New Mexico
Oil Conservation Commission
Pit Rule Hearing, January 9, 2013

- Clay Robinson, PhD
- Senior Soil Scientist, Stetson Engineers
- Former Professor of Soil Science, West Texas A&M University
- Certified Professional Soil Scientist
- Licensed Professional Geoscientist (Texas)

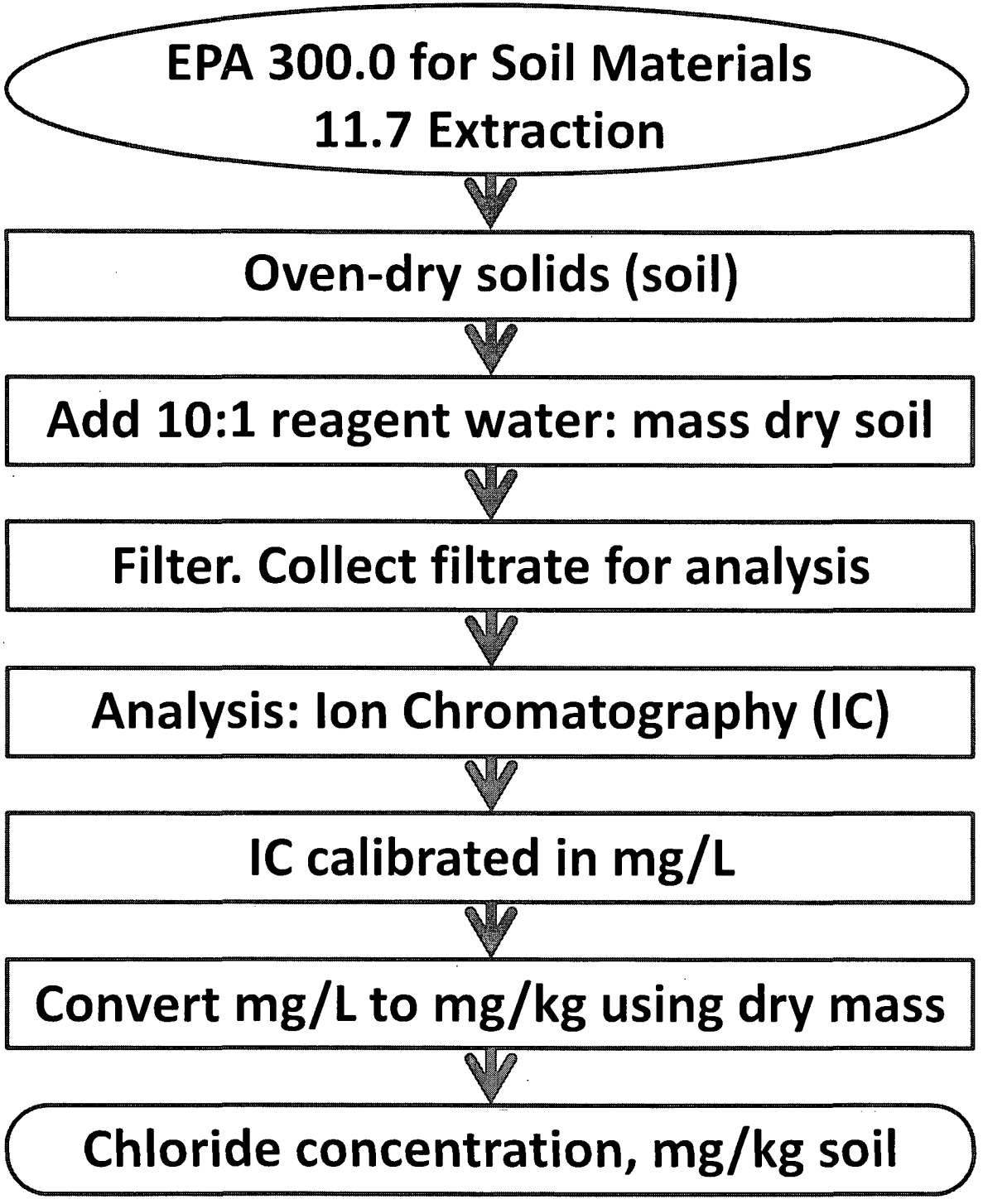
BEFORE THE OIL CONSERVATION COMMISSION
CASE NO. 14784 NMOGA EXHIBIT 26
JANUARY 9, 2013

