's River system and the broad valley of the St. John's Offset. The development of this valley is due in part to solution in the underlying limestone, which nears the surface in this area. The lake is bound on either side by the sand hills of the Crescent City Ridge to the east and the Ocala Scrub physiographic region to the west. The flood plain is characterized by swamp vegetation. Four seismic lines, approximately 12 km (7.5 mi), were run around the island. Data quality is typically poor due to noise and ringing in the acoustic return. Possible reasons include accumulation of organics at the river bottom, tightly packed sand in the near-surface and echoes from the nearby shoreline obscuring the signal.

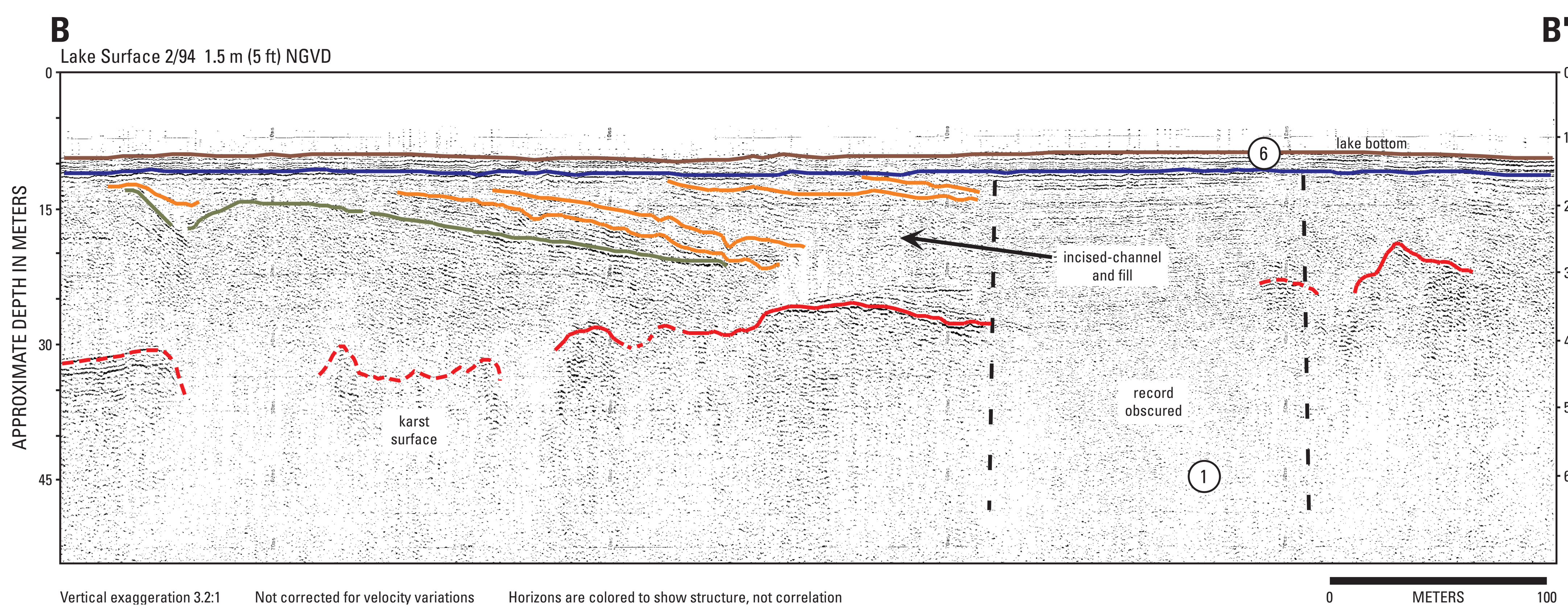
Subsurface Characterization

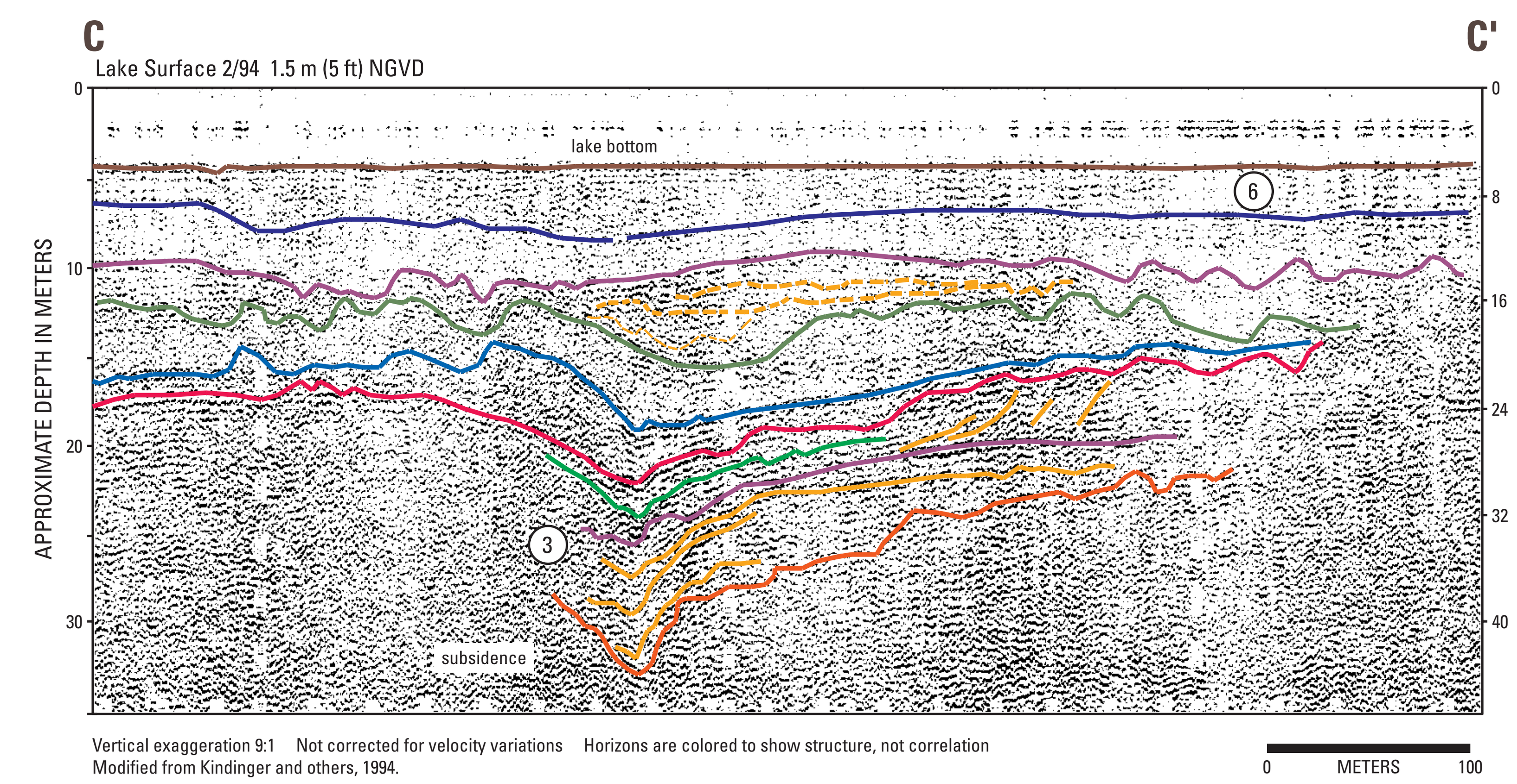
Three example seismic profiles near Drayton Island show several different types of geologic characterization present within the St. Johns River Valley. Karst development in the underlying limestone is accompanied by fluvial-type incised channels, occupying areas of subsidence caused by the loss of material at depth. Profile A-A' shows relatively mature karst development in the limestone, represented by the red dashed line at 30 to 45 m (92 to 148 ft). Gamma log profiles from four wells surrounding the northern portion of Lake George (P-0410, V-0346, M-0149 and M-0021; Index Map D, page 22) show a highly fluctuating upper contact to the Ocala Limestone. Depths to limestone range from greater than -61 m (-200 ft) below sea level southwest of Drayton Island, to -30 m (-100 ft) to the west, to -15 m (-50 ft) at the lake's eastern shoreline. The variability and range are consistent with the contact represented by the red dashed line on profiles A-A' and B-B'. In profile A-A', a fluvially-incised channel (light brown line) appears to reside over one of the more pronounced depressions in the karst surface. Multiple incisions appear within the channel (orange line) with fill (purple lines). Channel development was apparently terminated and a planing surface (green line) is overlain by a more recent depositional event (solid red lines). This sequence can be correlated to spikes in the gamma counts at -12 m (-40 ft) below sea level (P-0410, V-0346 and M-0149), suggesting a fluvial source, possibly a Pleistocene flooding surface and estuarine deposition, as seen elsewhere within the St. John's Offset (Brooks and Merrit, 1981). These low-angle reflectors are also truncated (dark blue line) and what appear to be recent, riverine deposits occupy the nearsurface of the profile. On the right side of the profile there appears to be another drop in the limestone surface which is also occupied by a channel incision (green lines), but most of this feature is obscured by noise in the seismic record.

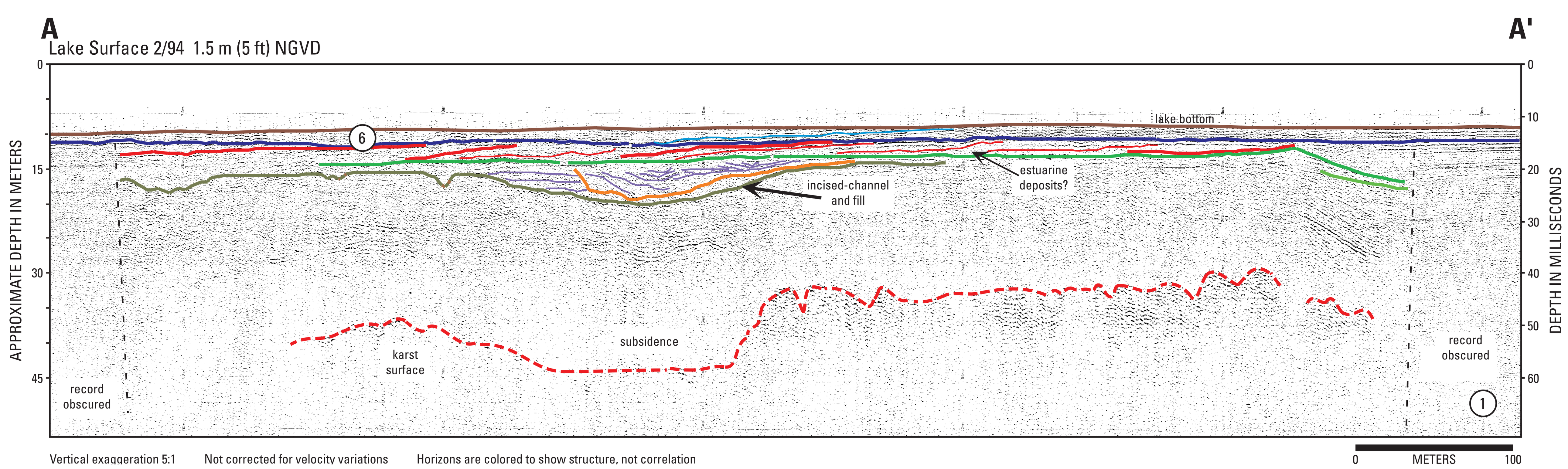
Profile B-B' exhibits similar fluctuations to the karst surface, with another incised channel taking shape (brown and orange lines) before being obscured by noise in the record. The truncation surface and subsequent depositional event represented by the solid red lines in profile A-A' are not as readily apparent. It is possible that the orange lines in profile B-B' may be correlative with this depositional event. The more recent hiatus (dark blue line) and overlying fluvial deposits are consistent in both profiles. The relationship of these incised channels to subsidence in the underlying geology is probably geomorphologic; channel development occurred within previously existing depressions and was not necessarily concurrent to karst development.

The shape of the channel incisions and the nature of their fill are similar to buried incised channels observed in seismic profiles acquired from the nearshore shelf environments of the Gulf and Atlantic coasts. The feature outlined in profile C-C' is characteristic of karst-type subsidence rather than a fluvial incision. Again the deepest red reflector may be correlative to the top of the Ocala Limestone, the overlying reflectors may represent subsequent subsidence in the sediments of the Hawthorn Group. Reflectors exhibit subsidence up to the near-surface, suggesting the karst feature in this profile post-dates the fluvial deposition shown in the previous two profiles. The uppermost subsurface reflector (dark blue line) is again overlain by high frequency, parallel reflectors which may be representative of recent fluvial deposition.

D







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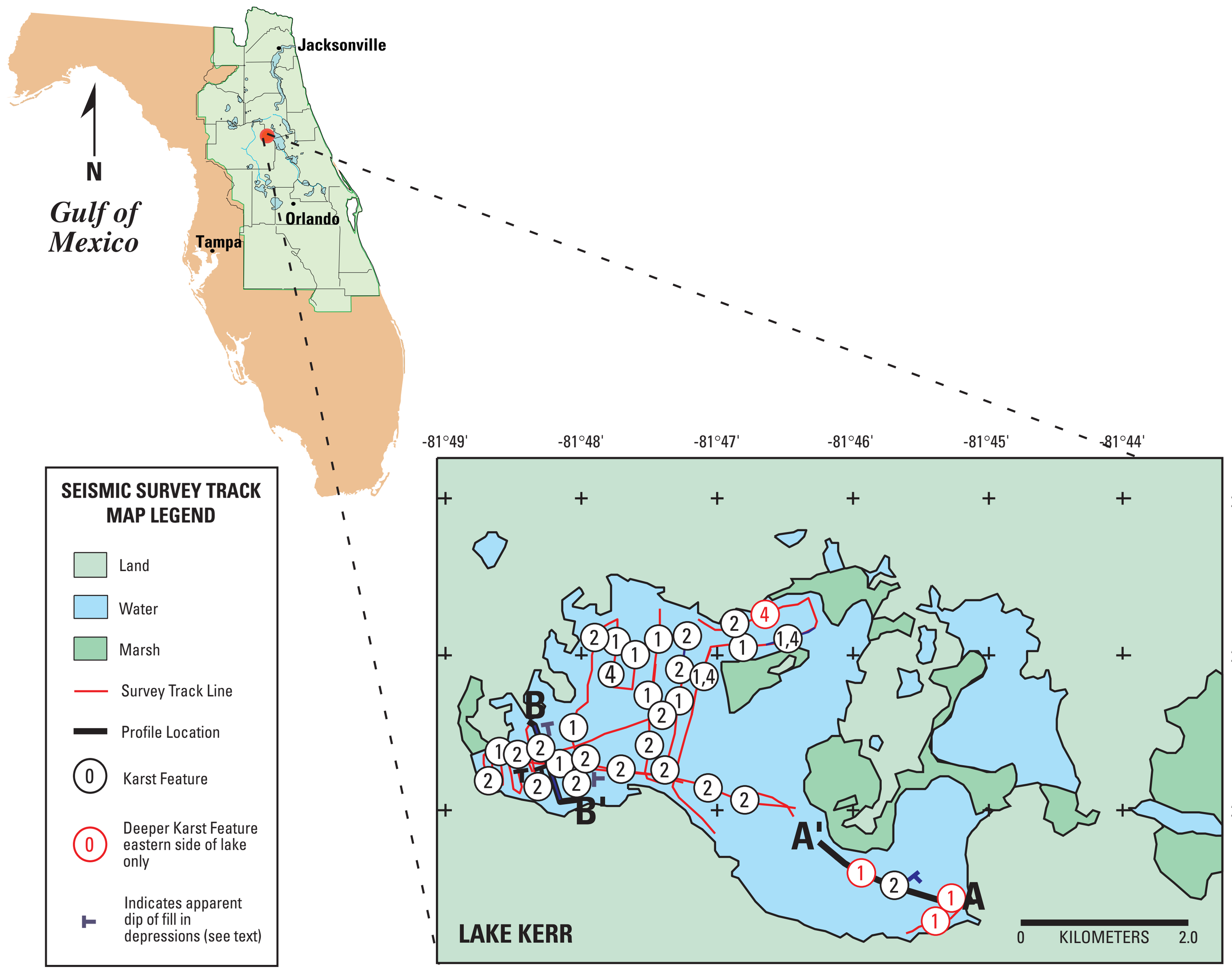
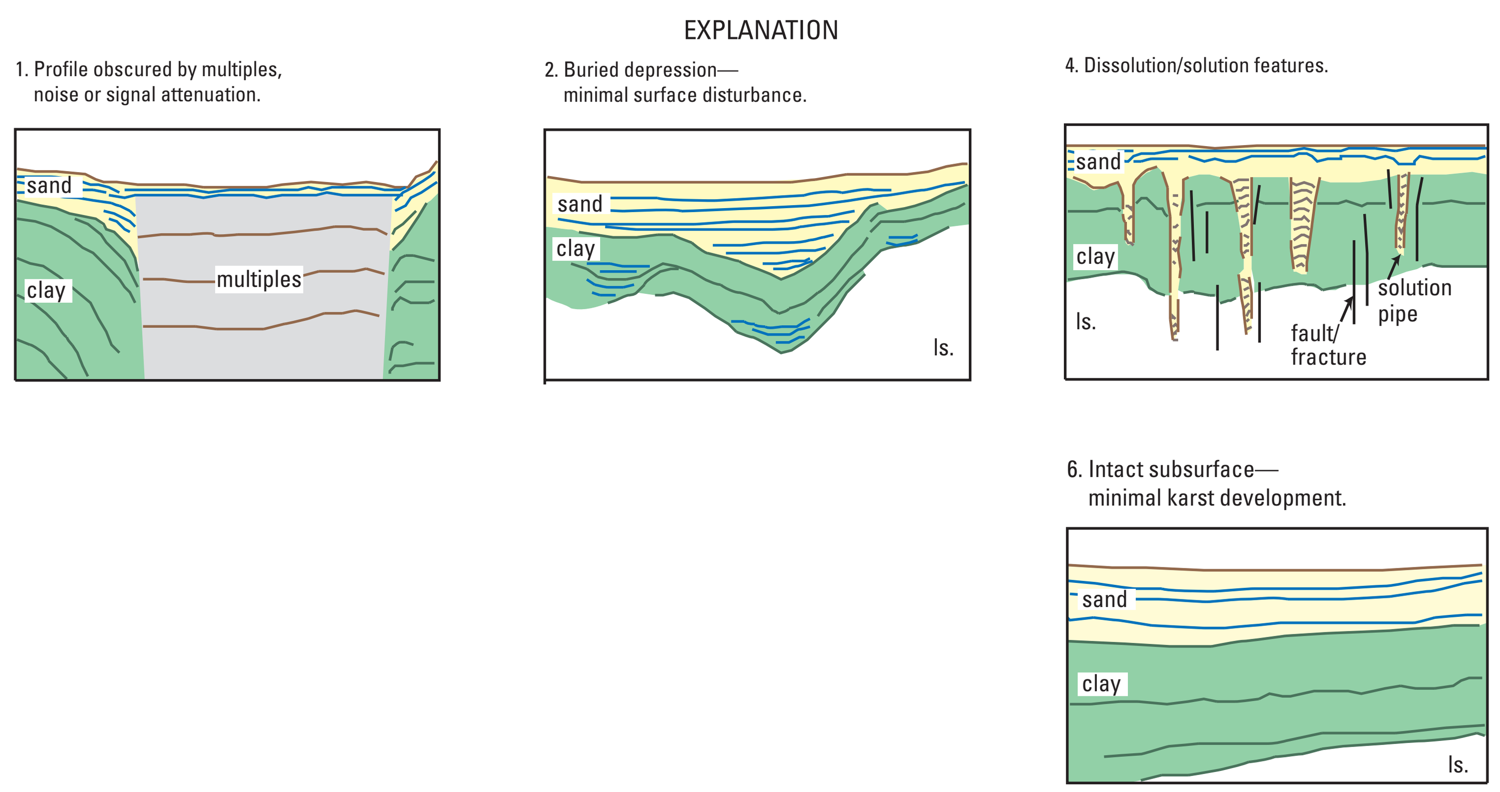
LAKE KERR
MARION COUNTY, FLORIDA





