Exploration Framework for Lithium in Brine

Presentation by

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Outline

- Regulatory framework that guides brine exploration
- Exploration Phases
- General brine removal trends
- Timing

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Mark King – My Background in Playas and Salars

- Worked on more than 16 salars in Chile, Argentina and Nevada.
- From 2009 to 2012, QP for three rounds of NI 43-101 Reports for Lithium Americas, culminating in a lithium brine Reserve Estimate.
  - 1st publicly released brine Reserve Estimate
- Due Diligence Studies of five different salars in Argentina and Chile
- Directed SEAWAT modeling efforts related to the Albemarle permit application at Salar Atacama.
- QP for work conducted by Talison Lithium, at the Salares Seven Lithium Brine Project in Chile.
- QP for three rounds of Technical Reports for the 3Q Project in Argentina (including Reserve Estimate)
- Directed Resource estimates and numerical models for Albemarle Silver Peak
- One of few QPs with extensive experience on both production and exploration sites

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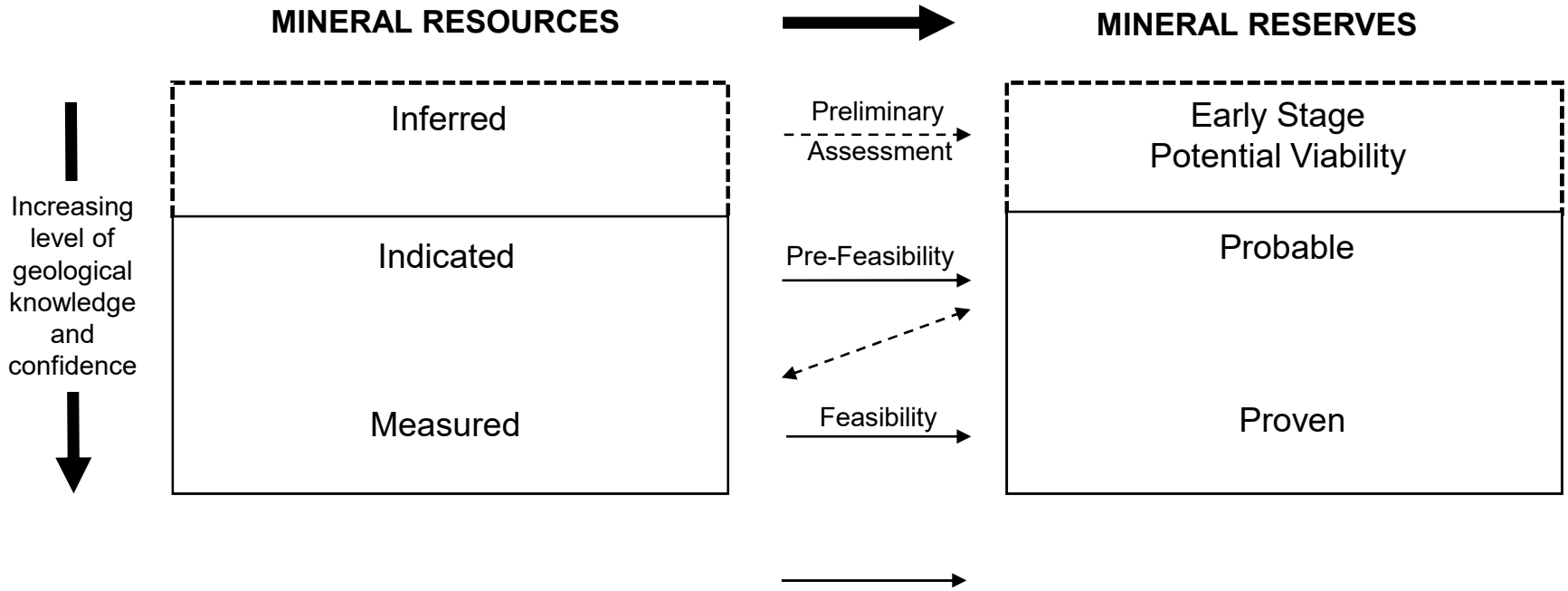
Relationship Between Resources and Reserves
(Originally defined for Hard Rock deposits)