Certified Professional Soil Scientist

- Core: soil genesis/morphology/classification; soil chemistry/mineralogy; soil fertility/ nutrient management; soil physics; soil biology/ecology; soils/land use management
- Supporting: agricultural sciences; biological/ ecological sciences; chemistry/mathematics/ physics/statistics, communications, geoscience; human health and land use; and water science.
- 2 exams: knowledge, professional practice
- Experience

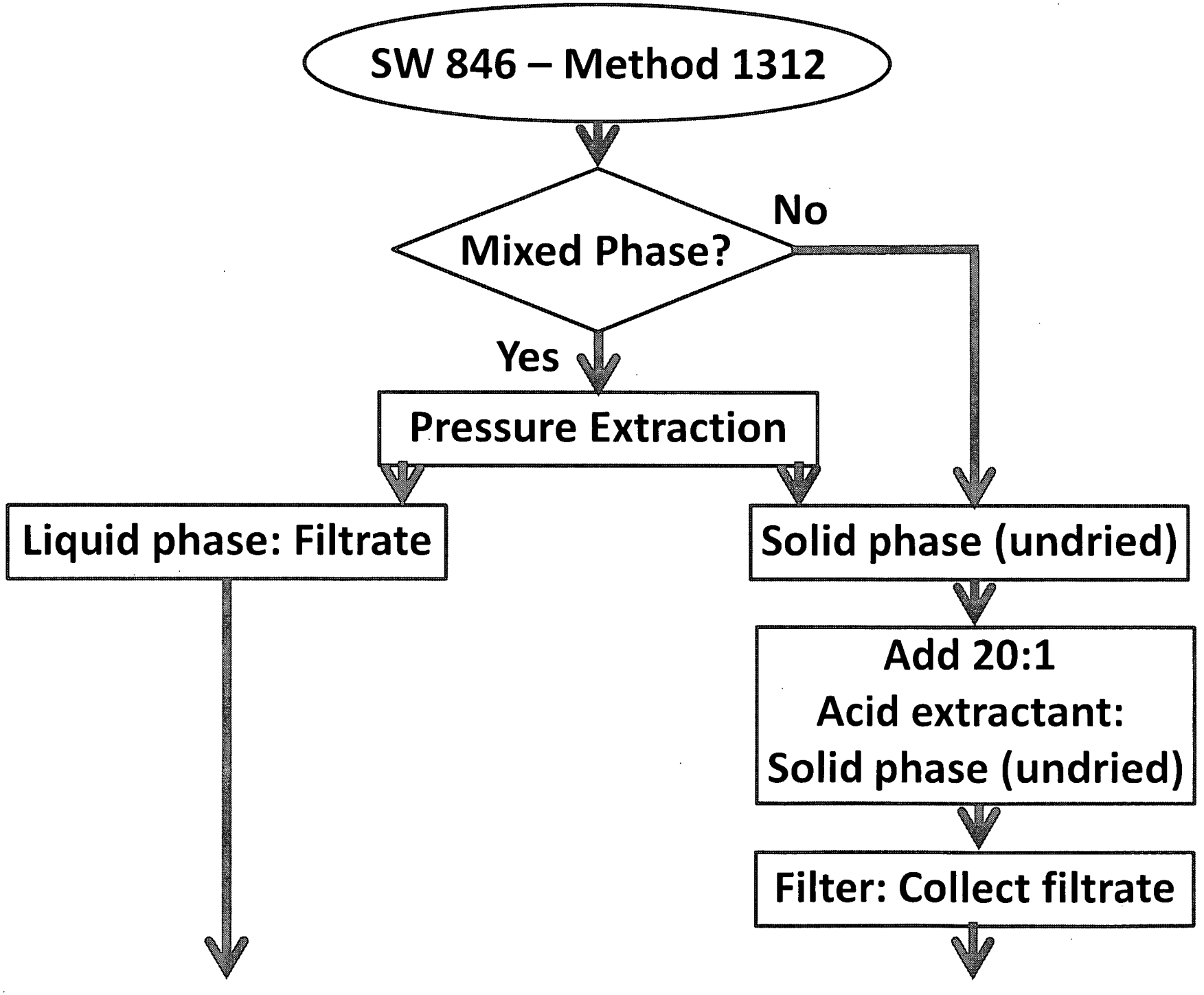
EPA 300.0 Determination of inorganic anions (including chlorides) by ion chromatography