Introduction

Lake Kerr, in northeast Marion county, is located in the Ocala Scrub area of the Central Lake District. The vast Ocala National Forest lies directly to the south. The shoreline is very irregular and nearly divides the lake in two, with a total length of 30 km. The lake covers an area of about 17 sq km, water depth ranges between 2-4 m (~6-14 ft) water depth, but exceeds 5 m (~16 ft) in some areas. Salt Springs is located in the southeast portion of the lake and Salt Springs Run connects Lake Kerr to Lake George and the St. Johns River system to the east.

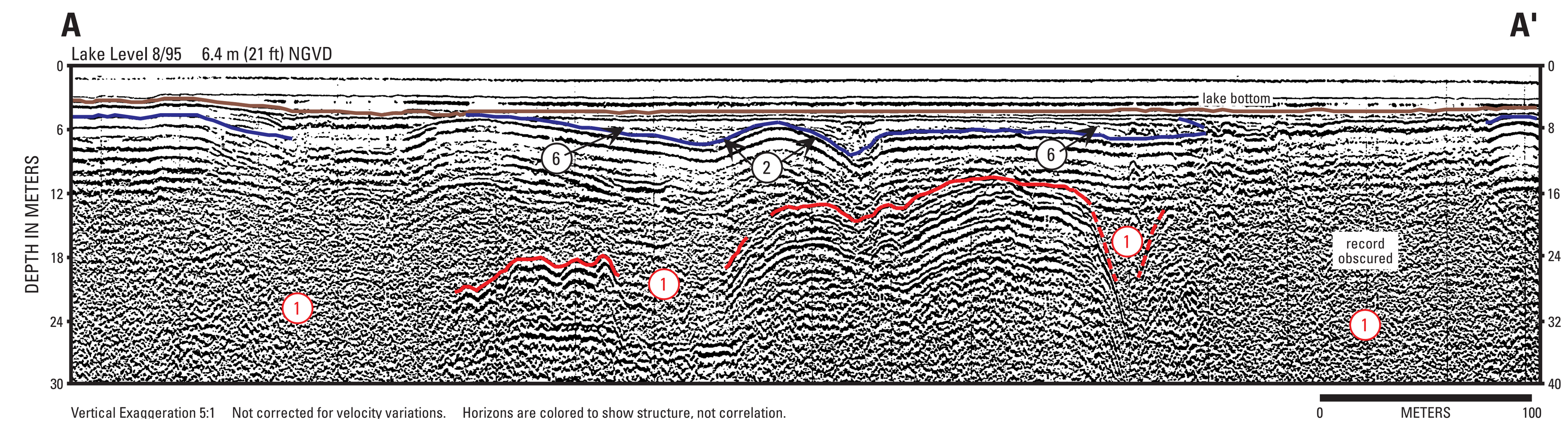
Subsurface Characterization

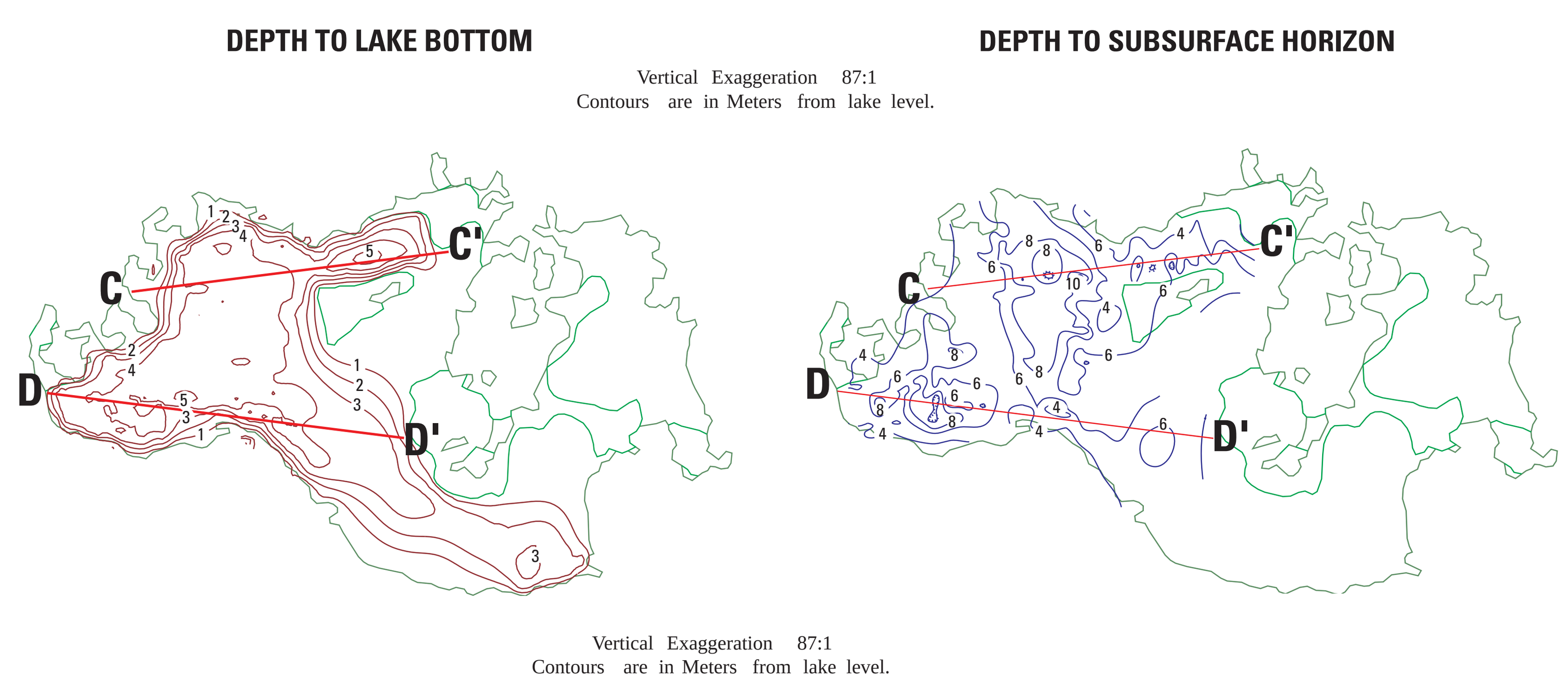
Lake Kerr is characterized by numerous subsidence depressions (type 2) tens to hundreds of meters in width (seismic profiles A-A', B-B'). Parallel to low angle reflectors within the depressions indicate active infilling during subsidence. The low-angle reflectors appear to dip toward the southeast when present in the record (black dip symbols, Index Map D, page 22). This infilling gives the lake a smooth bathymetry (brown line contour map), unlike the highly irregular subsurface in which the subsidence occurs (blue line contour maps and 2-D profiles). The reflective horizons that were digitized to produce the contour maps are shown on the seismic examples. The north and south cross sections, derived from the gridded contour data sets, shows this contrast very well and may indicate that subsidence had matured prior to deposition of the nearsurface sediments.

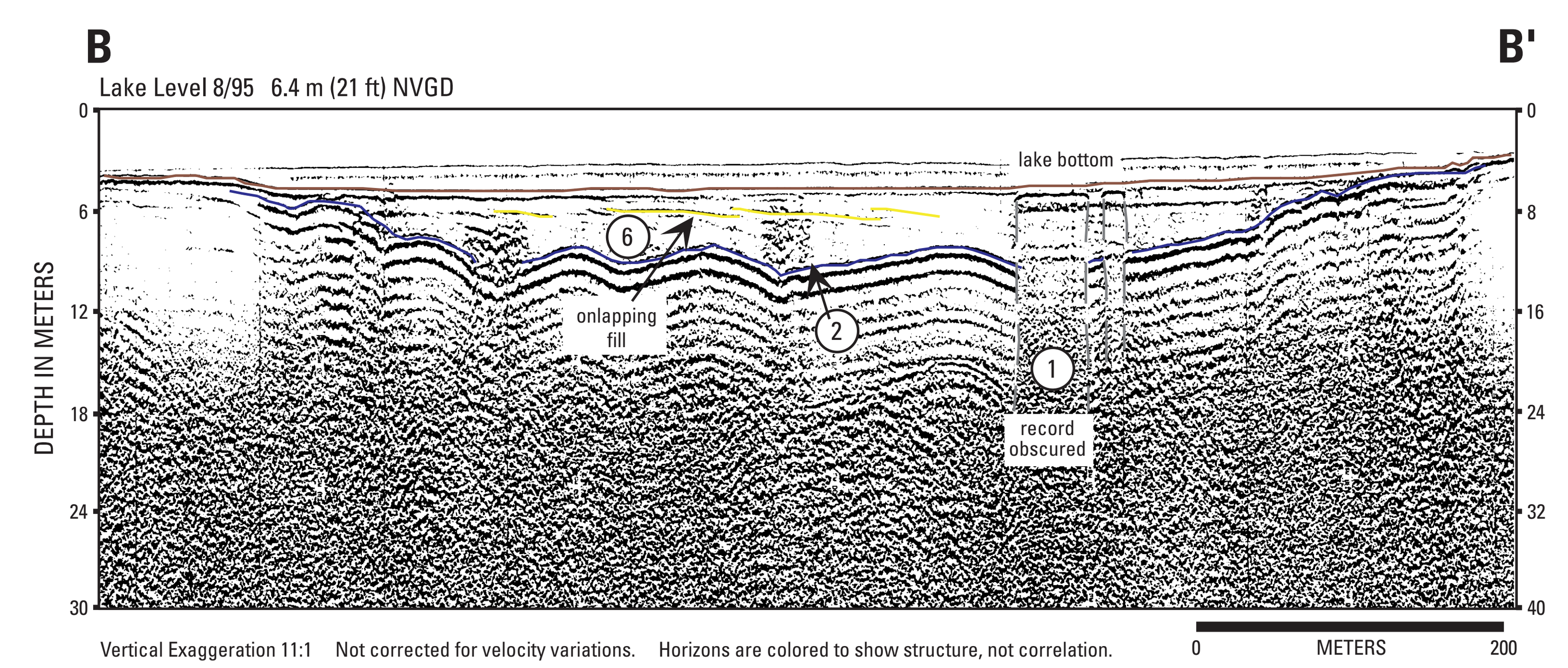
Noise in the seismic record decreases in the eastern part of the lake and deeper reflective horizons can be seen (seismic example A-A', red line). The acoustic signal in the lower horizons is more chaotic and contains very high angle reflectors, whereas the upper horizons have lower angle, intact reflectors. It seems apparent in the seismic profiles that more solution-type collapse has occurred in the lower horizons and that it has influenced a more gradual subsidence in the overlying material (blue line). During subsidence the depressions were filled, possibly during migration of paleo-dunes that define this physiographic region.

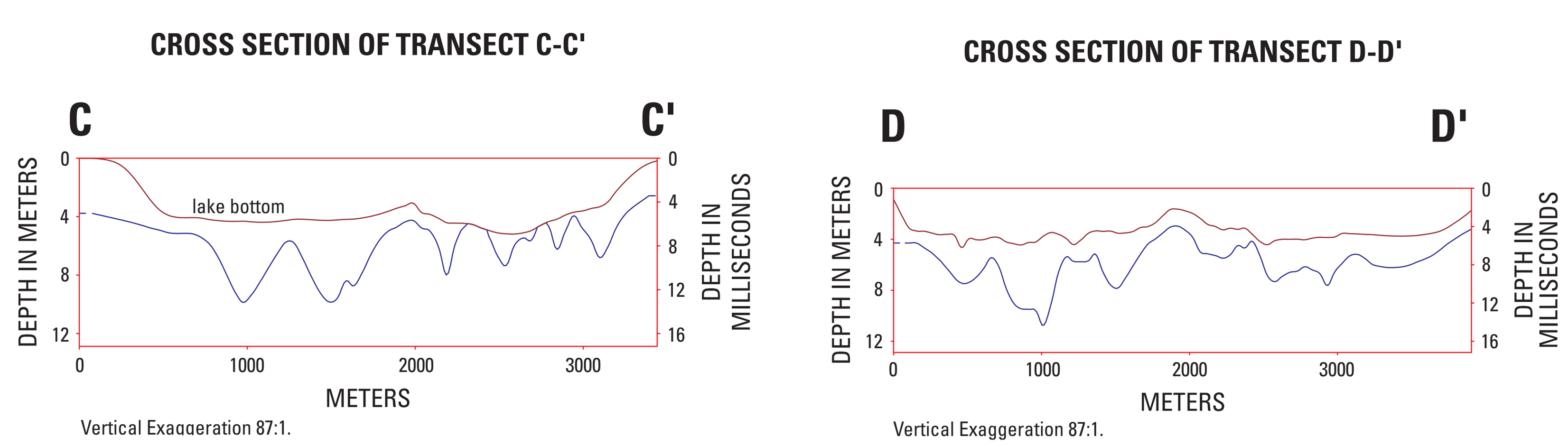
The contact between the Ocala Limestone and the Hawthorn Group, as interpreted from Gamma Log profiles, is deeper than resolvable depth in the seismic profiles. However, changes in Gamma counts in a well northeast of the lake (well M-0149, Index Map D, page 22) within the Hawthorn Group may correlate with the reflective horizons within profile A-A' at about 12 m.