- Figure is consistent with NI 43-101 (Canadian), JORC Code (Australian)
- SEC IG7 Guidance (US) is conceptually similar, but with minimal detail



Application to Brine Deposits

Some modification, enhancement, or addition to hard rock study methods

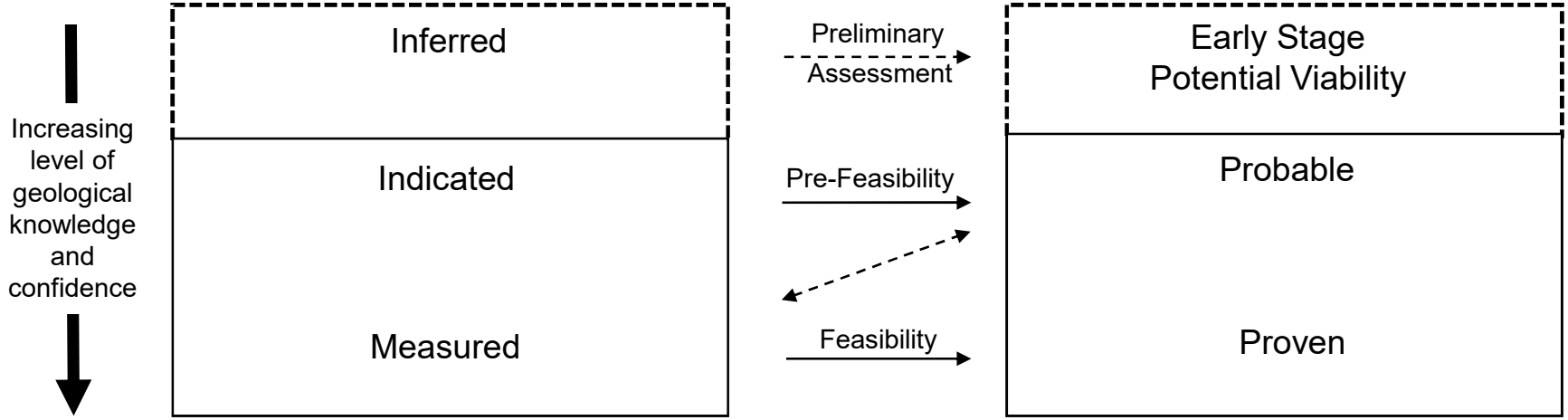
MINERAL RESOURCE EVALUATION → **MINERAL RESERVE EVALUATION**

Demonstrate bulk quantity of **drainable** dissolved mineralization; key components are 3D characterization of:

1) drainable porosity , and
2) brine grade

Demonstrate recoverability of dissolved mineralization; key components (in addition to Resource) include:

1) the continuity and distribution of reservoir permeability, and
2) reservoir boundary conditions (hydraulic and geochemical)



Otherwise, Modifying Factors concepts are identical to hard rock

Resource and Reserve Estimates

- Resource:
  - how much is in the ground
  - For brine, it is the drainable amount in the pore spaces
  - Published Resources cover a wide range of complexity
- Reserve:
  - how much of that can be economically extracted (pumped)
  - Requires predictive modeling with boundary conditions and water balance, to represent freshwater capture and well drawdown
  - By definition, there is no Reserve (no Project) without the right to extract brine
- Qualified Professional (QP) concept is central in identifying project "risks"

Commonly assumed Rule of thumb: Reserves are 25-33% of Resources (largely unconfirmed, because there are so few Reserve Estimates….. and even fewer producing sites)