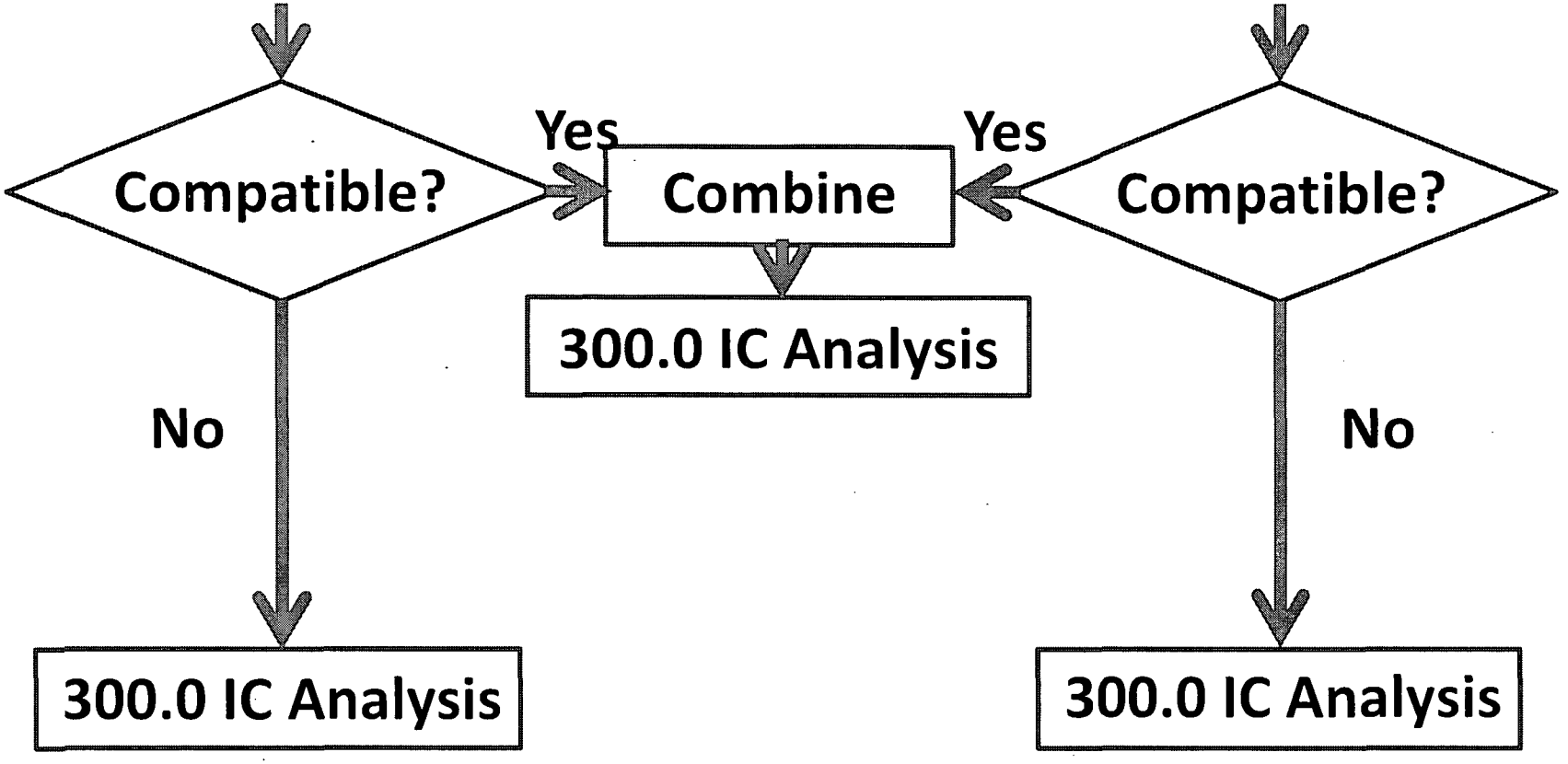
mg/L	mg/kg
Drinking water *Surface water* *Groundwater* *Reagent water* Wastewater Leachates	Solids (after extraction)