D









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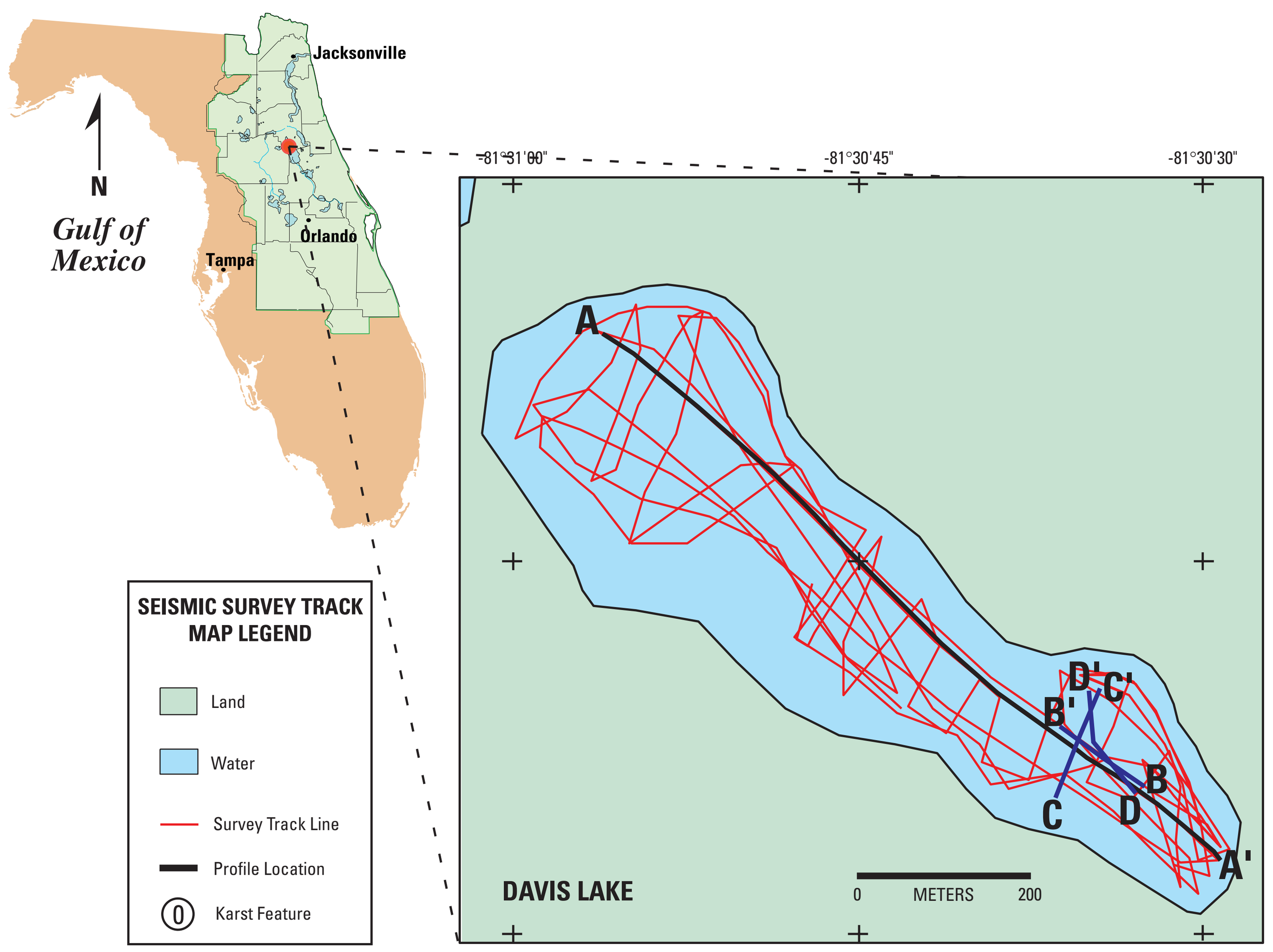
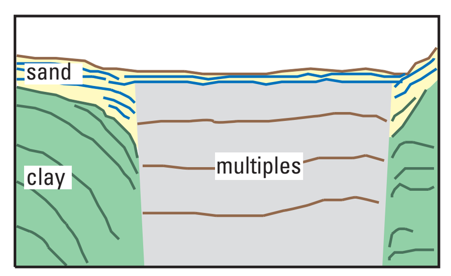


EXPLANATION

1. Profile obscured by multiples, noise or signal attenuation.



DAVIS LAKE

VOLUSIA COUNTY, FLORIDA

D

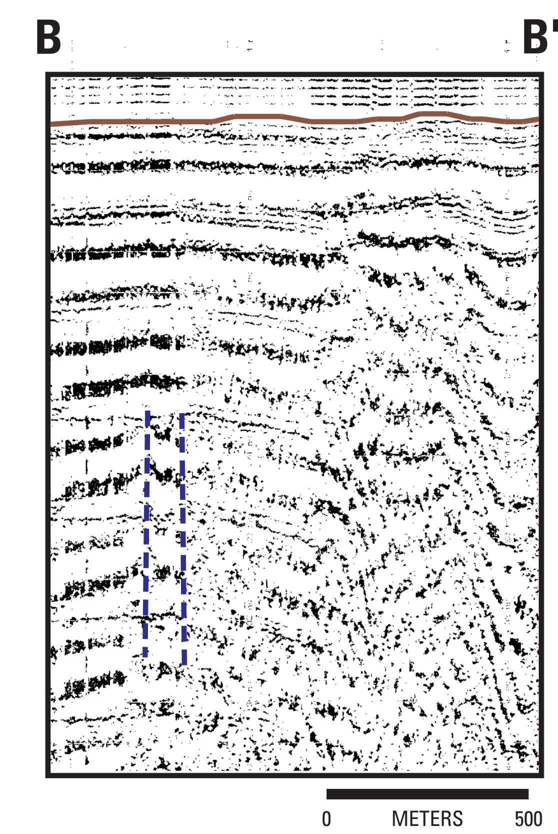
Physiography

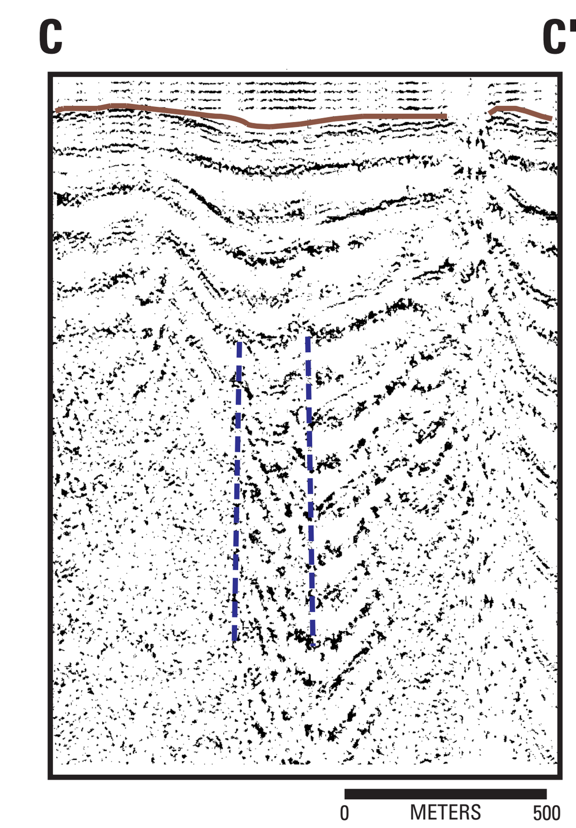
Davis Lake is located along the Crescent City Ridge in northwestern Volusia County. The ridge is described by Brooks and Merrit (1981), as a complex of Plio-Pleistocene sand hills resting directly on the Floridan Aquifer, which is within the Ocala Limestone. The active karst development of the uplifted limestone makes this area a principle recharge area for the aquifer, as evidenced by the numerous lakes in Volusia and Lake counties. The Crescent City Ridge bisects the marshy lowlands of the Crescent Lake Basin to the east and the St. John's River valley to the west. The ridge trends southeast-northwest, along with Deland Ridge to the south. Ridge heights reach ~30 m (100 ft) above sea level, lake level at the time of the survey was about 7.6 m (25 ft) NGVD. Lake Davis is elongate in shape, with a perimeter of 5 km covering an area of approximately 1.6 sq km.

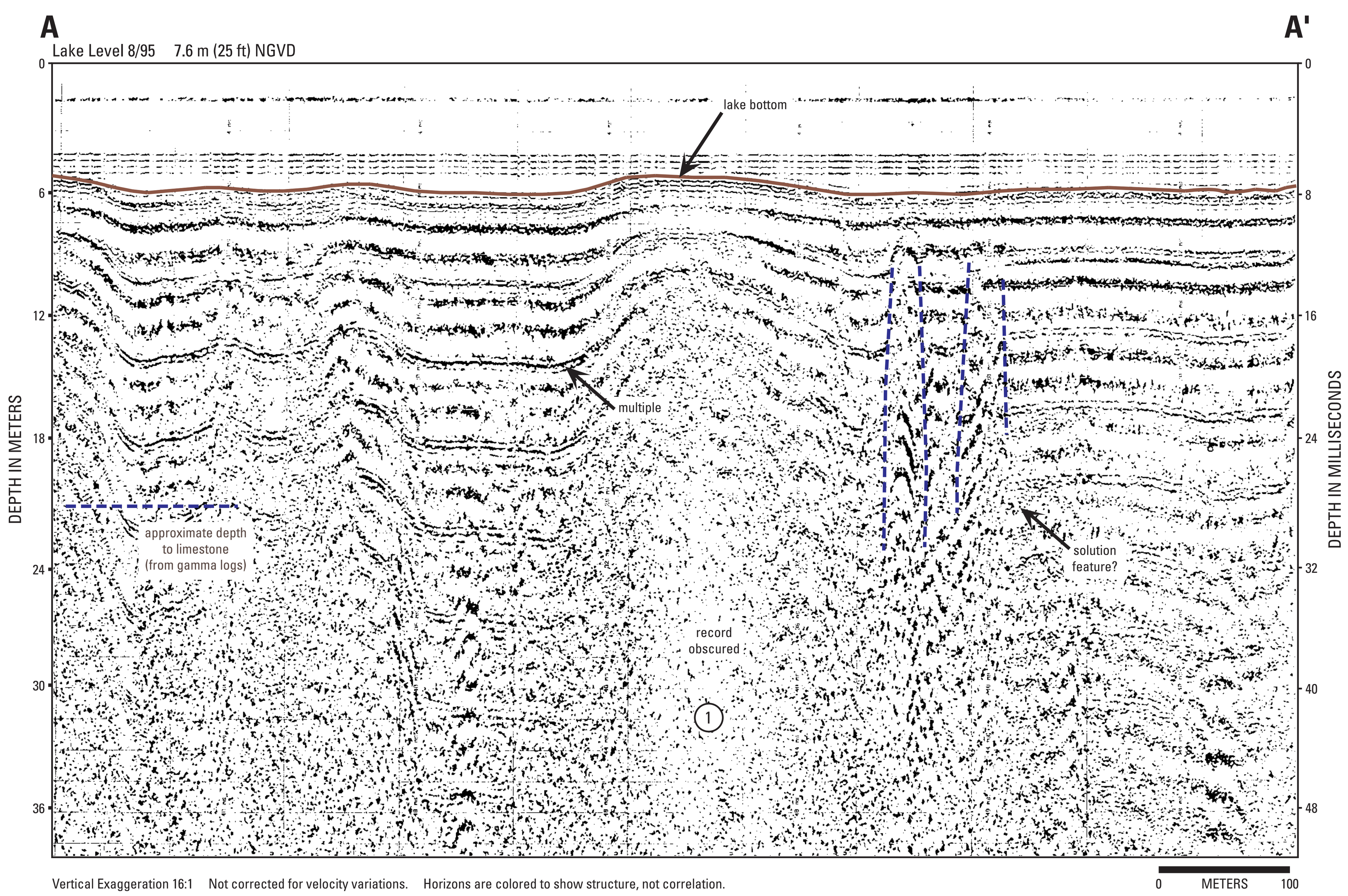
Geologic Characterization

The quality of the seismic profiles obtained from Davis Lake is poor. Multiples of the bottom reflector are seen throughout the data and obscure some of the record in the deeper portions of the lake. The record is also partially obscured in areas where the lake bottom nears the surface, as shown midway in profile A-A'. The multiples may be a result of lithologically homogeneous, hard packed sands near surface which tend to set up ringing in the acoustic return, accumulation of organic material at the lake bottom may also attenuate the signal. Profile A-A' does show one area of potential disturbance (red dashed line). The high angle reflectors, that become obscured by the multiples, may represent a dissolution feature which would indicate a breach in the overburden. The parabolic return (left-most feature bracketed by red dashed lines) unfortunately is also a pattern commonly associated with submerged pipelines.

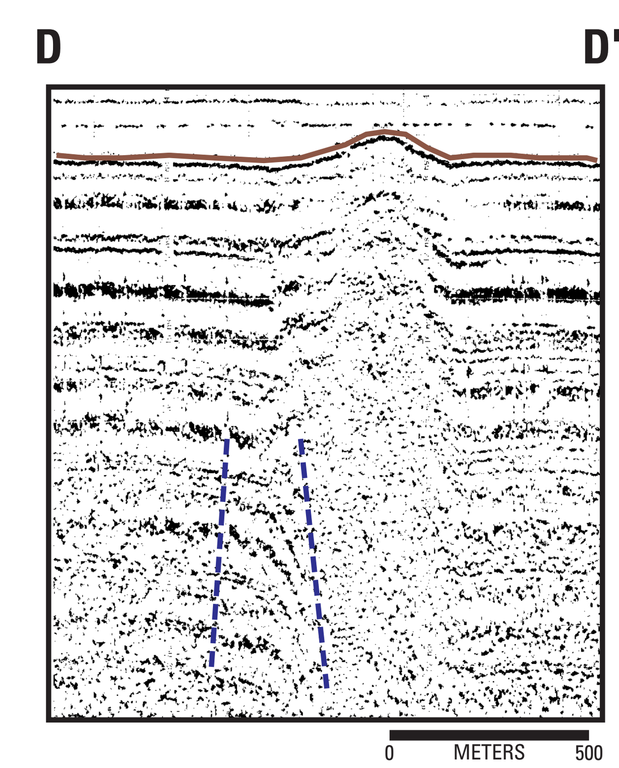
Three other lines that cross the same area are shown below right (B, C, D). The data is obscured by multiples, but inconsistencies in the acoustic return at depth may indicate a subsurface disturbance. Gamma-log profiles in the area (wells V-0346 and P-0146) show the contact between the Ocala Limestone and the overlying Hawthorn Group rising from about 21 m (70 ft) below mean sea level to the southwest, to 15 m (50 ft) below mean sea level north of the lake. This corresponds to approximately 20 m (-65.6 ft) below lake bottom, using an averaged sound velocity of 1500 m/s. This depth puts the top of the aquifer-bearing Ocala Limestone very near the surface. A breach through the overburden would increase the potential for contact between the surface waters and the aquifer.







Vertical Exaggeration 16:1 Not corrected for velocity variations. Horizons are colored to show structure, not correlation.