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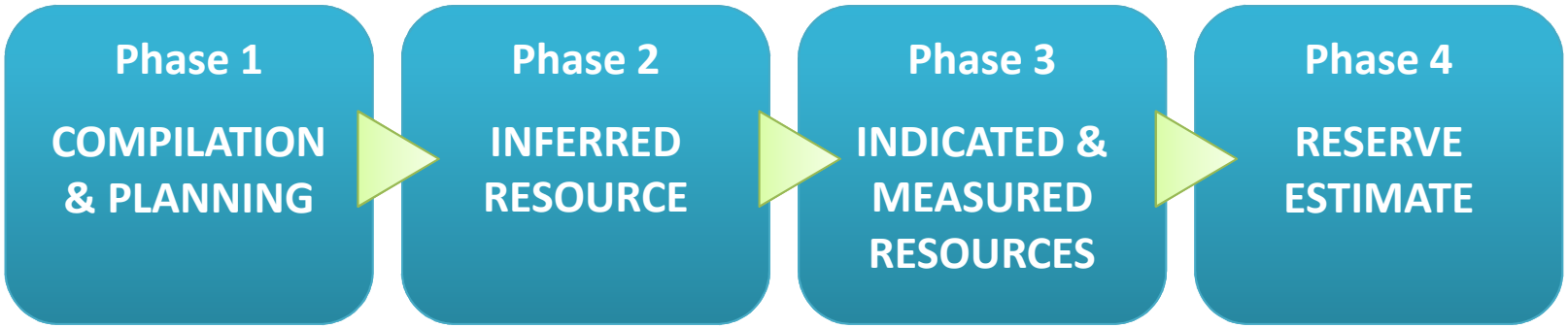
Phases of Work For Evaluating Resources and Reserves on Brine Sites

- Guidance documents do not provide specific exploration methods or approaches
- The following framework has become relatively standard
- Directed (or sometimes just audited) by a Qualified Person (QP)
- Primary field activities summarized below



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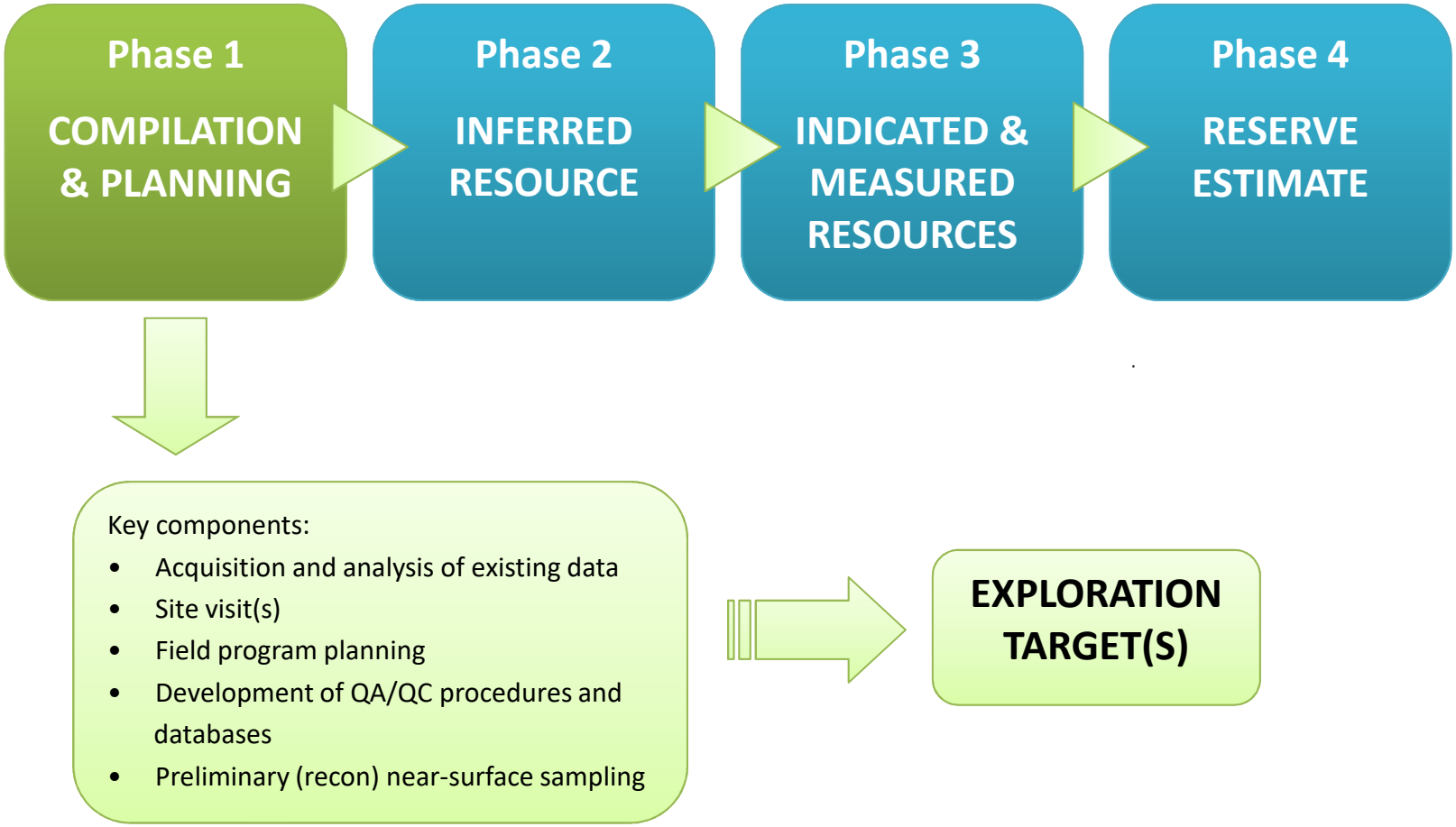
Phase 1: Compilation and Planning