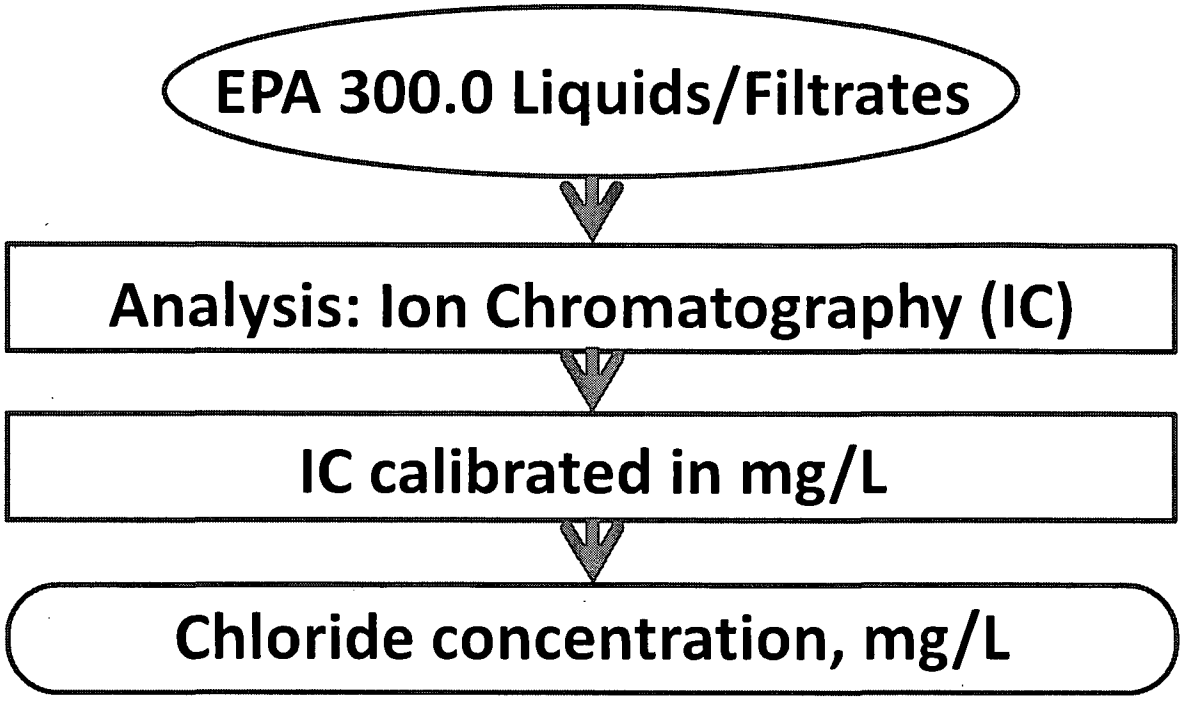

EPA 300.0 for Soil Materials
11.7 Extraction
Oven-dry solids (soil)
Add 10:1 reagent water: mass dry soil
Filter. Collect filtrate for analysis
Analysis: Ion Chromatography (IC)
IC calibrated in mg/L
Convert mg/L to mg/kg using dry mass
Chloride concentration, mg/kg soil