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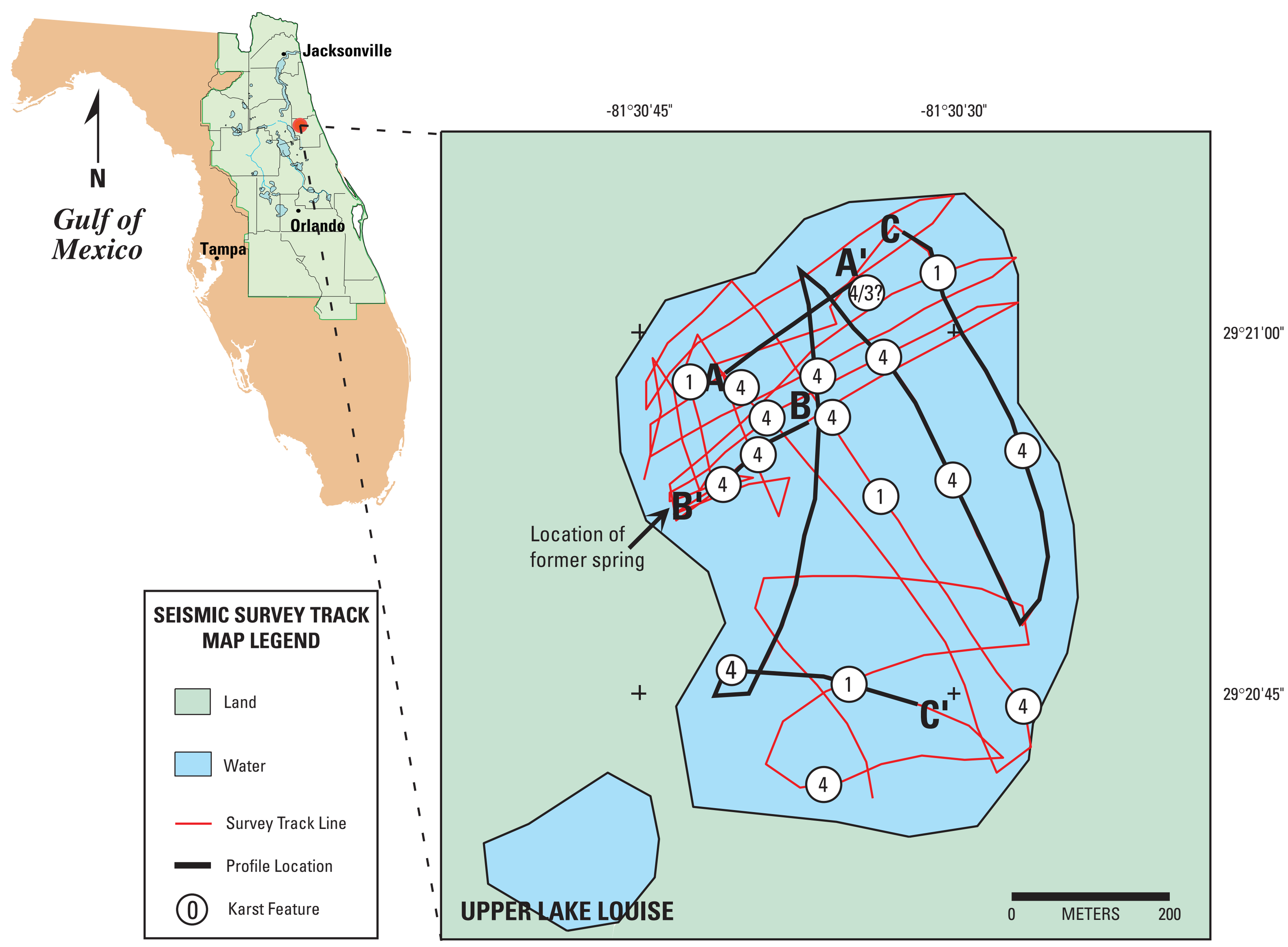
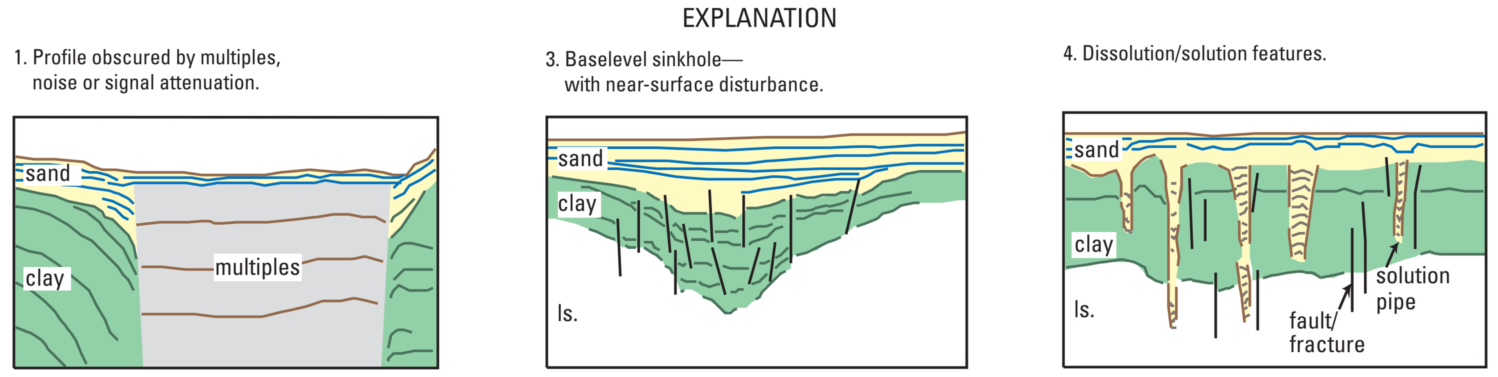
UPPER LAKE LOUISE
VOLUSIA COUNTY, FLORIDA





INTRODUCTION

Upper Lake Louise is situated within the Crescent City of the Central Lakes District. The area consists of sand hills with peak elevations between 24 to 30 m (80 to 100 ft) NGVD that are bordered to the west by the floodplain of the St. Johns River and Crescent Lake basin on the east. The elevation of Upper Lake Louise was approximately 12 m (40 ft) NGVD at the time of profiling. The lake covers an area of 1.7 sq km, with about 5 km (3 mi) of shoreline.

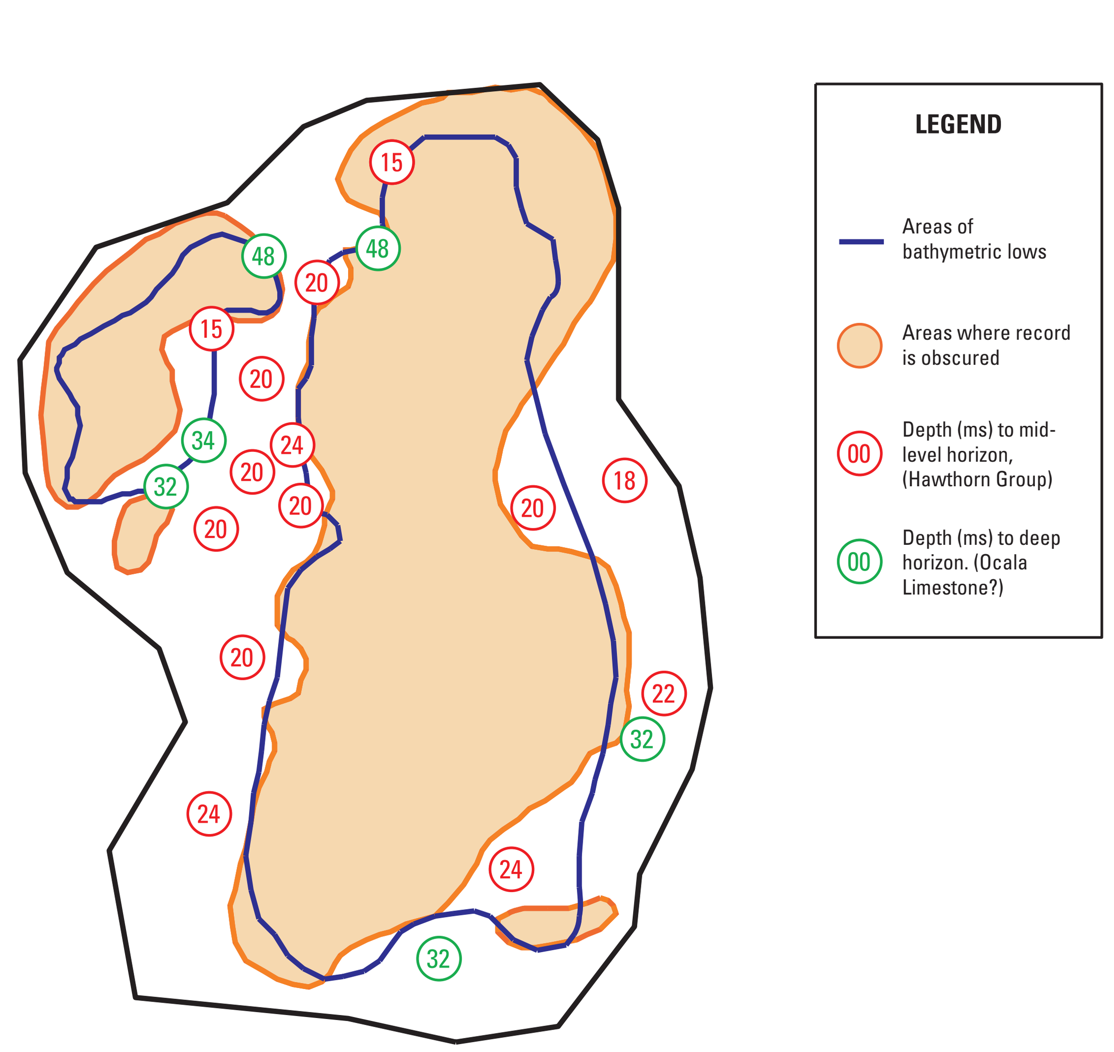
SUBSURFACE CHARACTERIZATION

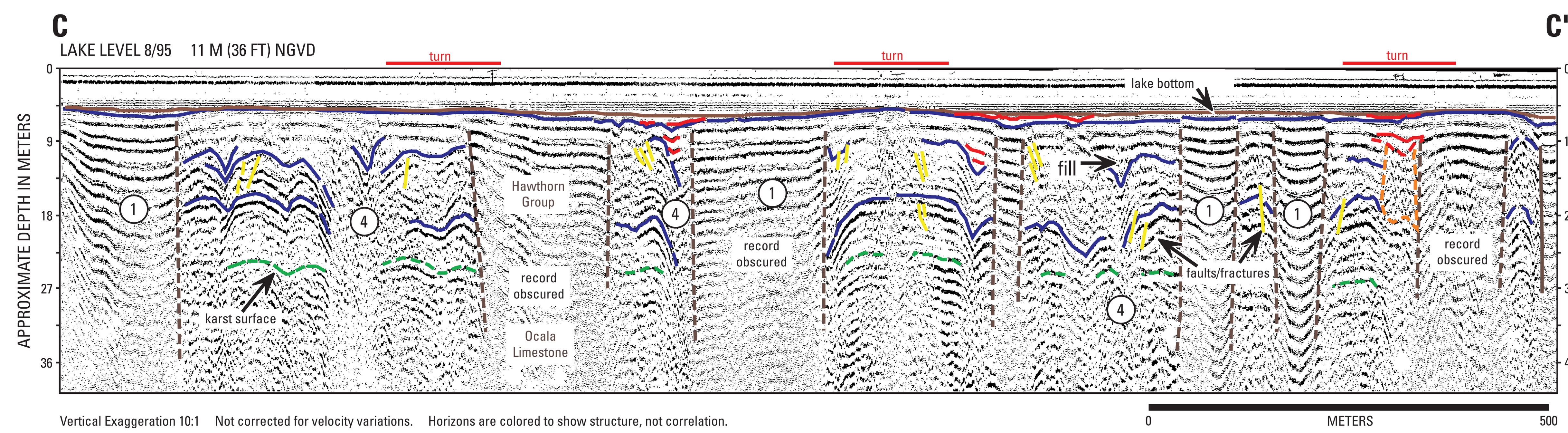
The surficial material of the Crescent City-Deland Ridge is composed of sand and shell. The ridge overlies the Hawthorn Group or in places directly overlies the Ocala Limestone (Brooks, 1981). Johnson (1986) describes a very thin Hawthorn Group (<3 m or 10 ft) at minus 1.5 m (5 ft) NGVD in a well about 5 km (3 mi) northwest of the lake. Natural gamma logs from wells depicted on the Gamma log profile sheet (Section D Hillshade page 24, wells P-0410, P-0146, P-0011) show logs with sufficient counts per second to characterize the Hawthorn Group. In some areas during deposition Hawthorn sediments have been reworked with the surficial Plio-Pleistocene sands of the Crescent City-Deland Ridge. The gamma response from these sediments may drop significantly as in well V-0283 located to the south. This situation makes delineating the Hawthorn Group more difficult. The top of the Floridan Aquifer was contoured by Rutledge (1982). For this area he identified this surface between -12 to -15 m (-40 to -50 ft) NGVD. The natural gamma log profiles also show this contact at -15 m (-50 ft) NGVD in wells P-0410 and P-0146, but it is not identifiable in P-0011 and P-0495 from the gamma logs alone.

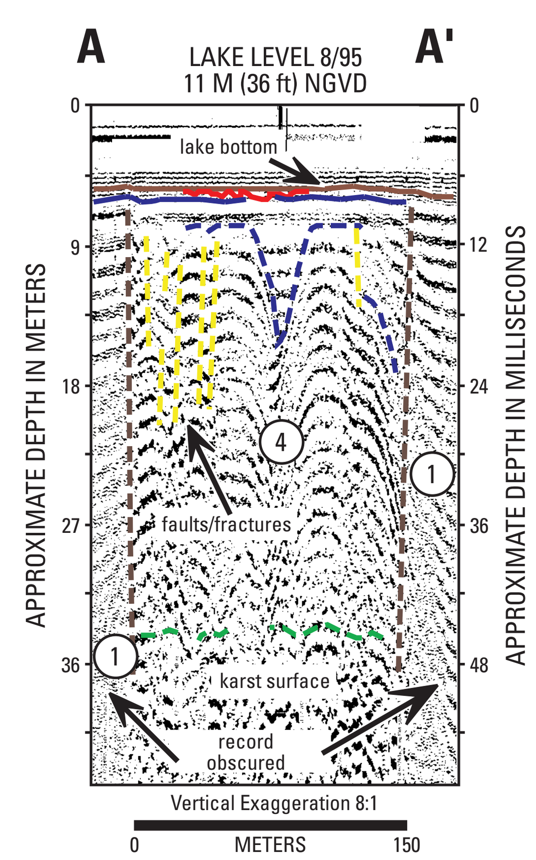
The seismic data from Upper Lake Louise is generally obscured by multiples in areas of bathymetric lows, as shown in the Distribution of Features map. This is consistent with lake bottoms of homogeneous sands, but also may be due to organic material accumulating in the deepest portions of the lake which tend to absorb the acoustic signal. The southern portion of the lake is characterized by a strong reflector at 20-24 ms (solid blue line, middle of profile C-C'). Depth to this mid-level horizon is shown in red numbers on the Features Map, and indicates a slight dip to the south across the lake. Correlation with gamma logs from wells adjacent to the lake would suggest that the horizon represents stratigraphy within the Hawthorn Group. The horizon is overlain by material of low reflective potential, possibly fill material or massive clays (middle of profile C-C'). Sediments within the Hawthorn Group exhibit major slumping and discontinuities, as seen in the example profiles. Profiles A-A' and B-B' show possible sinks, along with accommodation fractures or faults adjacent to the subsidence. The northern portion of the lake is characterized by numerous type 4 features (profiles A-A', B-B', C-C'), or a common characteristic where dip in a reflector is apparent but obscured by noise (profile C-C'). The features extend from near the lake bottom to depth and may indicate areas of potential leakage. A horizon very near the sediment surface can be resolved from the data (solid blue line), with infilling (red lines). At depth, a strong reflective horizon is evident between 30-48 ms (dashed green line). The horizon is punctuated by numerous discontinuities and elevation changes. The gamma logs indicate the top of the Ocala Limestone to be at about -15 to -24 m (-50 to -80 ft) below mean sea level, which correlates with this horizon. Dissolution of the Ocala Limestone would cause the subsidence seen in the overlying material of the Hawthorn Group. If the material above the mid-level horizon is impermeable massive clays, the discontinuities represent major breaches across the confining unit. Evidence of the breaches are substantiated by reports from local residents who indicate that a spring once flowed from the northwest section of the lake decades ago (see Seismic Survey Map). The spring was used as a water supply until flow ceased as the majority of the region changed from an area of discharge to recharge to the Floridan aquifer (Boniol and others, 1993).