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Phase 1

Key components:

- Data acquisition from various entities
  - Concession boundaries, geological mapping, road network, climate statistics, digital elevation model, historic data, etc.
- Site visit
- Desktop studies
  - Compile data
  - Basin wide and spatial analyses
  - Develop geological and hydrogeological understanding and summaries of project areas
  - Determine best practice applicable exploration methodologies
- Field program planning
  - Permit requirements
  - Sample requirements for Inferred Mineral Resource Estimate
  - Design databases and QA/QC procedures for new technical data
- Preliminary (recon) near-surface brine sampling

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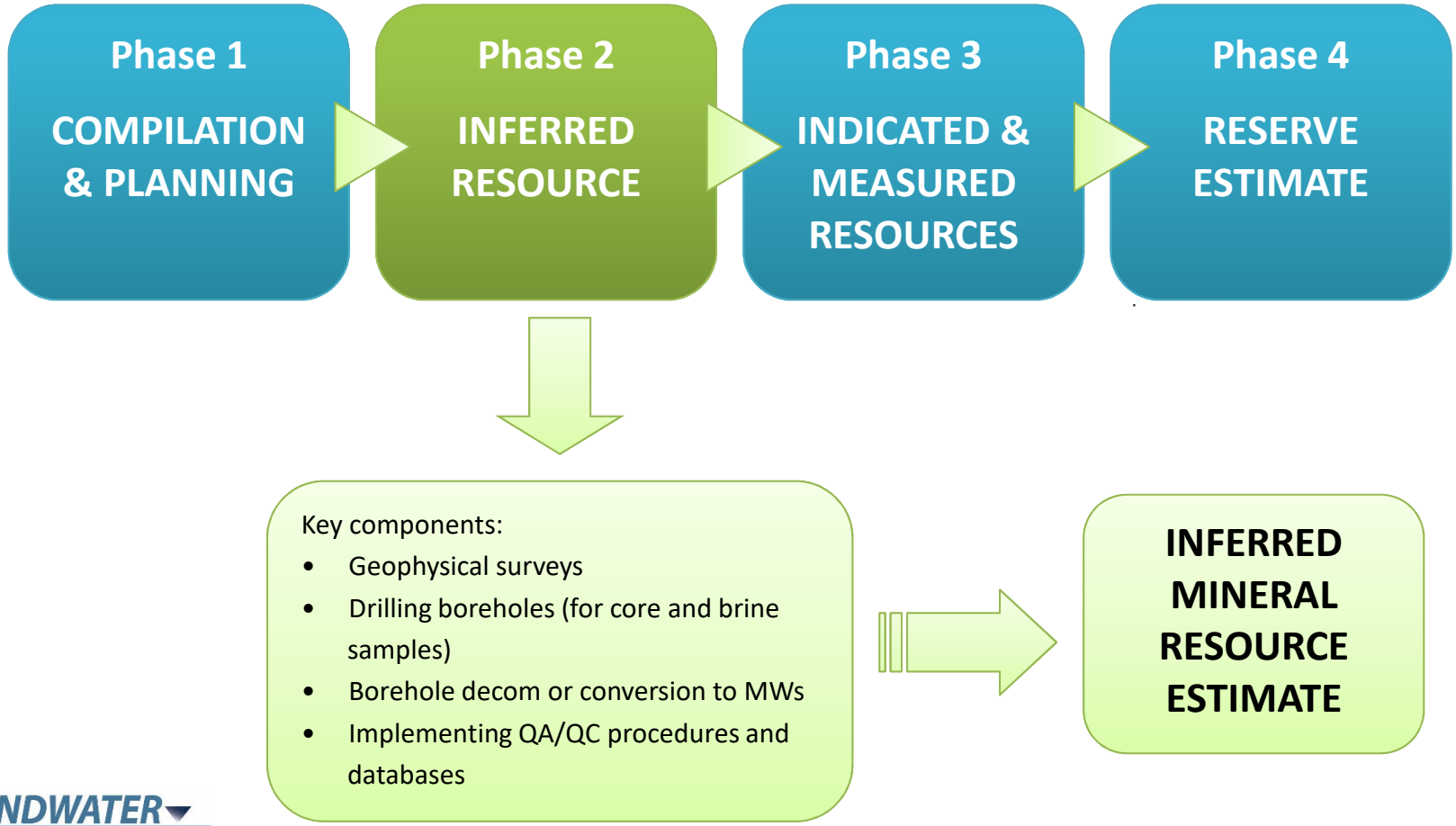
Phase 2: Inferred Mineral Resource Estimate