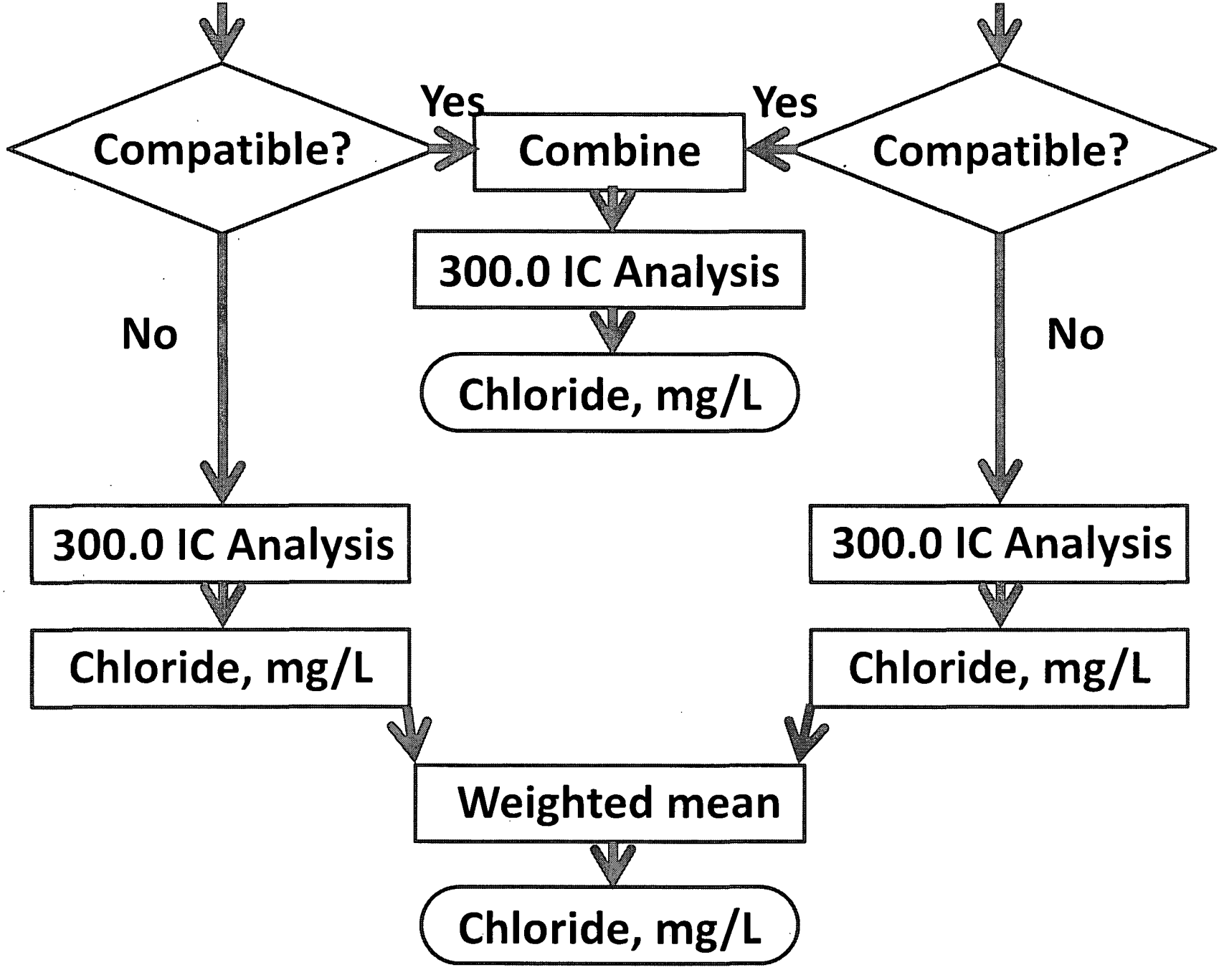
EPA SW-846, Method 1312
Synthetic Precipitation Leaching Procedure

- Determine *mobility* of organic and inorganic analytes present in liquids, soils, and wastes
- Liquid- or mixed-phase wastes


SW 846 – Method 1312
Mixed Phase?
No
Yes
Pressure Extraction
Liquid phase: Filtrate
Solid phase (undried)
Add 20:1
Acid extractant:
Solid phase (undried)
Filter: Collect filtrate


Compatible?
Yes
Combine
Yes
Compatible?
300.0 IC Analysis
No
No
300.0 IC Analysis
300.0 IC Analysis


EPA 300.0 Liquids/Filtrates
Analysis: Ion Chromatography (IC)
IC calibrated in mg/L
Chloride concentration, mg/L


Compatible?
Yes
Combine
Yes
Compatible?
300.0 IC Analysis
No
Chloride, mg/L
No
300.0 IC Analysis
300.0 IC Analysis
Chloride, mg/L
Chloride, mg/L
Weighted mean
Chloride, mg/L