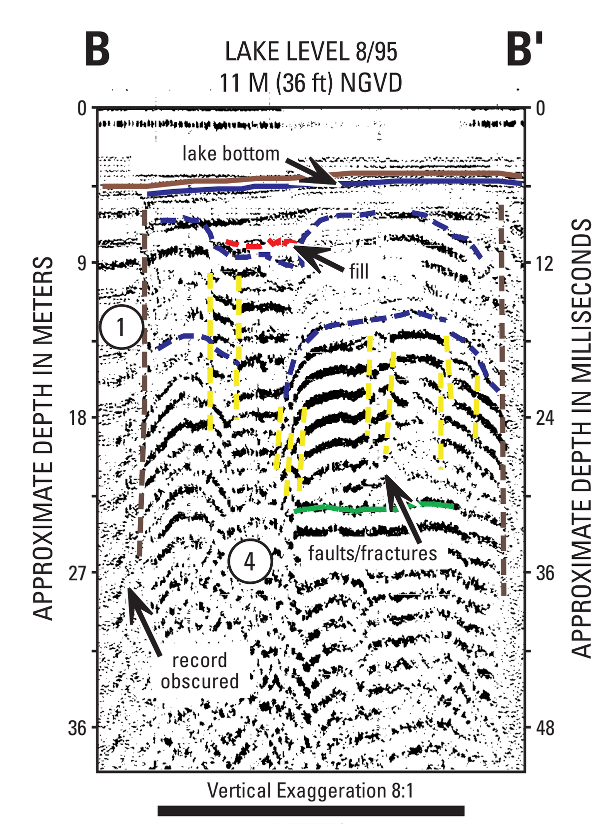
D

UPPER LAKE LOUISE
DISTRIBUTION OF FEATURES
(noted from seismic profi les)









Subsurface Characterizations of Selected Water Bodies in the St. Johns River Water Management District, Northeast Florida

Jack L. Kindinger[1], Jeffrey B. Davis[2], and James G. Flocks[1]
2000

[1] Center for Coastal Geology and Regional Marine Studies
U.S. Geological Survey
St.. Petersburg, Florida 33701

[2] St. Johns River Water Management District
Palatka, Florida 32178

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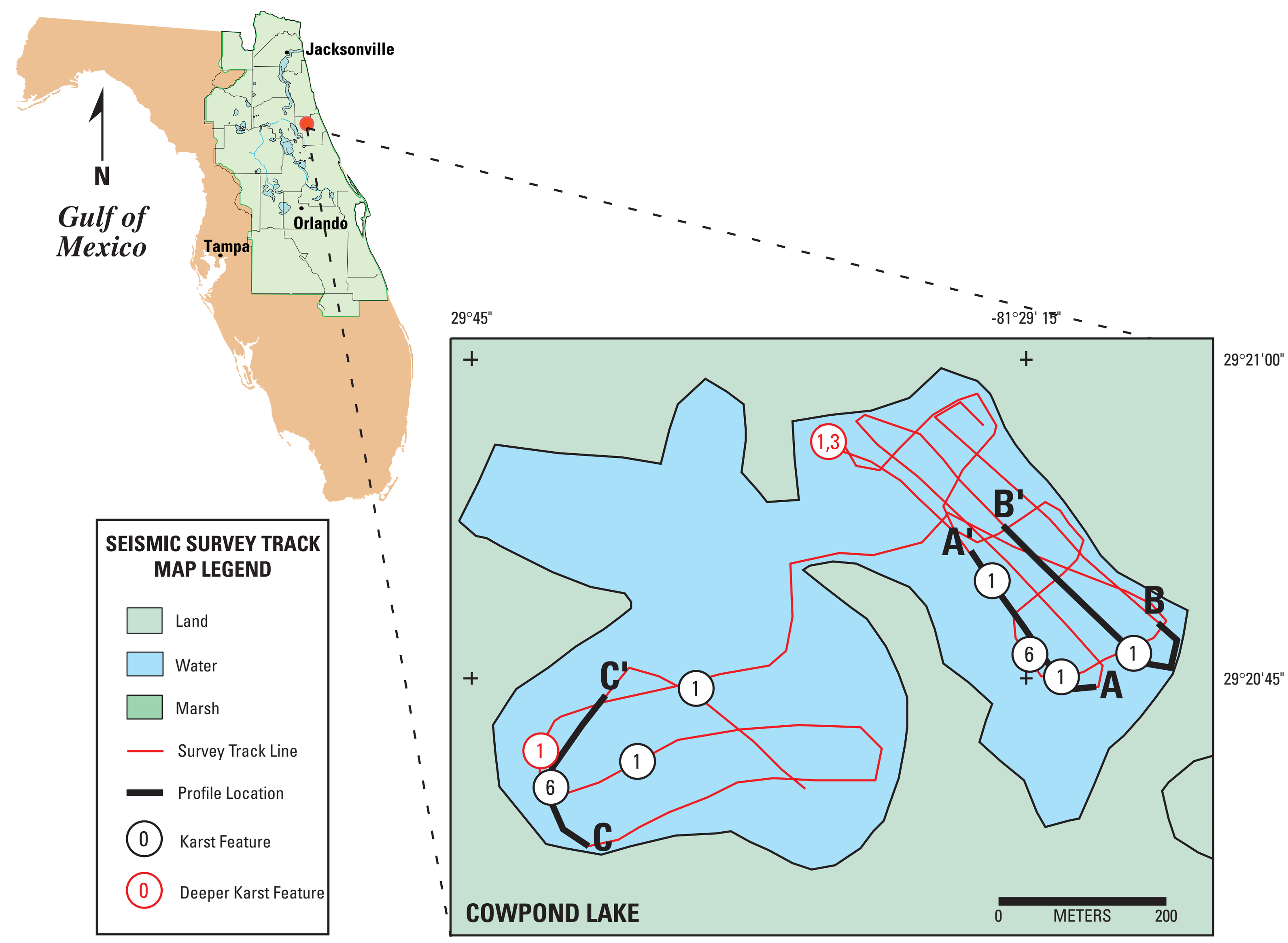
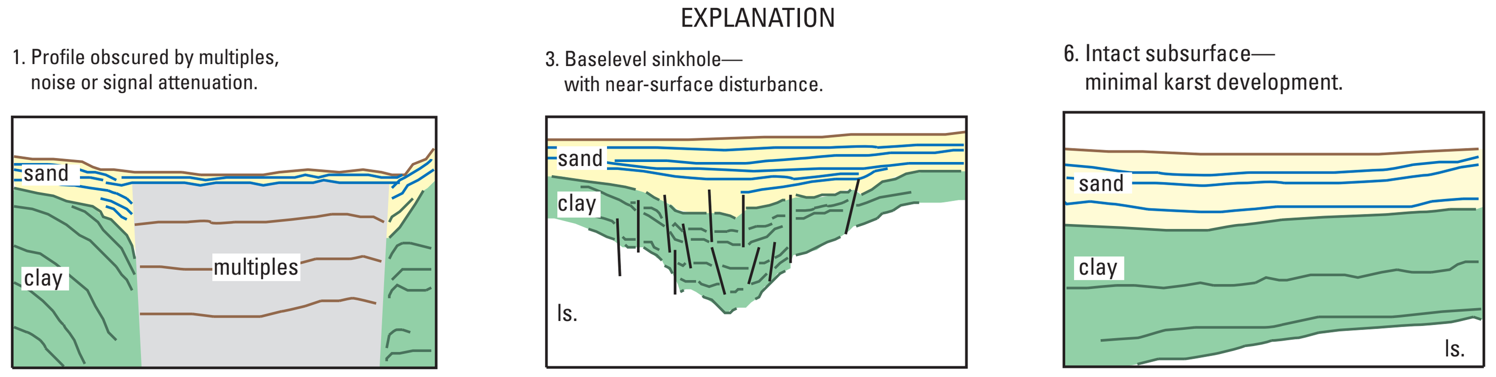
COW POND LAKE

VOLUSIA COUNTY, FLORIDA



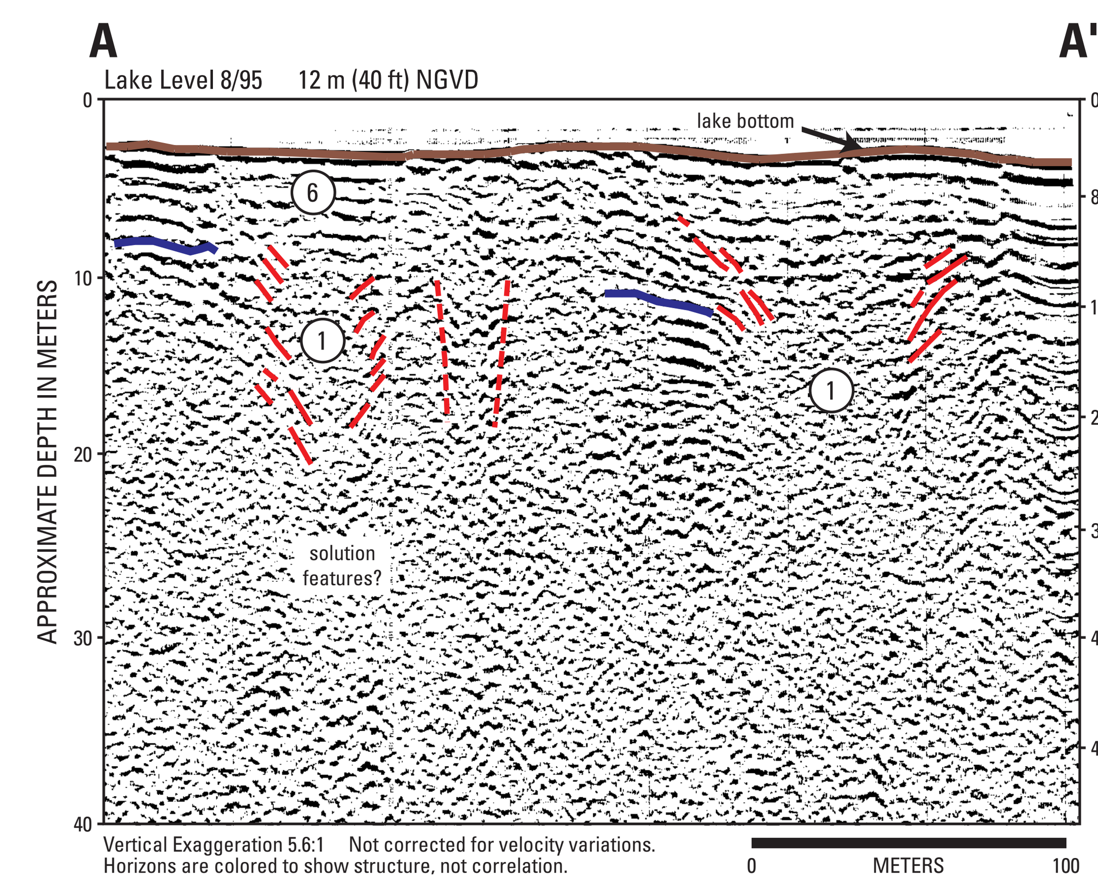


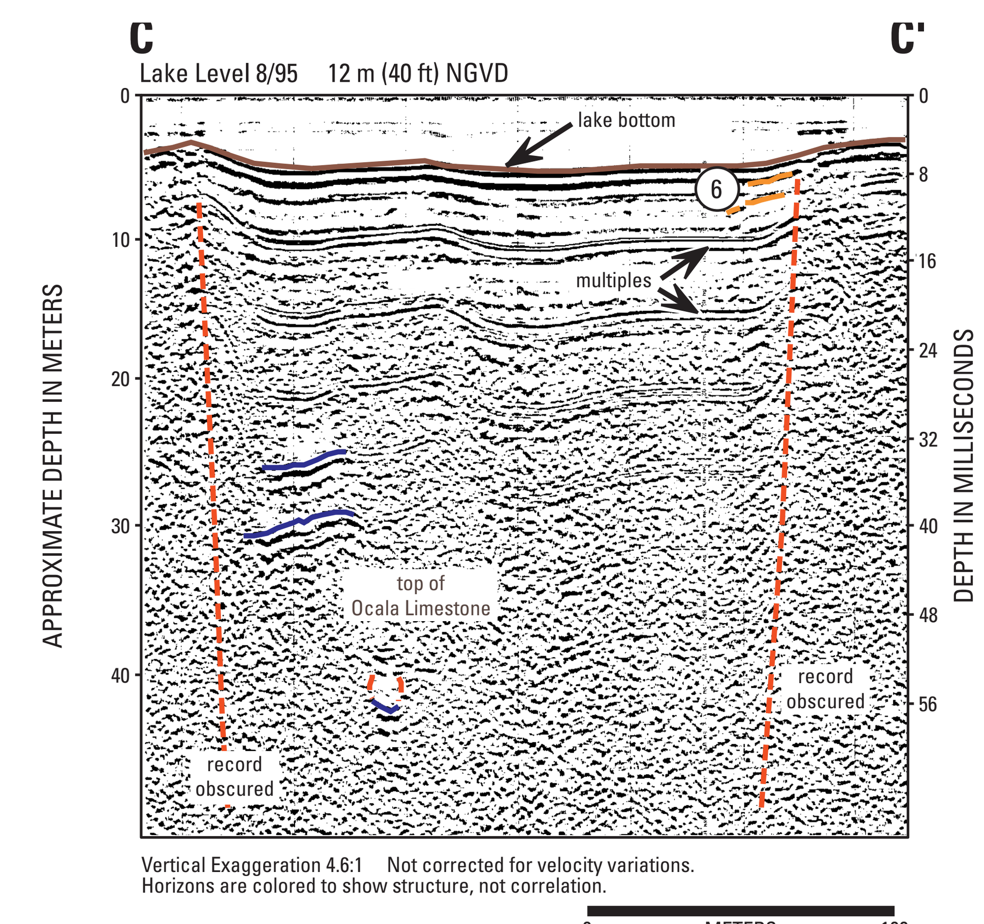
Introduction

Cow Pond Lake is located along the Crescent City Ridge in northwestern Volusia County. The ridge is described by Brooks and Merrit (1981) as a complex of Plio-Pleistocene sand hills resting directly on the carbonates that comprise the Floridan aquifer. Active karst development is evidenced by the numerous lakes in Volusia and Lake counties. The Crescent City Ridge bisects the marshy lowlands of the Crescent Lake Basin to the east and the St. John's River valley to the west. The ridge trends southeast-northwest, along with Deland Ridge to the south. Ridge heights reach 30 m (100 ft) above sea level, lake levels at the time of the survey were about 12 m (40 ft) NGVD. Cow Pond's irregular shape gives it over 5 km of shoreline with an area of only 0.6 sq km.