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Phase 2: Inferred Mineral Resource Estimate

Key components:

- Geophysical surveys:
  - Used to refine locations for follow-up drill sites
  - Contribute to understanding of basin architecture and composition
- Drill boreholes:
  - Continuous core of material to determine stratigraphy, permeability
  - Discrete level brine samples from specific depths
- Boreholes are either decommissioned or converted to monitoring wells (and then developed by removing fluid and seds)
- Compilation of databases and implementation of QA/QC procedures
- Results of field program analyzed and integrated with other data sets
- Preliminary characterization of hydrostratigraphic model
- Quantification of Inferred Mineral Resource Estimate, if supported by data

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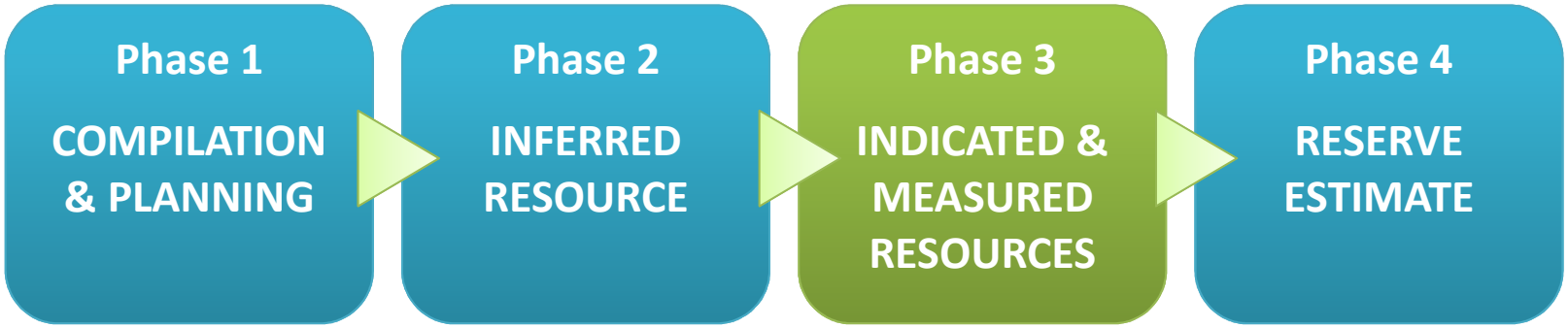
Phase 3: Indicated & Measured Resources



Key components:

- Detailed sampling and drilling
- May drill pumping wells (for Phase 4)
- May initiate processing pilot tests (for Phase 4)
- Integrate data from monitoring wells
- Refinement of hydrostratigraphic model
- Possible preliminary flow model (for Phase 4)
- Continued QA/QC and database monitoring