EPA 300.0 vs. SW-846, Method 1312

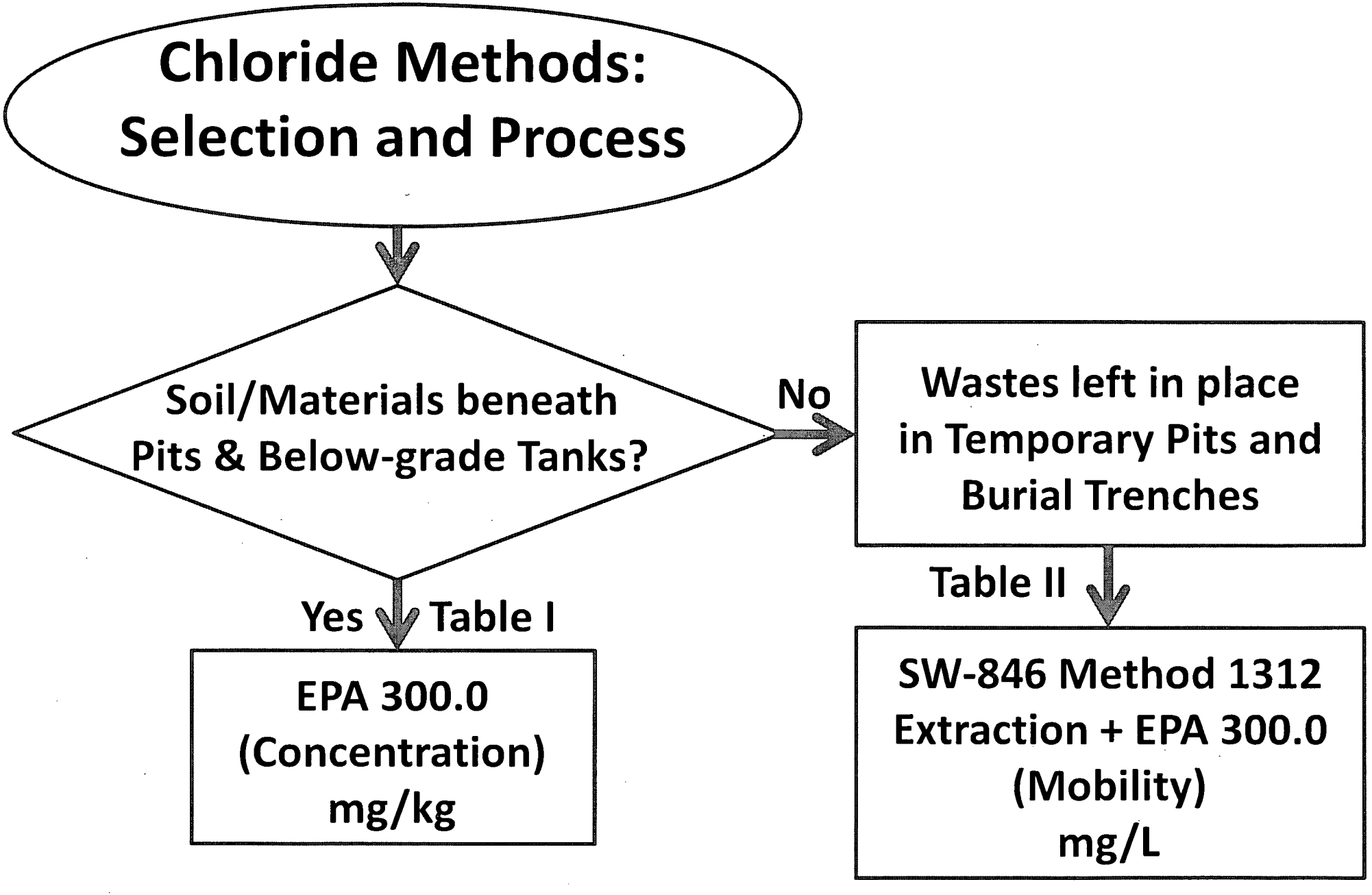
300.0, Soil	1312, Pit Contents
Dry solid material (11.7) – dried at 105° C to constant mass, 12 to 24 h	Solids remain on filter after pressure filtration to 50 psi (7.1.1). Water remains in solids.
Known dry mass allows mg/L to mg/kg conversion.	Method does not provide dry mass needed to convert mg/L to mg/kg

Determination of inorganic anions by ion chromatography, including Chloride, in

300.0	300.1
Drinking water	*Finished* drinking water
Surface water	Surface water
Groundwater	Groundwater
Reagent water	Reagent water
Wastewater	
Leachates	
Solids (after extraction)	

EPA 300.0 vs. EPA 300.1

300.0	300.1
General purpose	Specific purpose: detect lower concentrations
Solids (dry) extraction ratio specified, allows volume to mass conversion	*Not intended for solids*, no extraction ratio specified


Chloride Methods:
Selection and Process
Soil/Materials beneath
Pits & Below-grade Tanks?
No
Wastes left in place
in Temporary Pits and
Burial Trenches
Table II
Yes
Table I
EPA 300.0
(Concentration)
mg/kg
SW-846 Method 1312
Extraction + EPA 300.0
(Mobility)
mg/L