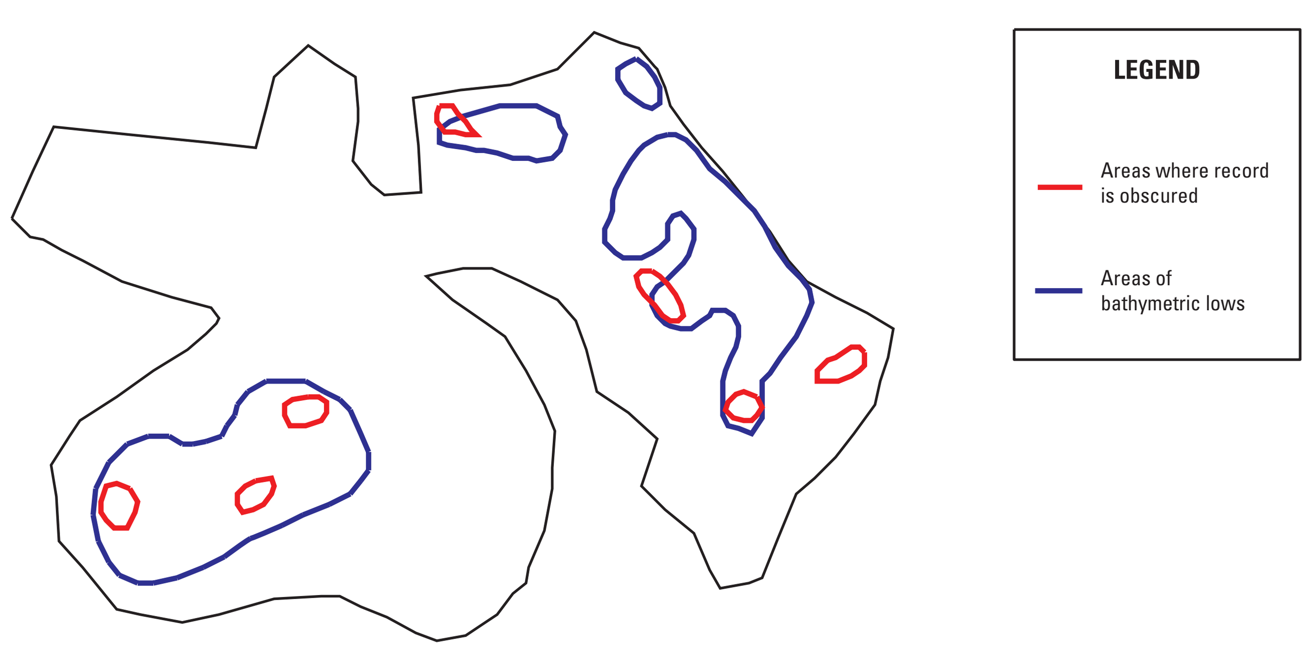
Subsurface Characterization

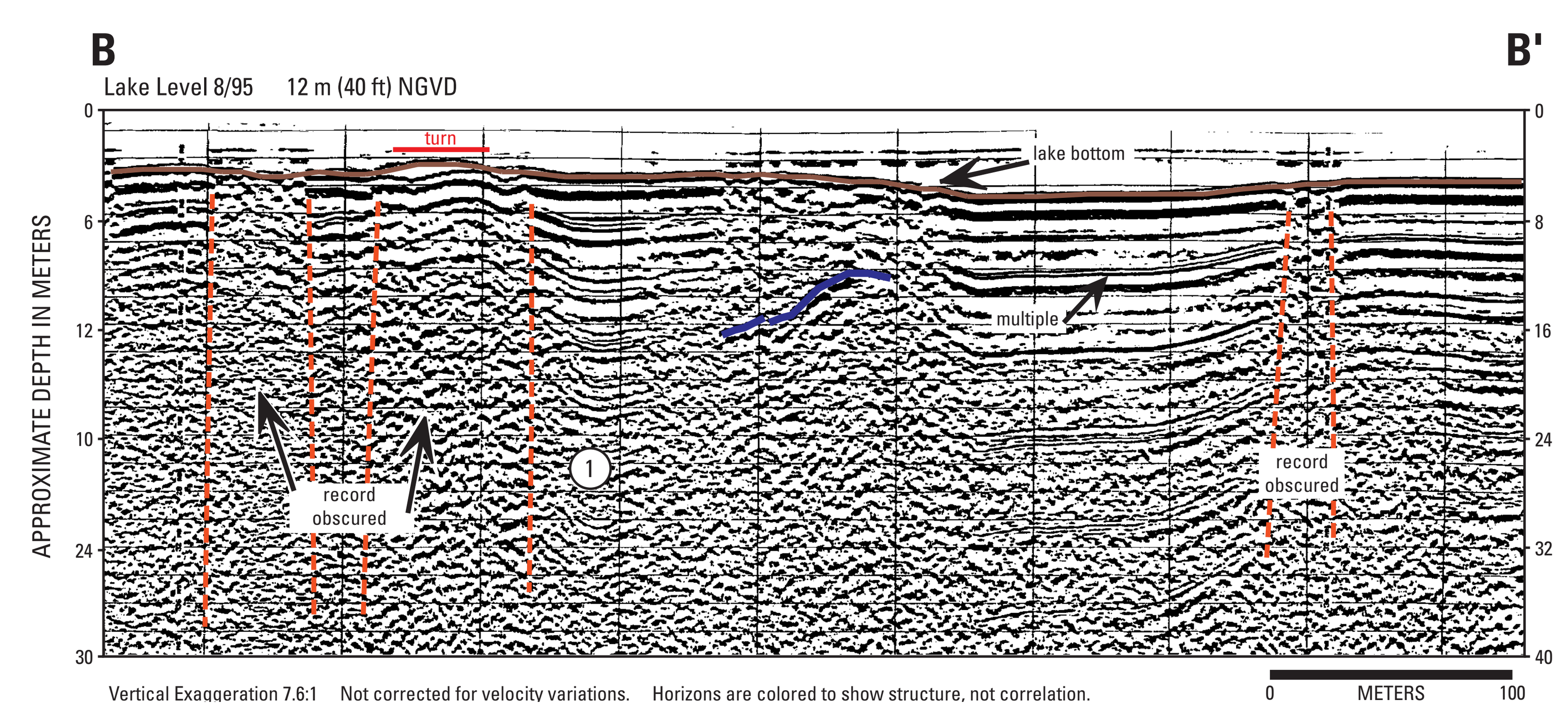
The quality of the seismic profiles obtained from Cow Pond Lake is generally poor. A strong bottom reflector leads to multiples, seen throughout the data, that obscure some of the record in the deeper portions of the lake. The record is also partially obscured in areas where the lake bottom nears the surface (profiles B-B', C-C'). Areas above the first multiple show sediment fill (type 6, profile C-C') and evidence of near surface subsidence (type 1, profile A-A'). These patterns are identical by down-dipping reflections on the flanks of a zone of obscured record. The type 1 features extend to depth in the profiles and occur in numerous, constrained areas throughout the lake. Areal extent of features noted from the seismic profiles can be seen in the map to the lower left. The distribution map shows that the lake is comprised of small solution/subsidence features rather than one predominant subsidence as seen in other lakes. Most of the type 1 reflection patterns seen in the lake extend to depth from the near lake bottom. Two areas of the lake, however, show deeper solution/subsidence type features (red numbers, survey track map) that do not extend entirely to the surface. These features may have evolved on a different time scale (earlier and infilled, or later and not fully developed) or hydrologic regime than the other type 1 features. Throughout the seismic profiles, segments of a strong reflector can be seen at depth where the record is not obscured (blue lines). These reflectors may represent the karst surface of the Ocala Limestone. Interpretations of gamma logs from wells in the vicinity (see Index Map D, page 22, wells P-0416, V-0346, V-0184) infer the top of the Ocala Limestone to range from -15 to -22 m (-50 to -75 ft) below sea level. The depth corresponds to 36 to 46 ms below the lake surface, using an averaged sound velocity of 1500 m/s. This correlates with the strong reflector seen in profile C-C'. The material above the Ocala Limestone could be the sands and clays of the Hawthorn Group and subsidence fill from the Plio-Pleistocene ridge sediments.





COWPOND LAKE
DISTRIBUTION OF FEATURES
(noted from seismic profi les)





Subsurface Characterizations of Selected Water Bodies in the St. Johns River Water Management District, Northeast Florida

Jack L. Kindinger[1], Jeffrey B. Davis[2], and James G. Flocks[1]
2000

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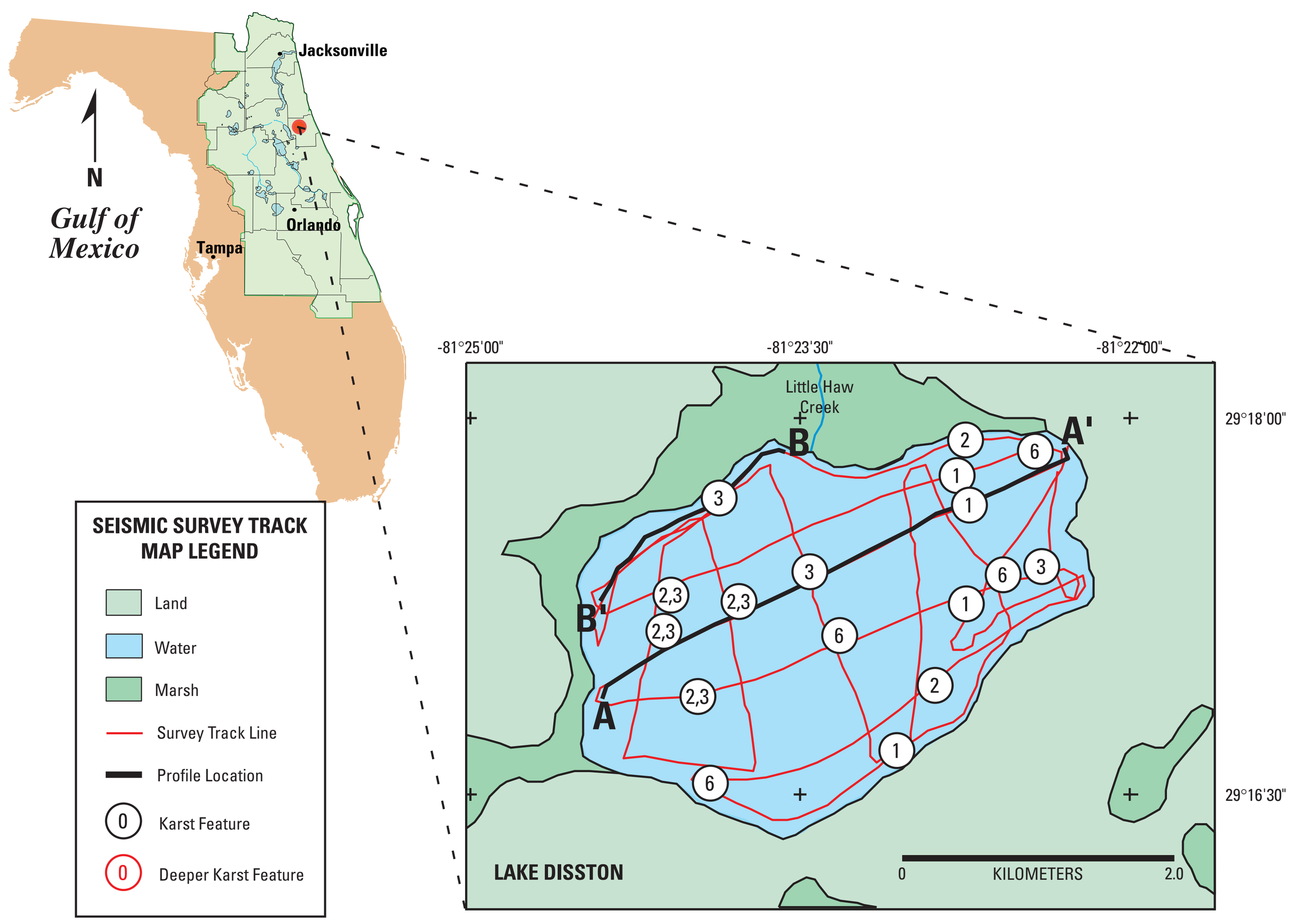
LAKE DISSTON
FLAGLER COUNTY, FLORIDA

D



INTRODUCTION

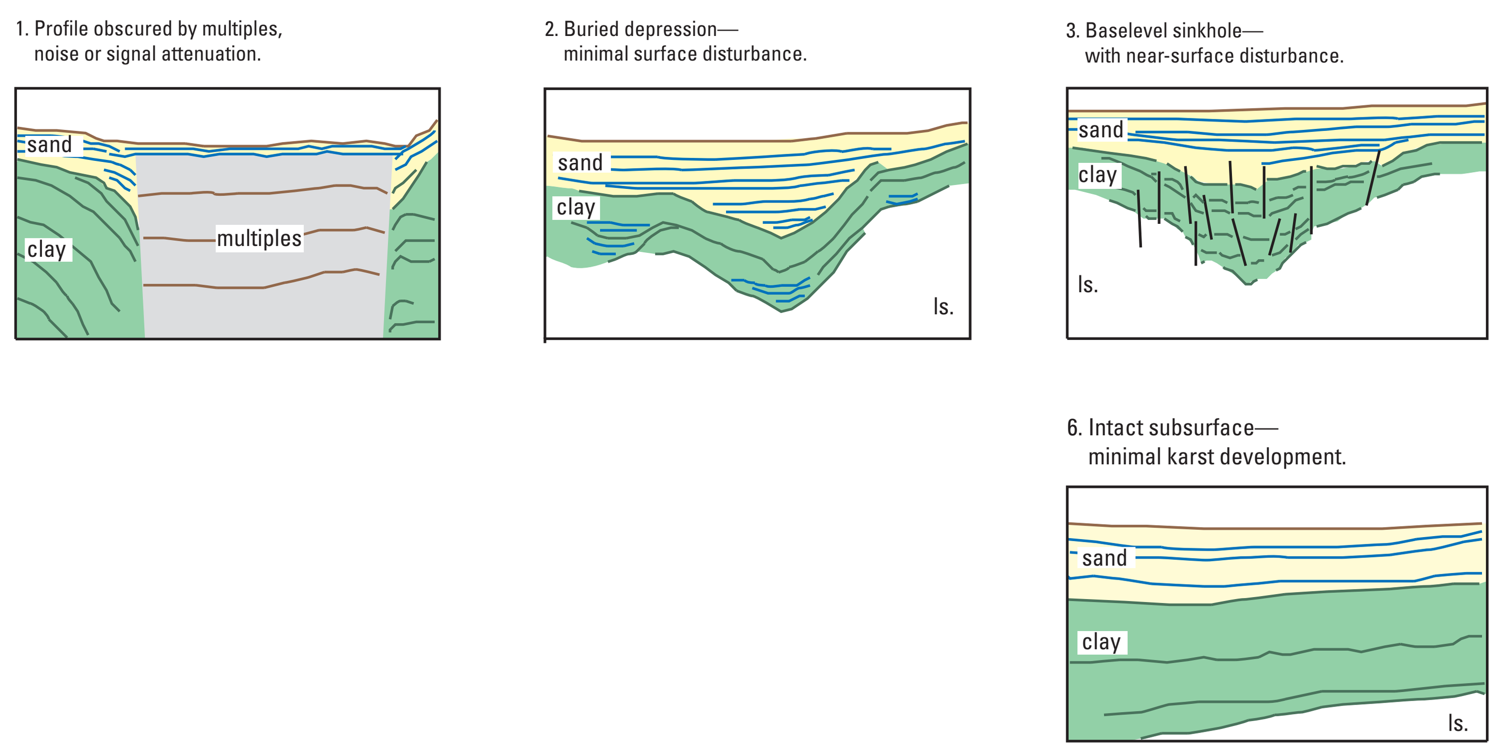
Lake Disston is in the extreme southwestern corner of Flagler County, Florida. The lake is located east of the southern tip of the Crescent City Ridge and northwest of the northern tip of the Deland Ridge. It resides in the Pamlico Terrace. Lake elevation at the time of the seismic survey was ~4.26 m (14 ft) NVGD. Lake Disston is oval shaped, ~4.2 x 2.4 km with a perimeter of 10.8 km and the surface area 15.5 sq km. Average water depth during the survey was 1.5 to 1.8 m (5 - 6 ft). The lake is surrounded by a plain with 61 m (~20 ft) average elevation and is bordered on the north by marsh associated with Little Haw Creek. Woodlands occur to the south.

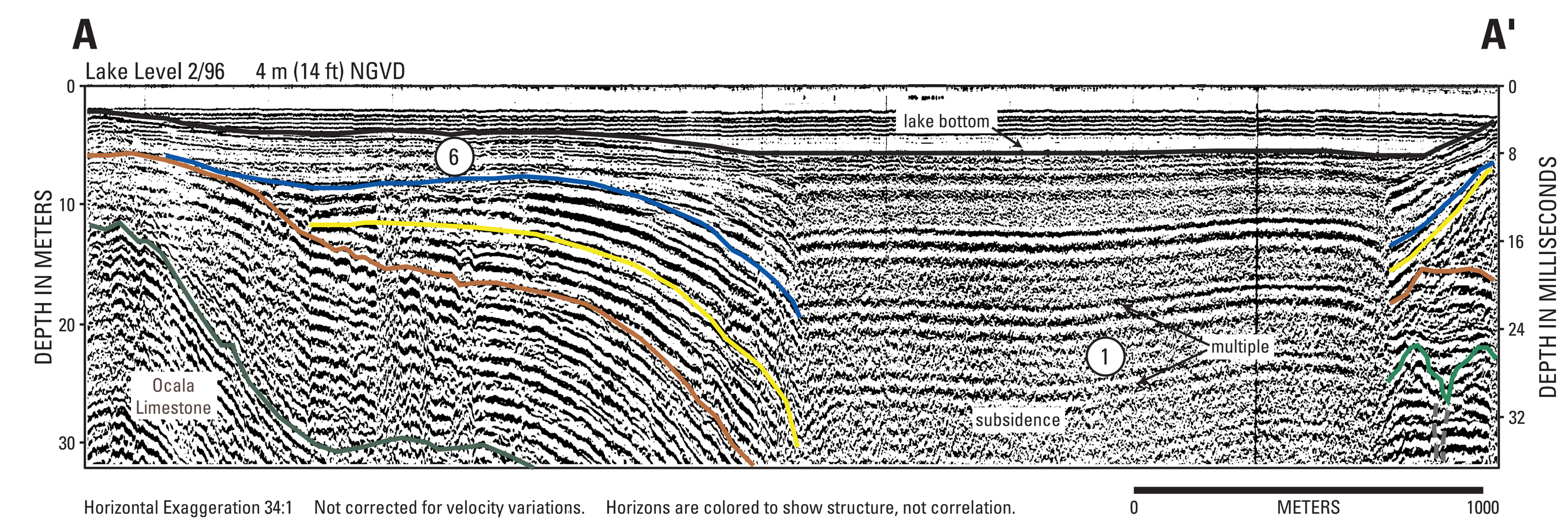
SUBSURFACE CHARACTERIZATION

Lake Disston is characterized by a variety of seismic reflectors. These reflectors are consistent throughout the lake and are represented by the colored lines in seismic profiles A-A' and B-B'. The lines have been digitized and the depths to the reflectors plotted as contour maps shown below left. In the eastern part of the lake there is a large subsidence (> 1 km), obscured by noise in the record (Profile A-A' and Contour Maps). The western part has several smaller, near surface and deeper depressions (types 2 and 3, profile B-B'). The deep subsurface relationship between this complex and the larger subsidence is uncertain. Seismic Profile B-B' shows a deeper subsidence (type 3) with infilling by Hawthorn Group sediments that appear to have fracturing or dissolution type features that have distorted the overburden (profile B-B', yellow line). These features may provide conduits for surface water recharge of the aquifer. Except for near surface sediments, the strata has subsided. High frequency, horizontal reflectors near the surface may represent more lacustrine type fill, with no apparent disturbance (above green line).