INDICATED & MEASURED MINERAL RESOURCE ESTIMATE

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Phase 3: Indicated & Measured Resources

Key components:

- More detailed field program to increase confidence and geological understanding of deposits
  - More borehole drilling and monitoring wells
- May drill pumping wells for hydraulic characterization of aquifers (for Phase 4)
- May initiate processing pilot tests (for Phase 4)
- Continued monitoring of QA/QC procedures and databases
- Assess and integrate results of detailed program with existing data
- Refine hydrostratigraphic model
  - May include development of preliminary dynamic flow model (for Phase 4)
- Upgrade Inferred Resource to Indicated and/or Measured Mineral Resource Estimates, if supported by data
- Determine additional information requirements for upgrading Resources to Mineral Reserves
  - E.g. additional permitting, pre-feasibility study, preliminary economic assessment, etc.

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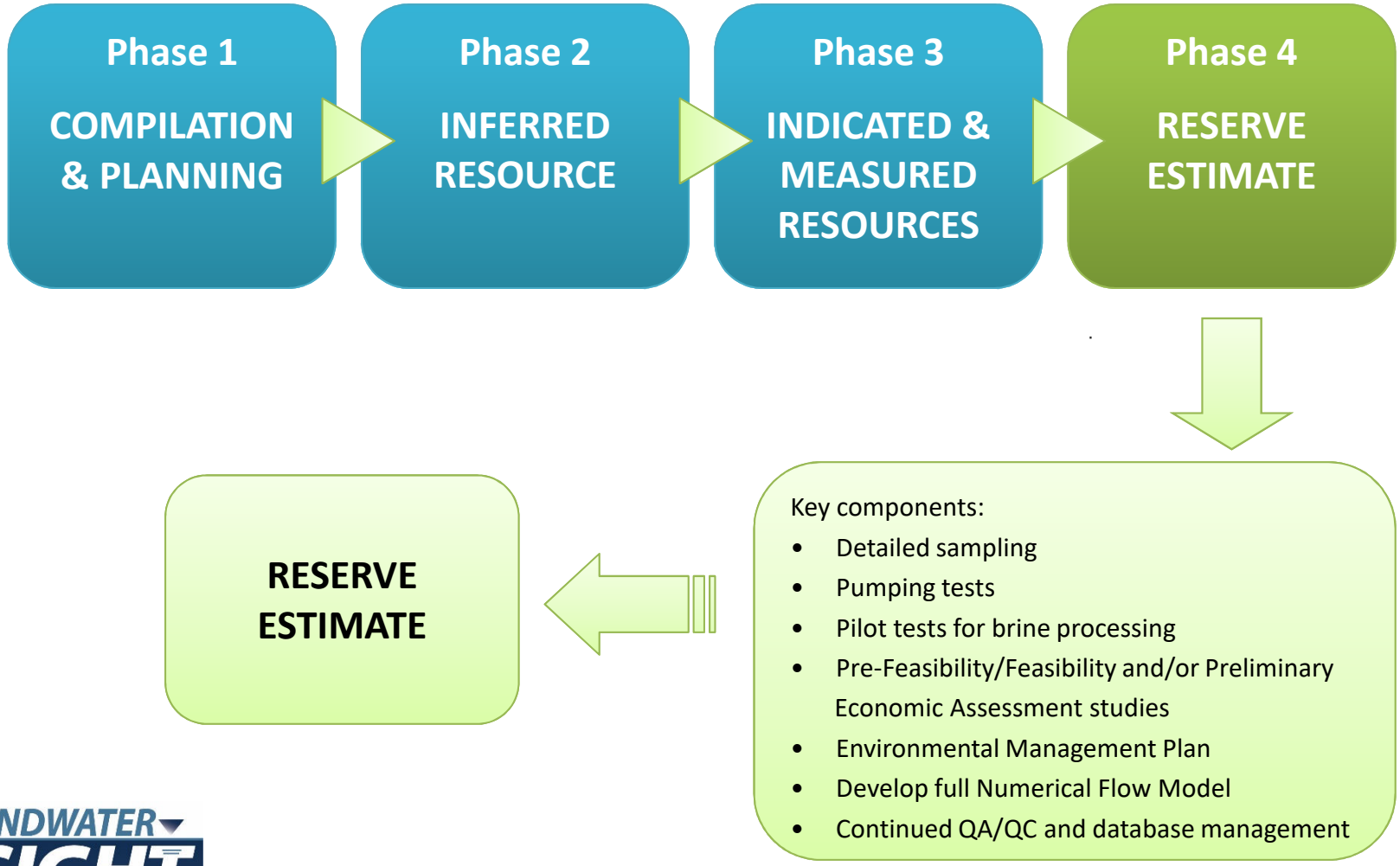
Phase 4: Reserve Estimate



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Phase 4: Reserve Estimate

Key components:

- Additional drilling (for core and brine sampling) to increase geological understanding and confidence of deposit
- Pumping tests for hydraulic characterization
- Conduct pilot tests for brine processing response
- Assess results and integrate with existing data
- Pre-Feasibility/Feasibility and/or Preliminary Economic Assessment studies
- Develop Environmental Management Plan
- Development full numerical flow model
- Use model to upgrade Indicated and Measured Resources to Probable and Proven Mineral Reserves

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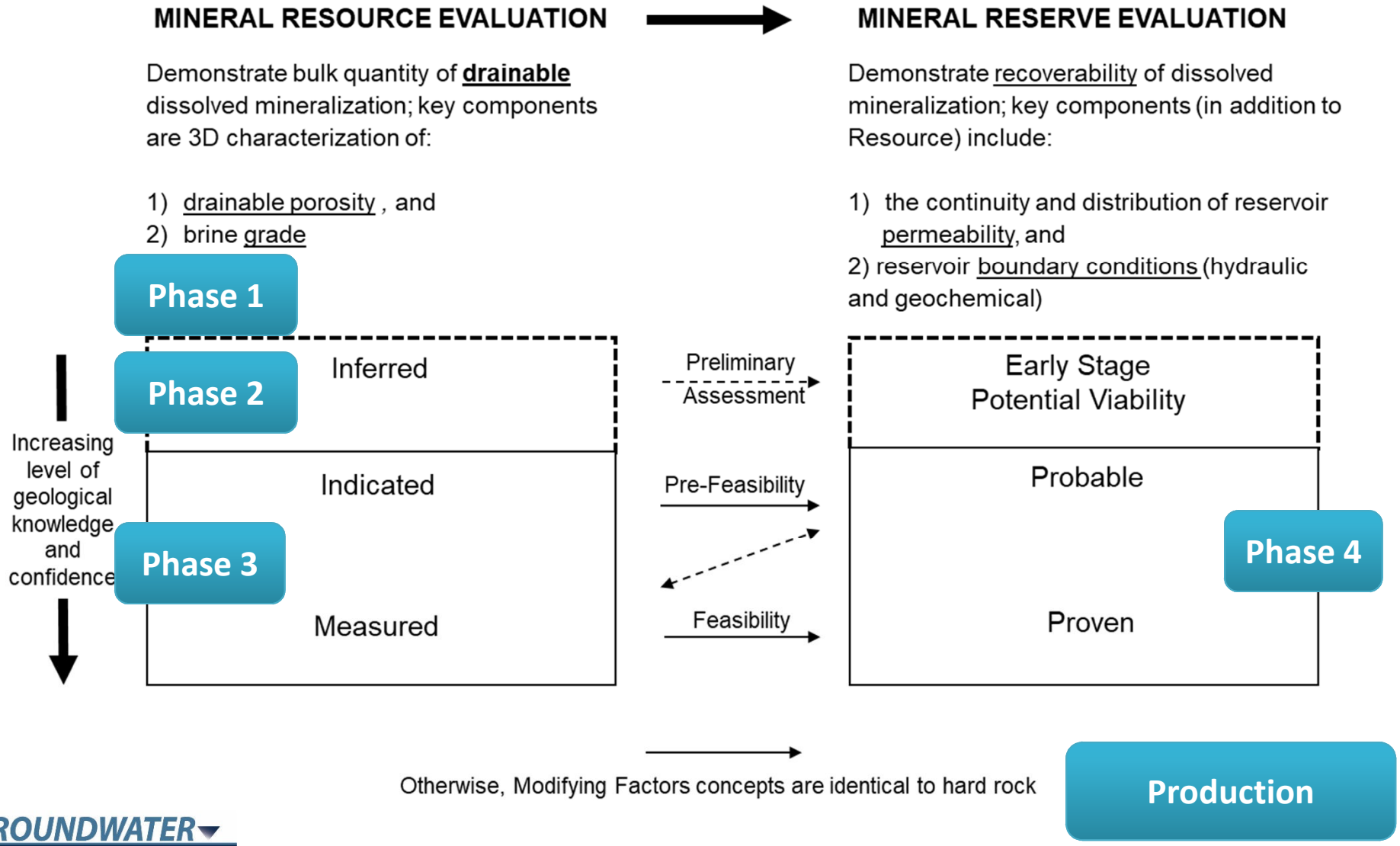
How these Exploration Phases Relate to the Framework