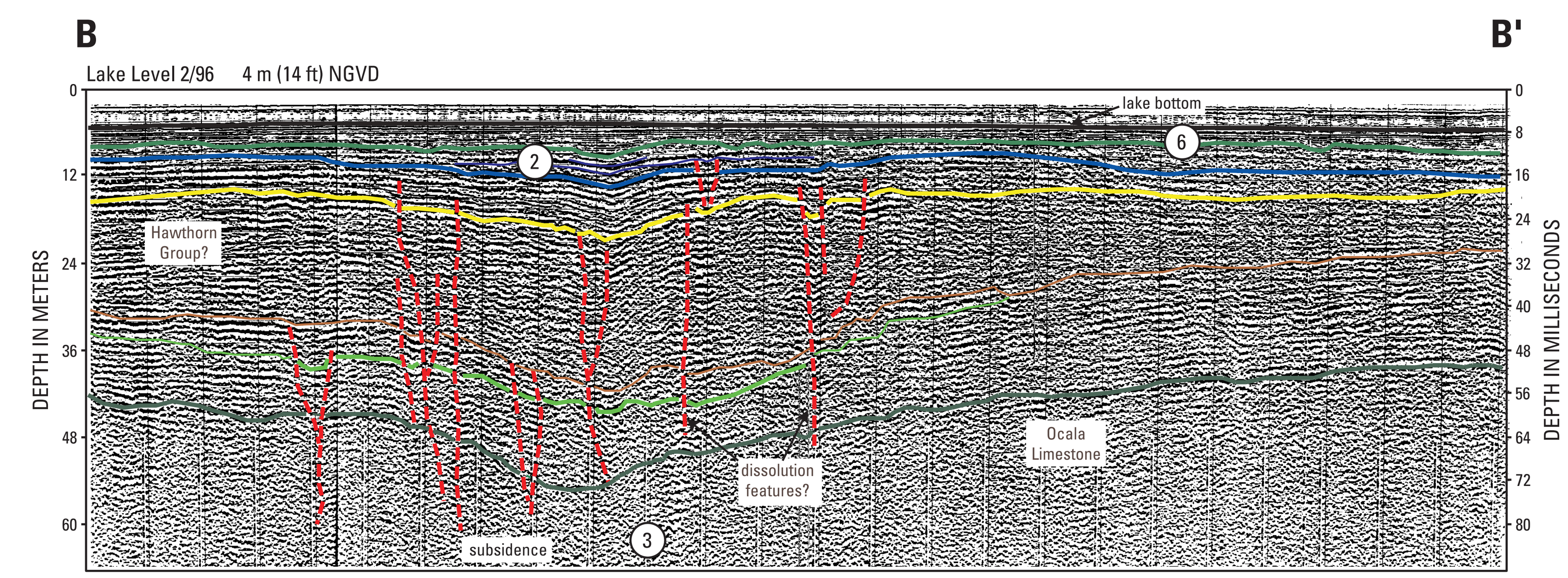
Logs from wells in the area (Gamma log profile sheet, wells V-0339, F-0296) show the depth to the Ocala Limestone to decrease from about -46 m (-150 ft) NVGD east of the lake to about -15 m (-50 ft) NGVD to the west. The reflective horizon represented by the dark green line in profiles A-A' and B-B', correlates with this contact. The variable relief of this horizon, as expressed on the left side of profile A-A', and in the contour plot (Depth to Limestone) and subsurface two dimensional profile C-C', is characteristic of mature karst development and a subsidence sinkhole. Besides the large depression in the east central portion of the lake (Depth to Limestone contour plot), there also appears to be dip in the karst surface to the northwestern portion of the lake. The plot of the intermediate horizon shows subsequent subsidence in the overlying Hawthorn Group sediments.

EXPLANATION



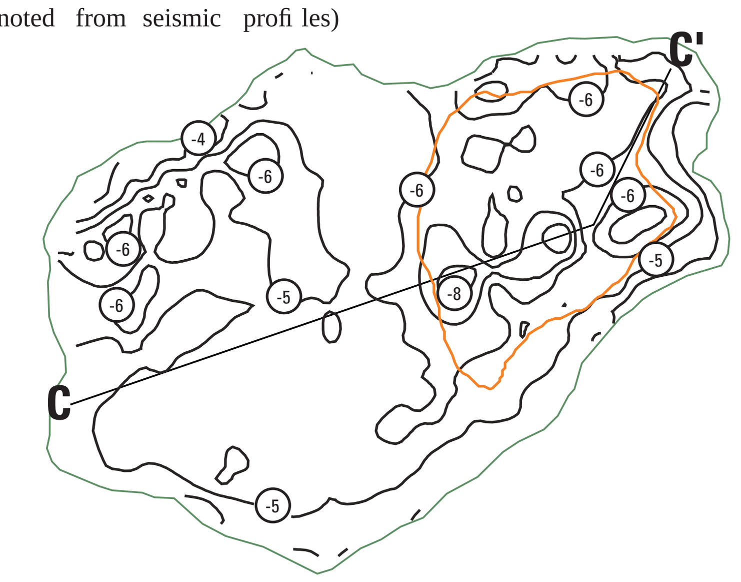


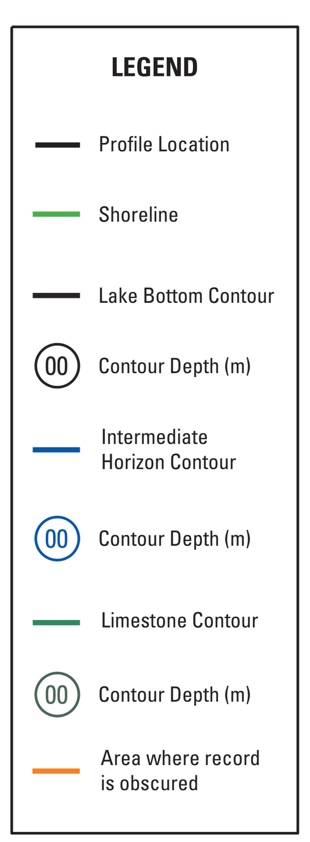
Horizontal Exaggeration 34:1 Not corrected for velocity variations. Horizons are colored to show structure, not correlation.



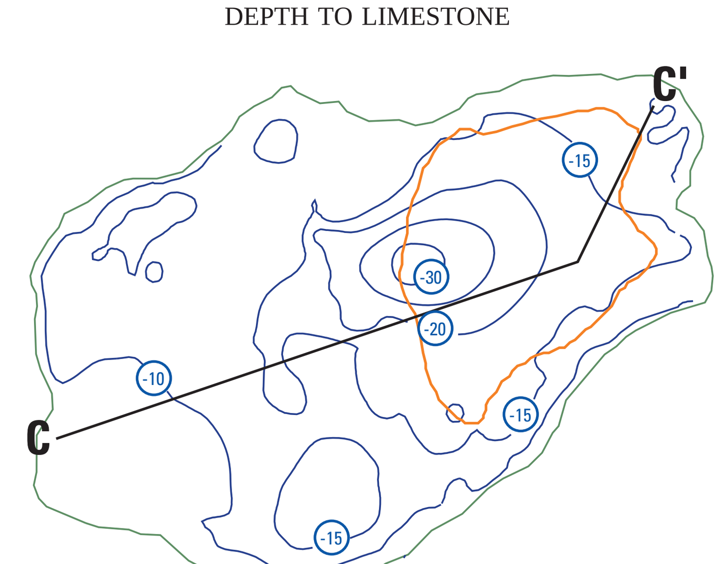
Horizontal Exaggeration 23:1 Not corrected for velocity variations. Horizons are colored to show structure, not correlation.

LAKE DISSTON
DISTRIBUTION OF FEATURES
(noted from seismic profiles)

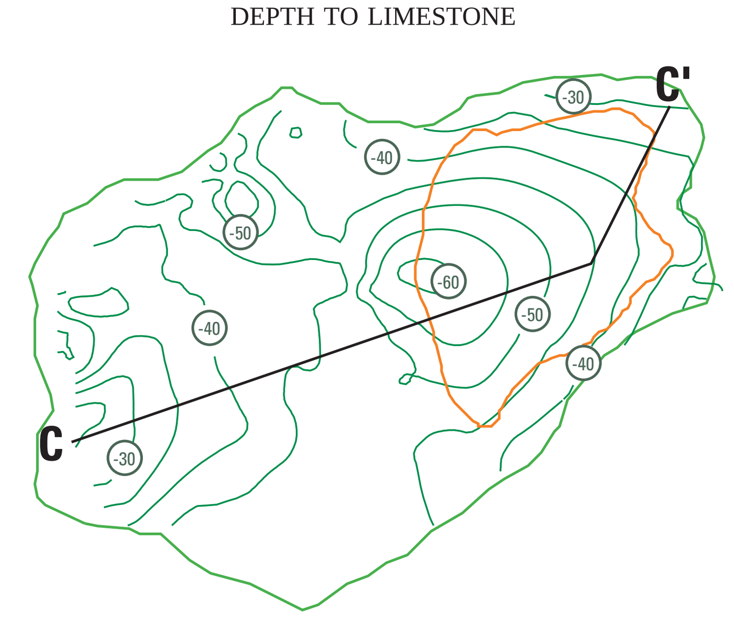


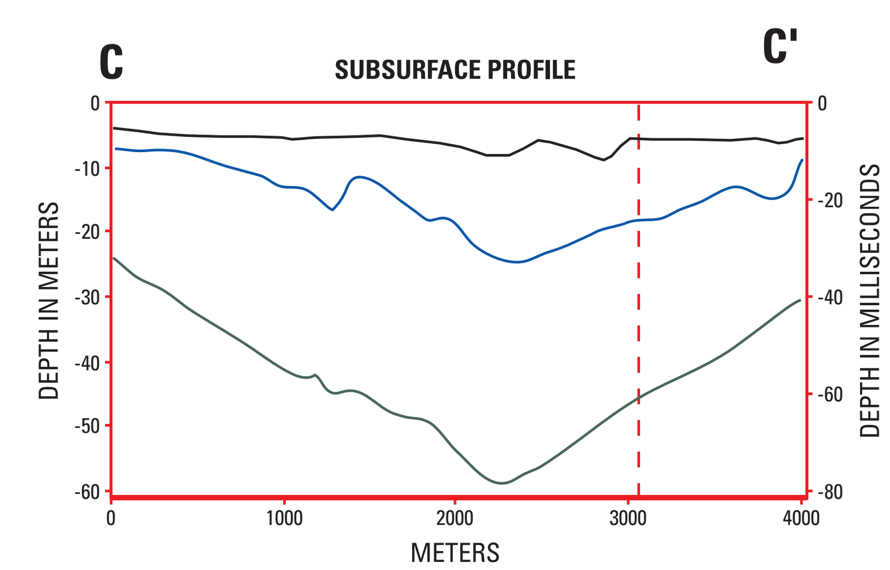


DEPTH TO LIMESTONE



DEPTH TO LIMESTONE





Subsurface Characterizations of Selected Water Bodies in the St. Johns River Water Management District, Northeast Florida

Jack L. Kindinger[1], Jeffrey B. Davis[2], and James G. Flocks[1]
2000

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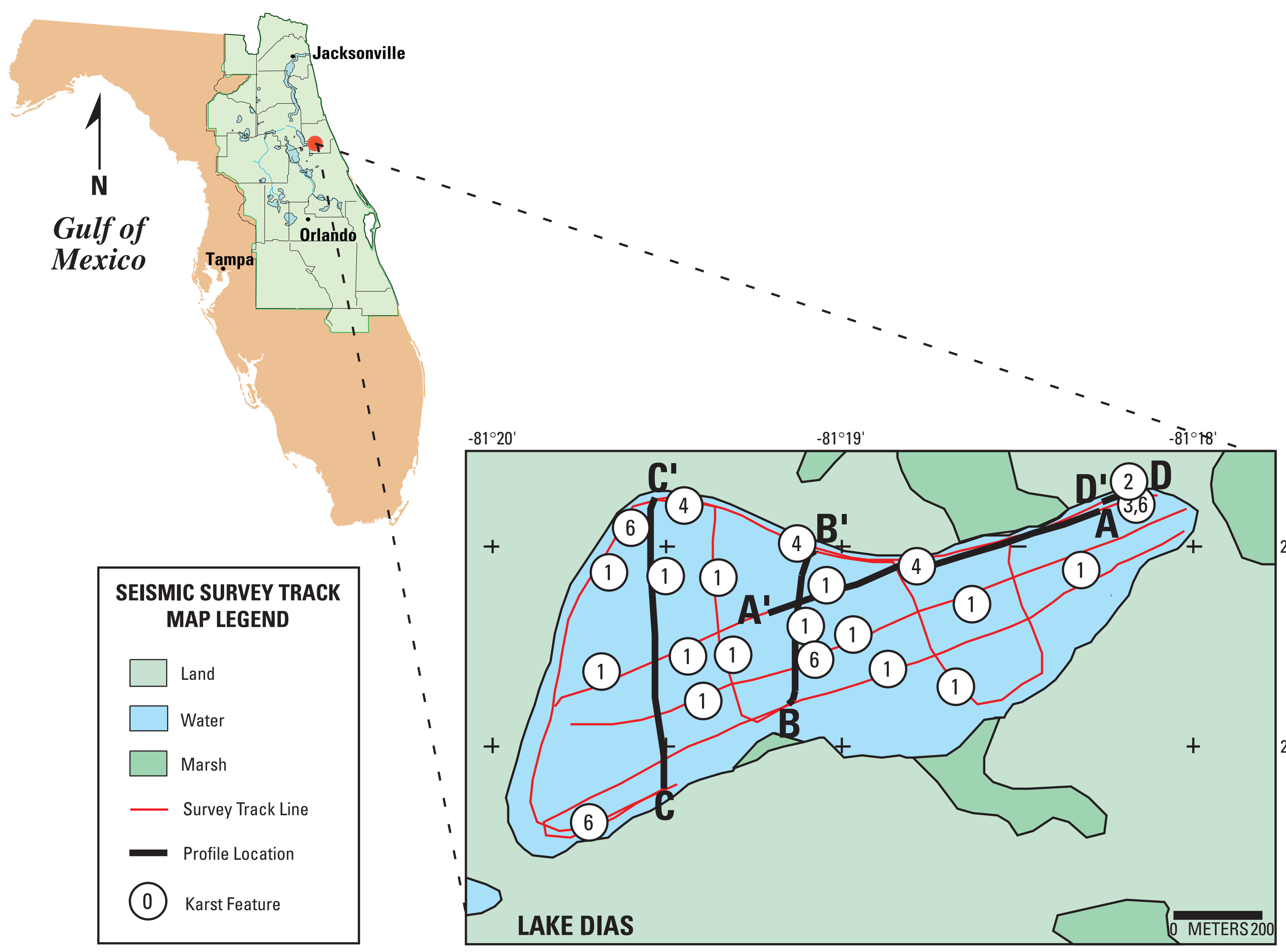
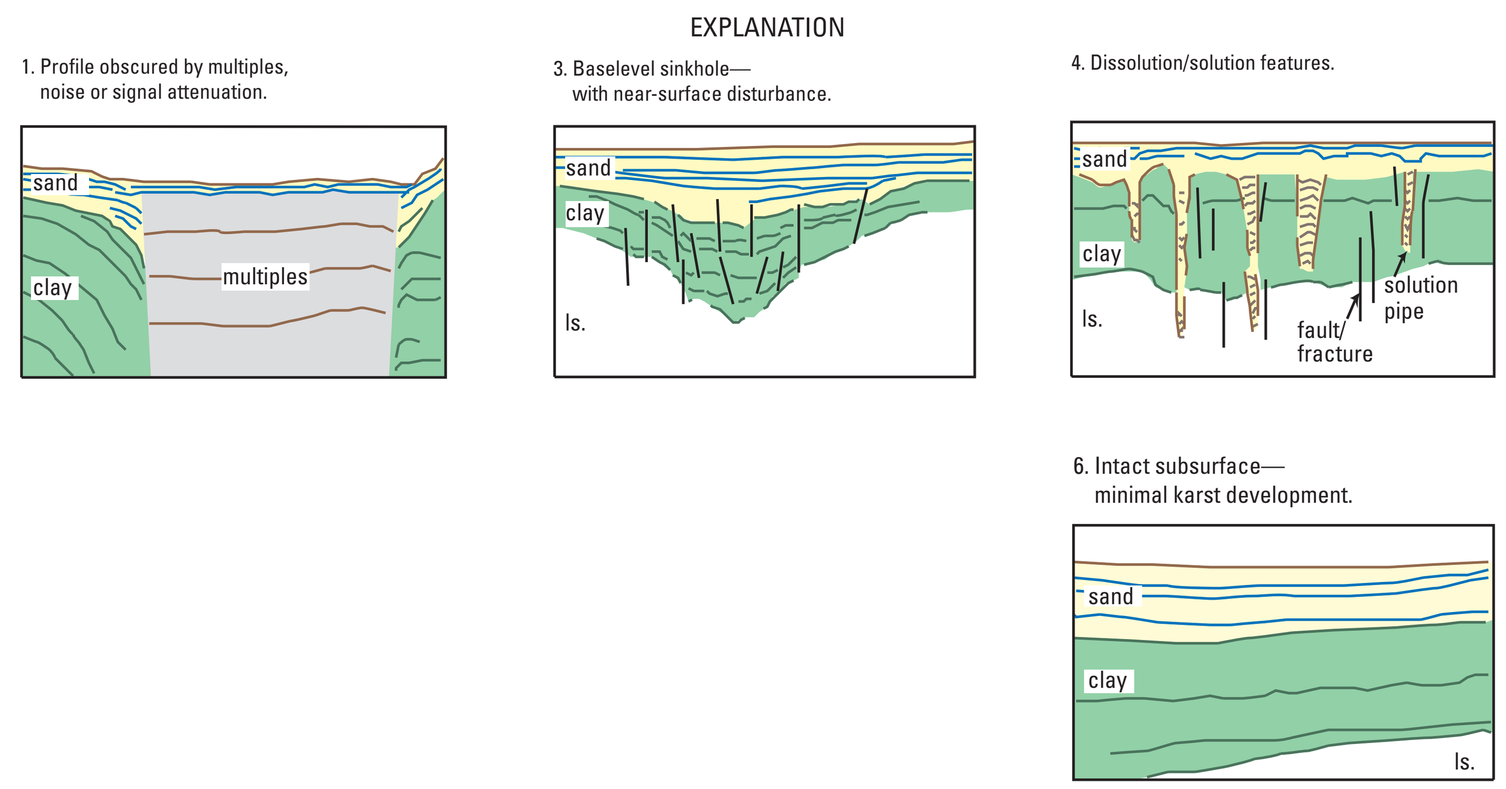
LAKE DIAS
VOLUSIA COUNTY, FLORIDA