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Brine Removal Trends in Each Phase

Exploration Phase	Brine Removal Activity (Relative Amount)
1	Surface brine grab sampling • Nominal (<< 1 acre foot)
2	Borehole brine sampling and well development • Minimal (<1 acre foot)
3	Borehole brine sampling and well development • Minimal (<1 acre foot) Well pump tests (if considered useful by QP) • +/- 5 acre feet; QP judgment
4	Well pump tests (required) • +/- 5 acre feet; QP judgment Pilot processing • Possibly using pump test effluent; QP judgment

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Timing Considerations

- Feasible to progress through the 4 Phases in 3-4 consecutive field campaigns; interpretive work and planning conducted in the intervening periods.
- 4-6 months per field campaign; at least 3-4 years for Reserve Estimation
- Progression from one Phase to the next requires field evidence of potential lithium resources + QP sign-off
- In general, brine removal increases as the Phases advance

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The Road to Eventual Production

- The Phases of exploration are set up to protect investors: to ensure that reported results are “real” and that significant risks have been considered
- If Exploration is successful, it leads to Production
- During Production, there is an ongoing requirement to understand the deposit, so that it can be effectively mined
  - Combination of production data and boreholes for brine and core samples

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Summary

- There is a Regulatory Framework for defining mineral assets:
  - Resources (Inferred, Indicated and Measured) and Reserves (Probable and Proven)
- The Framework is driven by the need for public reporting
  - NI 43-101, JORC Code, SEC IG7
    - Initially developed for hard rock deposits
    - Applicable to brines, with some technical modifications
- For publicly traded juniors, the QP role is critical, especially for identifying significant risks
- The requirement for brine usage increases as exploration proceeds:
  - Borehole sampling is required for Resources – relatively minimal usage
  - Pumping tests and pilot processing required for Reserves – QP will ultimately determine adequacy

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Appendix

Exploration Drilling and Brine Sampling Methods

Method 1.

- Diamond Drilling:
  - Produces continuous column of drill core
  - Various core sizes and rig capacities (>3000 feet)
  - Core and brine samples collected
  - Important for geological modelling
  - Currently in use at SP
  - Relatively high cost

- Brine Sampling methods:
  - Packer system
    - isolates specific horizons identified in core
  - Contamination possible from drilling fluids
  - Selected horizon purged clean before sampling

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Exploration Drilling Methods

Method 2:

- Sonic Drilling:
  - Produces continuous column of drill core
  - Sonic vibration penetration, no drill fluids
  - Limited core sizes; max depth capacity ~600 feet
  - Core and brine samples collected – high quality
  - Important for geological modelling
  - Fast drilling; higher $cost/foot

- Brine sampling methods:
  - Bailer and Packer systems
    - From specific horizons identified in core
  - No drilling fluid contamination

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Exploration Drilling Methods

Method 3:

- Reverse Circulation (RC):
  - Produces slurry/chips
  - Percussion method, air driven
  - Flexible range of bit sizes and depth capacities
  - Chip samples less definitive
  - Packer system samples collected;
  - Mainly for down-hole and horizon-testing surveys
  - Lower $cost/foot

Method 4:

- Air Lift (AR):
  - Air percussion method
  - Large diameter open holes possible
  - Cased and used for pump testing
  - Relatively cheap
  - Generally not sampled

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