D





Introduction

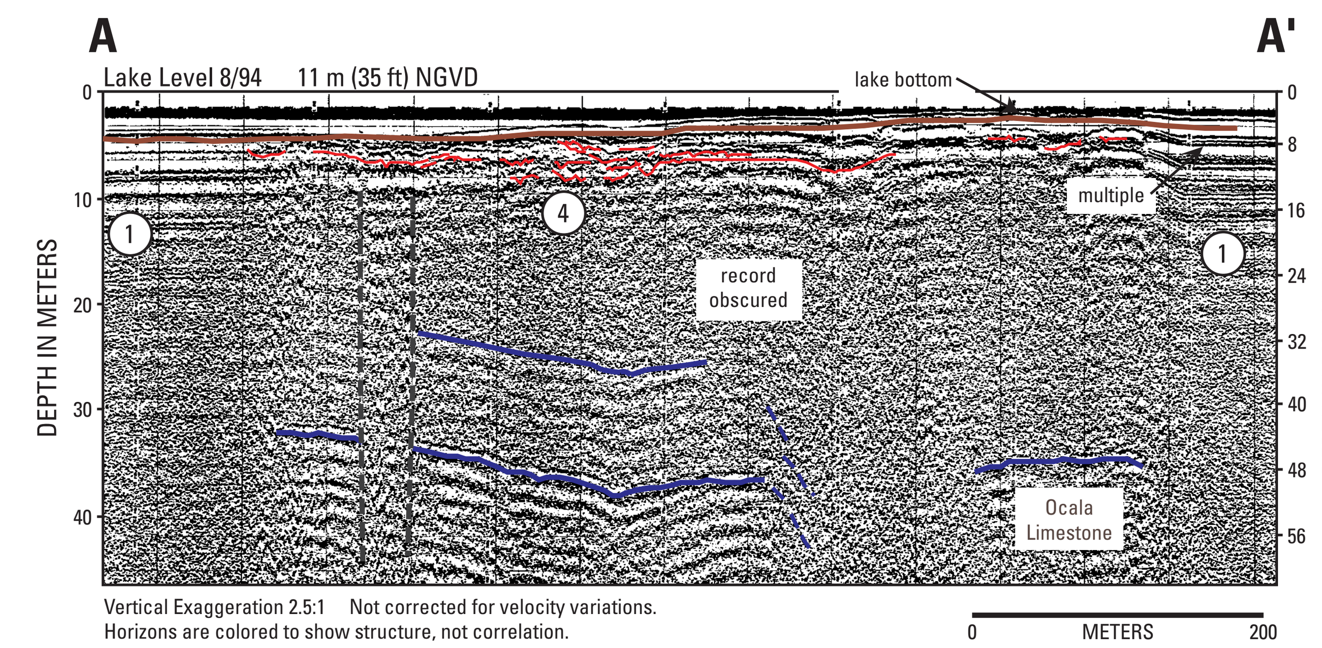
Lake Dias is located in north-central Volusia County. The lake lies on the northern part of the Deland Ridge, near the eastern edge of the Central Lakes District which is the principle recharge area for the Floridan aquifer. The ridge straddles the swampy lowlands of Lake Woodruff to the west and Little Haw Creek to the east. The Crescent City-Deland Ridge physiographic subdivision consists of sand hills with summits generally between 24 and 30 m (79 and 98 ft) in elevation. Plio-Pleistocene sand and shell rest directly upon the Floridan aquifer. The lake level at the time (August, 1994) of the seismic survey was 10.6 m (35 ft) NGVD. Lake Dias is oval in shape, with a perimeter of 8.7 km, an area of 4.3 sq km, and average water depth of approximately 3 m (6 ft).

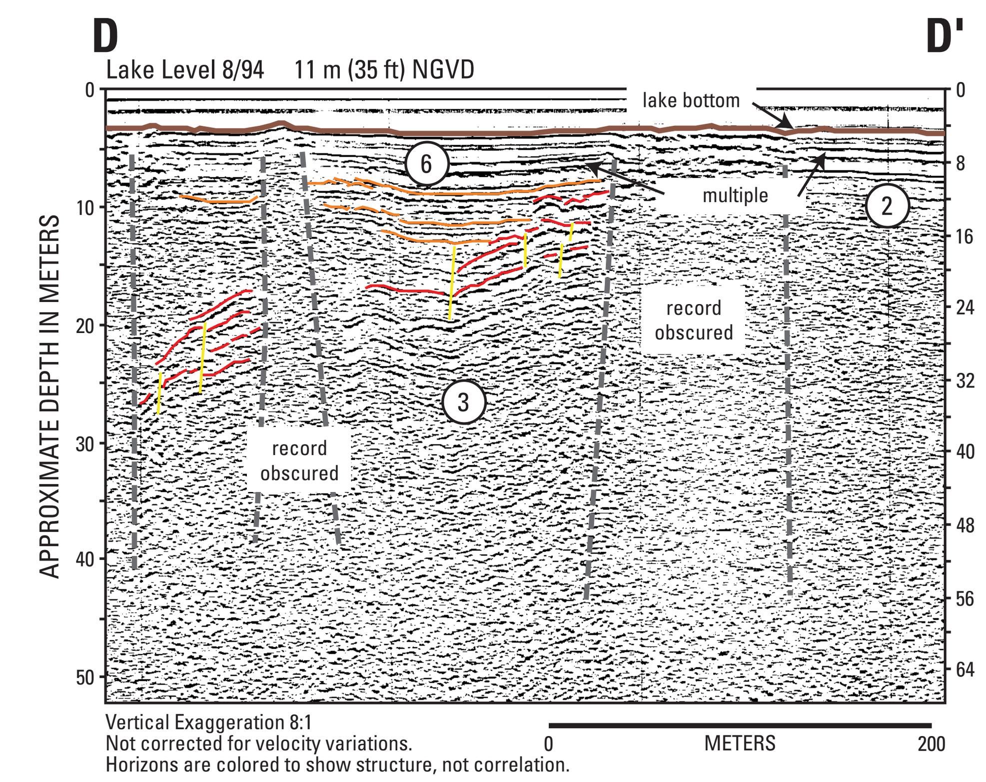
Subsurface Characterization

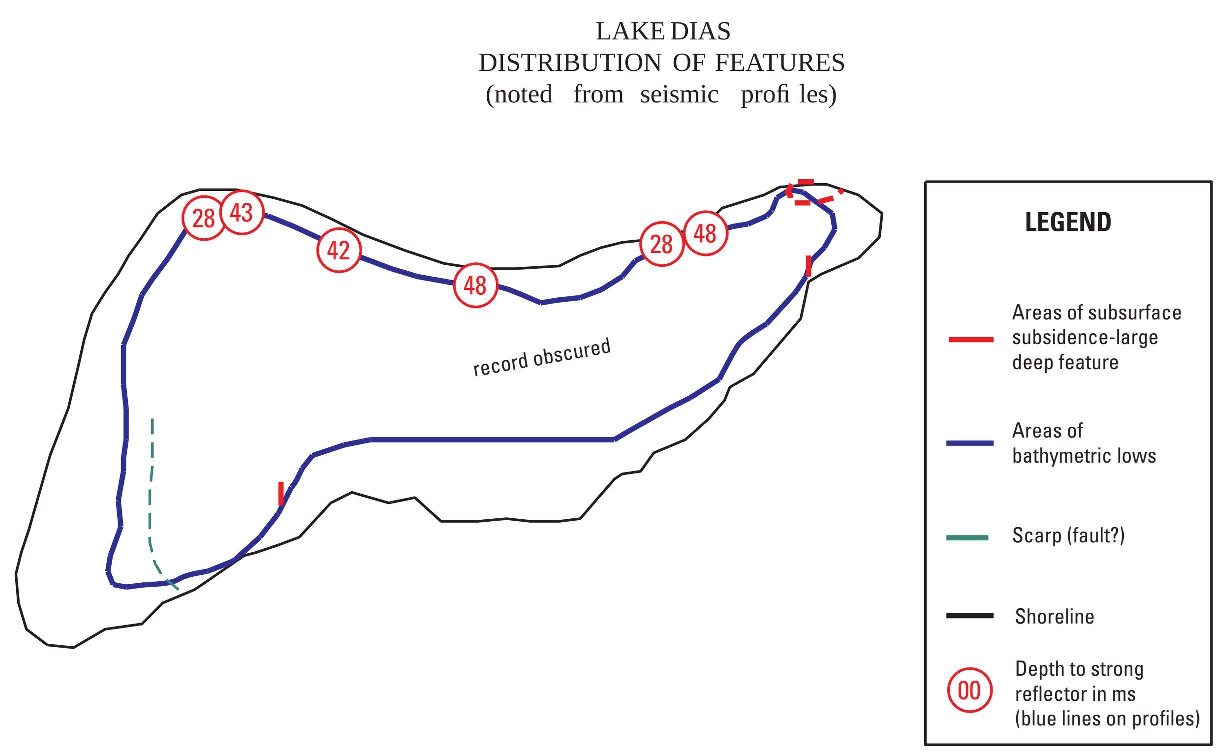
Seismic profiles from Lake Dias are predominantly obscured at depth. A strong bottom reflector leads to multiples seen throughout the data that obscure some of the record in the deeper portions of the lake (profile C-C'). The record is also partially obscured in areas where the lake bottom nears the surface (profile A-A', B-B'). In general the lake is characterized as a single large depression comprising most of the lake (Distribution of Features Map, blue line). Deep reflectors tend to drop prior to becoming obscured near the central portions of the lake (profile B-B', blue lines). This suggests that deep structures influence the lake bathymetry. Low-amplitude, near surface reflectors in some of the profiles near the fringes of the lake have a hummocky appearance (index map, type 4 feature, profiles, A-A', B-B', red lines). The reflectors may represent smaller subsidence features in the fill overlying the deeper subsidence. Profile C-C' also shows some low angle, offlap type reflectors (type 6 feature, red lines) that may represent subsequent fill during subsidence of the lake.

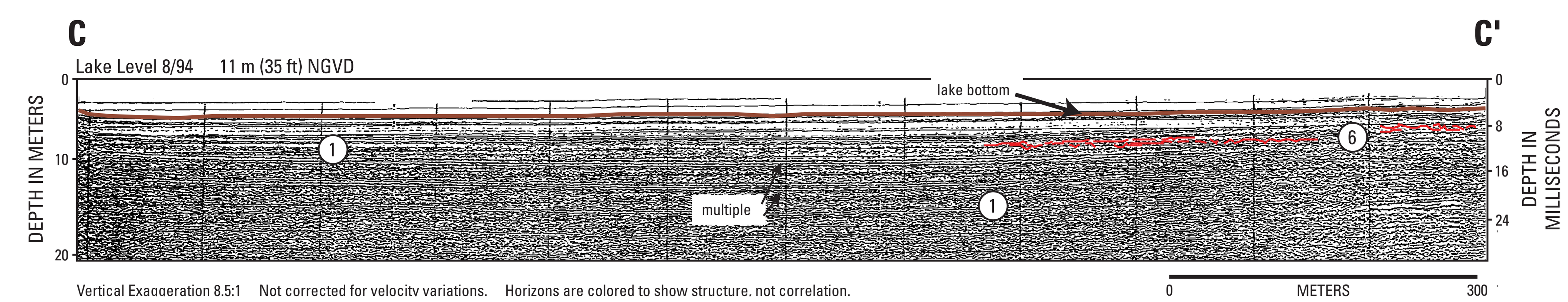
Profile D-D' shows a feature seen in the extreme northeastern portion of the lake. Pronounced high angle reflectors (red lines), overlain by fill-type horizontal reflectors (orange lines) may represent a collapse structure (type 3 feature). A chaotic signal below the horizontal reflectors could be block fill associated with the initial collapse, which was subsequently overlain by fluvial fill. This is the only area throughout the lake where this type feature is present and could represent a major breach in the confining material overlying the aquifer.

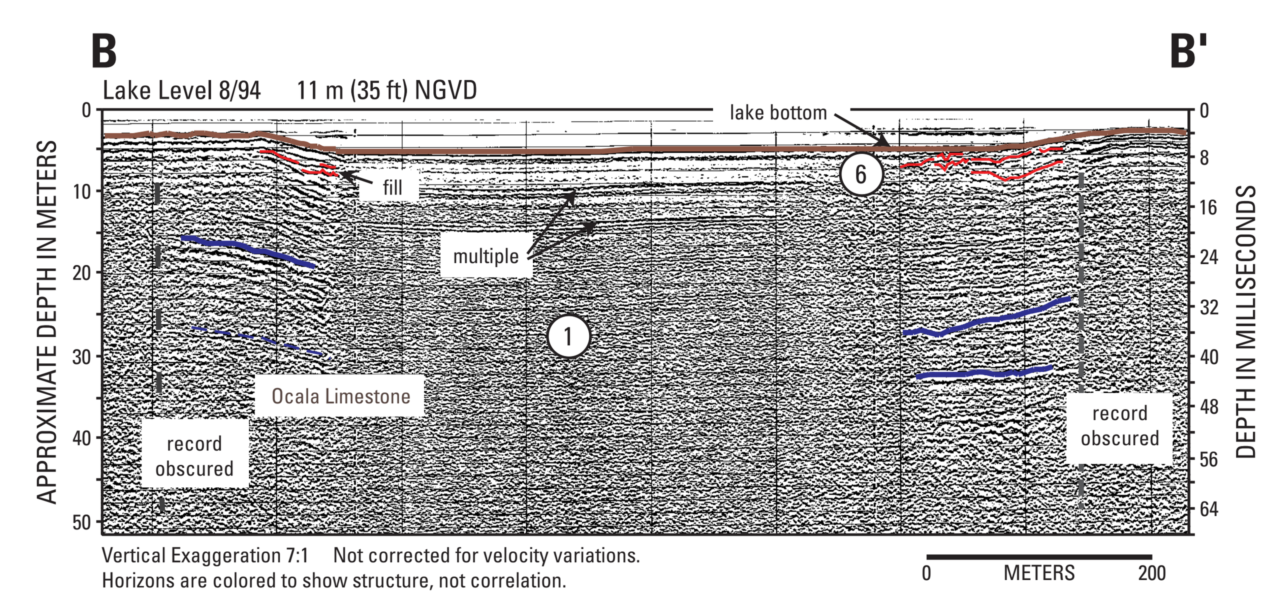
Interpretations of Gamma profiles from wells surrounding the lake (Index Map D, profile C-C') show the top of the Ocala Limestone to be between -9 and -15 m (-20 and -50 ft) NGVD. This would correspond to between 26 and 35 milliseconds depth in the profiles, using an averaged sound velocity of 1500 m/s. This depth would suggest that the blue lines seen in the profiles (A-A', B-B') represent horizons near the top of the Ocala Limestone. Dissolution in the Ocala Limestone at depth would cause subsidence in the overlying material and fill.











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